10th International Conference on
Applied Human Factors and Ergonomics

jointly with

1st International Conference on Industrial Cognitive Ergonomics and Engineering Psychology
1st International Conference on Human Factors for Apparel and Textile Engineering
2nd International Conference on Human Factors in Artificial Intelligence and Social Computing
2nd International Conference on Kansei Engineering
2nd International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping
2nd International Conference on Advanced Production Management and Process Control
2nd International Conference on Interdisciplinary Practice in Industrial Design
2nd International Conference on Human Factors in Aging and Gerontology
2nd International Conference on Human Factors and Assistive Technology
3rd International Conference on Human Factors and Wearable Technologies
3rd International Conference on Human Error, Reliability, Resilience, and Performance
3rd International Conference on Human Factors in Communication of Design
3rd International Conference on Human Factors in Virtual Environments and Game Design
4th International Conference on Design for Inclusion
4th International Conference on Cognitive Computing and Internet of Things
4th International Conference on Human Factors and Simulation
4th International Conference on Human Factors in Management and Leadership
5th International Conference on Human Factors in Cybersecurity
5th International Conference on Human Factors and Systems Interaction
5th International Conference on Human Factors in Robots and Unmanned Systems
5th International Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation
5th International Conference on Human Factors, Business Management and Society
5th International Conference on Human Factors in Energy
5th International Conference on Human Factors in Training, Education, and Learning Sciences
6th International Conference on Human Factors, Software, Service and Systems Engineering
6th International Conference on Architecture, Sustainable Urban Planning and Infrastructure
6th International Conference on Safety Management and Human Factors
7th International Conference on Affective and Pleasurable Design
7th International Conference on Human Factors in Transportation
7th International Conference on Ergonomics in Design
8th International Conference on Cross-Cultural Decision Making
8th International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices
8th International Conference on Digital Human Modeling and Applied Optimization
10th International Conference on Physical Ergonomics and Human Factors
10th International Conference on Usability & User Experience
10th International Conference on Neuroergonomics and Cognitive Engineering
10th International Conference on Social & Occupational Ergonomics
20th International Conference on The Human Aspects of Advanced Manufacturing: Managing Enterprise of the Future

Final Program

July 24-28, 2019
Washington Hilton
Washington D.C. USA

www.ahfe.org
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Opening Plenary Session and Keynote Address

Date: Thursday, July 25 • 17:00 - 19:00
Room: Columbia Ballroom (Terrace Level)
Chair: Dylan Schmorrow

INTRODUCTORY REMARKS
Waldemar Karwowski - General Conference Chair

IN THE FUTURE WILL THERE BE HUMANS TO FACTOR IN?

Prof. Peter A. Hancock
Pegasus Professor, Provost Distinguished Research Professor, and Trustee Chair
University of Central Florida, USA

About the speaker
Peter A. Hancock, D.Sc., Ph.D. is Provost Distinguished Research Professor in the Department of Psychology and the Institute for Simulation and Training, as well as at the Department of Civil and Environmental Engineering and the Department of Industrial Engineering and Management Systems at the University of Central Florida (UCF). In 2009, at UCF, he was selected as the 16th University Pegasus Professor and named the 6th University Trustee Chair in 2012. He directs the MIT2 Research Laboratories and is Associate Director of the Center for Applied Human Factors in Aviation (CAHFA). Prior to his current position, he founded and was the Director of the Human Factors Research Laboratory (HFRL) at the University of Minnesota, where he held appointments as Professor in the Departments of Computer Science and Electrical Engineering, Mechanical Engineering, Psychology, and Kinesiology as well as at the Cognitive Science Center and the Center on Aging Research. He continues to hold an appointment as a Clinical Adjunct Professor in the Department of Psychology at Minnesota. He is also an affiliated Scientist of the Humans and Automation Laboratory at MIT, a Research Associate of the University of Michigan Transport Research Institute, and a Senior Research Associate at the Institute for Human and Machine Cognition in Pensacola, Florida. Professor Hancock is the author of over seven hundred refereed scientific articles and publications as well as writing and editing over twenty books.

CONFERENCE RECEPTION/BANQUET: THURSDAY, JULY 25 • 19:00
COLUMBIA BALLROOM (TERRACE LEVEL)
(AHFE 2019 BADGE REQUIRED)
Dress is business casual
## Pre-Conference Tutorials

All Tutorials will be offered on Wednesday, July 24 and Thursday, July 25, 2019 (Cardozo, Gunston and Fairchild rooms are at the Terrace Level) Tutorial registration is required.

### Wednesday, July 24

<table>
<thead>
<tr>
<th>Time</th>
<th>Tutorial</th>
<th>Room</th>
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<tbody>
<tr>
<td>8:00 - 12:00</td>
<td><strong>Coffee Break at 10:30</strong></td>
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</tr>
<tr>
<td>T-1</td>
<td>An Introduction to Cognitive Work Analysis</td>
<td>Cardozo</td>
</tr>
<tr>
<td></td>
<td>Presenter: Neville Stanton, University of Southampton</td>
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<tr>
<td>T-3</td>
<td>Cybersecurity: How to Protect Yourself and Your Company From Cyber Attacks</td>
<td>Gunston</td>
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<tr>
<td></td>
<td>Presenter: Abbas Moallem, San Jose State University</td>
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<tr>
<td>T-14</td>
<td>User-Centered Design Process</td>
<td>Fairchild</td>
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<td></td>
<td>Presenter: Javed Sheikh, University of Sialkot</td>
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<tr>
<th>Time</th>
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<tr>
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<td><strong>Coffee Break at 15:30</strong></td>
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<tr>
<td>T-4</td>
<td>Modern Design Heuristics</td>
<td>Cardozo</td>
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<tr>
<td></td>
<td>Presenter: Everett McKay, UX Design Edge</td>
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<tr>
<td>T-6</td>
<td>Researching UX: How Can You Ensure That You Provide a Good Experience for Your Users?</td>
<td>Fairchild</td>
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<tr>
<td></td>
<td>Presenters: Ger Joyce, Katarzyna Zerka, TripAdvisor and Google</td>
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<tr>
<td>T-16</td>
<td>Critical Safety Systems: Designing Warning Strategies and Requirements</td>
<td>Gunston</td>
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<td></td>
<td>Presenter: Susana Costa, University of Minho</td>
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### Thursday, July 25

<table>
<thead>
<tr>
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<tbody>
<tr>
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<td><strong>Coffee Break at 10:30</strong></td>
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<tr>
<td>T-7</td>
<td>A Practical Guide to Doing Task Analysis</td>
<td>Cardozo</td>
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<tr>
<td></td>
<td>Presenter: Neville Stanton, University of Southampton</td>
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<tr>
<td>T-8</td>
<td>Intuitive and Simple Design</td>
<td>Fairchild</td>
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<tr>
<td></td>
<td>Presenter: Everett McKay, UX Design Edge</td>
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<tr>
<th>Time</th>
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<td><strong>Coffee Break at 15:30</strong></td>
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<tr>
<td>T-10</td>
<td>Prototyping HMI for Partially and Highly Automated Vehicles: A Balanced Human Systems Integration Approach</td>
<td>Cardozo</td>
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<tr>
<td></td>
<td>Presenters: Marcel Baltzer, Frank Flemisch, RWTH-Aachen and Fraunhofer</td>
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<tr>
<td>T-12</td>
<td>Rapid Design Elicitation and Iteration Using Q-Methodology</td>
<td>Fairchild</td>
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<td>Presenter: Eric Vorm, Navy Aerospace Experimental</td>
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<tr>
<td>T-13</td>
<td>Eye Tracking in Use “I see What You See:” How We Can Effectively Use Eye Tracking Data in Research</td>
<td>Gunston</td>
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<td></td>
<td>Presenter: Julia Falkowska, Wroclaw University of Science and Technology</td>
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</tbody>
</table>
AHFE 2019 Registration Desk
Located at Terrace Foyer
(Terrace Level)

Conference
Reception/Banquet
Thursday, July 25 • 19:00

Columbia Ballroom
(Terrace Level)
(AHFE 2019 Badge Required)
Dress is business casual

Registration desk open:
Tuesday, July 23............13:00 - 18:00
Wednesday, July 24........7:00 - 18:00
Thursday, July 25.........7:00 - 18:00
Friday, July 26..............7:00 - 18:00
Saturday, July 27.........7:30 - 16:00
Sunday, July 28..........7:30 - 16:00

Scientific Advisory Board (SAB) Meetings (Simultaneous)
Saturday, July 27, 13:00-13:30

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<td>Human Factors in Aging and Gerontology</td>
<td>Columbia 2</td>
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<tr>
<td>Human Factors in Management and Leadership</td>
<td>Columbia 3</td>
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<tr>
<td>Human Factors in Training, Education, and Learning Sciences</td>
<td>Columbia 3</td>
</tr>
<tr>
<td>Human Factors, Architecture, Sustainable Urban Planning and Infrastructure</td>
<td>Columbia 4</td>
</tr>
<tr>
<td>Additive Manufacturing, Modeling Systems, and 3D Prototyping</td>
<td>Morgan</td>
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<tr>
<td>Advanced Production Management and Process Control</td>
<td>Holmead West</td>
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<tr>
<td>Human Factors and Assistive Technology</td>
<td>FairchildEast</td>
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<tr>
<td>Neuroergonomics &amp; Cognitive Engineering</td>
<td>Dupont</td>
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<tr>
<td>Cognitive Computing and Internet of Things (IoT)</td>
<td>Columbia 9</td>
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<tr>
<td>Safety Management and Human Factors</td>
<td>Columbia 9</td>
</tr>
<tr>
<td>Transportation: Aviation, Road &amp; Rail, Maritime, Space</td>
<td>Columbia 11</td>
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<tr>
<td>Digital Human Modeling and Applied Optimization</td>
<td>Columbia 12</td>
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<tr>
<td>Interdisciplinary Practice in Industrial Design</td>
<td>Cardozo</td>
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<tr>
<td>Industrial Cognitive Ergonomics and Engineering Psychology</td>
<td>Embassy</td>
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<tr>
<td>Design for Inclusion</td>
<td>Gunston West</td>
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<td>#</td>
<td>Session Title</td>
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</tr>
<tr>
<td>1</td>
<td>Plenary: Neuroergonomics and Cognitive Engineering</td>
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<tr>
<td>2</td>
<td>Plenary: Human Factors in Robots and Unmanned Systems</td>
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<tr>
<td>3</td>
<td>Symposium: Digital Human Modelling by Women in Human Factors I</td>
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<tr>
<td>4</td>
<td>Sociotechnical Approach to Road Safety (STARS)</td>
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<td>5</td>
<td>Physical Ergonomics and Comfort</td>
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<td>6</td>
<td>Information, Design and Visualization</td>
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<tr>
<td>7</td>
<td>Ergonomics in Design: Application in Indian Context</td>
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<tr>
<td>8</td>
<td>Artificial Intelligence and Social Computing I</td>
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<tr>
<td>9</td>
<td>Advances in User Experience, Affordance and Technology</td>
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<tr>
<td>10</td>
<td>Human Factors, Business Management and Society: Business Development</td>
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<td>11</td>
<td>Education in Medicine and Rehabilitation</td>
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<td>12</td>
<td>Human Factors for Apparel Design/Engineering</td>
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<td>13</td>
<td>Leadership, Change Process and Technology</td>
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<tr>
<td>14</td>
<td>Algorithmic Design and Rapid Prototyping for Cultural Heritage I</td>
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<tr>
<td>15</td>
<td>Strategic Decision Making Models in Manufacturing and Service Systems</td>
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<td>16</td>
<td>Emotional Evidence</td>
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<td>17</td>
<td>Human Factors and Assistive Technology I</td>
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<td>18</td>
<td>Healthcare Worker Risk and Diagnosis Systems</td>
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<td>19</td>
<td>Systemic-Structural Activity Theory</td>
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<tr>
<td>20</td>
<td>Physical Ergonomics &amp; Human Factors</td>
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<td>21</td>
<td>Human Resilience in Aviation and Space Systems</td>
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<tr>
<td>22</td>
<td>Social Design, Innovation and Ergonomics I</td>
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<tr>
<td>23</td>
<td>Ergonomics in Building and Architecture I</td>
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<tr>
<td>24</td>
<td>User Experience: Smart Phone and Mobile Applications</td>
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<td>25</td>
<td>Behavioral and Cognitive Science</td>
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<td>26</td>
<td>Panel: Human-Agent Teaming: Soldiers, Sailors, Airmen, and Marines and Their Alliance with Autonomous Unmanned Vehicles</td>
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<tr>
<td>27</td>
<td>Occupational Safety, Defense and Security</td>
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<td>28</td>
<td>Human Factors in Virtual Environments I</td>
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<tr>
<td>29</td>
<td>Design in Advertising and Media Communication</td>
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<tr>
<td>30</td>
<td>Algorithmic Design and Rapid Prototyping for Cultural Heritage II</td>
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<tr>
<td>31</td>
<td>Interdisciplinary Design and Education</td>
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<tr>
<td>32</td>
<td>Design for Health and Wellness</td>
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<tr>
<td>33</td>
<td>Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries</td>
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<tr>
<td>34</td>
<td>Brain - Machine Interface and Artificial Intelligence (AI) Systems</td>
</tr>
<tr>
<td>35</td>
<td>Transportation: Maritime</td>
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</table>

**Conference at a Glance**

**Friday, July 26, 2019**

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<thead>
<tr>
<th>#</th>
<th>SESSION TITLE</th>
<th>ROOM</th>
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<tbody>
<tr>
<td>39</td>
<td>Emotion, Culture and Society</td>
<td>Morgan</td>
<td>APD</td>
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<tr>
<td>40</td>
<td>Understanding and Monitoring Human Performance Under Highly Ecological Settings</td>
<td>Holmead West</td>
<td>CN/CCIoT</td>
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<td>41</td>
<td>UX in Design</td>
<td>Fairchild East</td>
<td>ED</td>
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<tr>
<td>42</td>
<td>Tasks, Errors and Personal Resilience</td>
<td>Du Pont</td>
<td>HERRP</td>
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<tr>
<td>43</td>
<td>Agile Manufacturing</td>
<td>Columbia 1</td>
<td>MFG</td>
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<td>44</td>
<td>Safety and Human Factors at a Societal Level</td>
<td>Columbia 2</td>
<td>SMHF</td>
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<td>45</td>
<td>Automation I</td>
<td>Columbia 3</td>
<td>RR</td>
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<tr>
<td>46</td>
<td>Ergonomics in Building and Architecture II</td>
<td>Columbia 4</td>
<td>SUPI</td>
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<tr>
<td>47</td>
<td>User Experience in Healthcare and Medical Applications</td>
<td>Columbia 9</td>
<td>UUE</td>
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<tr>
<td>48</td>
<td>Human-Machine Interaction Applications</td>
<td>Columbia 10</td>
<td>SYSI</td>
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<td>49</td>
<td>Human Factors, Business Management and Society: Digital Views</td>
<td>Columbia 11</td>
<td>HFBMS</td>
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<td>50</td>
<td>Internationalization in Learning Science</td>
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<td>51</td>
<td>Human, Artificial Intelligence, and Robot Teaming</td>
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<td>Human Factors in Cybersecurity: Applications and Privacy Research</td>
<td>Gunston West</td>
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<td>53</td>
<td>Design for Inclusion: Building Environment, Public Spaces and Communities</td>
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<td>54</td>
<td>Communication Design and Practices</td>
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<td>55</td>
<td>Artificial Intelligence and Social Applications II</td>
<td>Jay</td>
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<td>Human Factors and Assistive Technology II</td>
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<td>Artificial Intelligence and Social Applications I</td>
<td>Fairchild West</td>
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**Refreshments:** 15:30-16:00 • **Room:** Columbia West (Terrace Level)

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<tr>
<td>58</td>
<td>Emotional Interaction Design</td>
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<td>Human-Machine Teaming and Leadership at the U.S. Air Force Academy</td>
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<td>Cultural Aspects in Design</td>
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<td>Design for People</td>
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<td>Automation II</td>
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<td>Macroergonomic Systems Design and Improvement</td>
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<td>Ergonomics and Material Environment Design I</td>
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<td>Usability Evaluation and Interface Design</td>
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<td>Human Factors in Sports, Injury Prevention and Outdoor Recreation</td>
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<td>67</td>
<td>Panel: The Impact of Vehicle Automation on Vulnerable Road Users</td>
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<td>Designing for Inclusion: Learning Experiences, Methodology and Future Trends</td>
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<td>Human Factors for Apparel and Textile Engineering</td>
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<td>Applications in Software, Service and Systems Engineering I</td>
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<td>Digital Human Modeling and Applied Optimization I</td>
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<td>Human Factors in Game Design I</td>
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<td>74</td>
<td>Human Factors and Wearable Technologies I</td>
<td>Jay</td>
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<td>Theorizing and Theoretical Issues in High Reliability Organizations</td>
<td>Holmead East</td>
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<td>76</td>
<td>Application of 3D Scanning to Product Design</td>
<td>Fairchild West</td>
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<td>Safety and Hazards</td>
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<td>Symposium: Digital Human Modelling by Women in Human Factors II</td>
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<td>Ergonomics in Manufacturing</td>
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<td>Human Factors in Transportation: Rail</td>
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<td>Driver Training, Education and Hazards</td>
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<td>Ergonomics and Material Environment Design II</td>
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<td>85</td>
<td>User Experience and HMI: Automation and Transportation</td>
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## Conference at a Glance

**Sunday, July 28, 2019**

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<td>208</td>
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### Refreshments: 15:30-16:00 • Room: Columbia West (Terrace Level)

### Session Time: 16:00-18:00 (pages 77 - 82)

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<td>Virtual Reality and Machine Learning for Neuroergonomics</td>
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<td>211</td>
<td>Ergonomics in Design: Applications II</td>
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<td>212</td>
<td>Cross-Cultural Decision Making II</td>
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<td>213</td>
<td>Applications in Human Interaction and Design</td>
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<td>214</td>
<td>Designing Autonomy in Transportation: Age and Inclusion</td>
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<td>215</td>
<td>Panel: Practical State of the Art Augmented and Virtual Reality for Operational Usage</td>
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<td>216</td>
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<td>Usability and User Experience Applications V</td>
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<td>Educational Strategies</td>
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<td>219</td>
<td>Theoretical Advances in Human Error and Performance</td>
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<td>Human Factors for Textile Design/Engineering</td>
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<td>221</td>
<td>Human Factors in Aging and Gerontology II</td>
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<td>222</td>
<td>Additive Manufacturing, New Materials and Industrial Processes</td>
<td>Cardozo</td>
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<td>Organizational Complexity and Leadership Management</td>
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<td>225</td>
<td>Human Systems Engineering and User Centered Design</td>
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<td>226</td>
<td>Mental State Assessment II</td>
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<td>227</td>
<td>Digital Human Modeling and Applied Optimization III</td>
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<td>3rd International Conference on Human Error, Reliability, Resilience, and Performance</td>
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<td>3rd International Conference on Human Factors in Game Design and Virtual Environments</td>
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<td>3rd International Conference on Human Factors and Wearable Technologies</td>
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<td>3rd International Human Factors in Communication of Design</td>
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<td>4th International Conference on Cognitive Computing and Internet of Things</td>
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<td>4th International Conference on Design for Inclusion</td>
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<td>4th International Conference on Human Factors and Simulation</td>
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<td>4th International Conference on Human Factors in Management and Leadership</td>
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<td>5th International Conference on Human Factors and Systems Interaction</td>
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<td>5th International Conference on Human Factors in Cybersecurity</td>
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<td>ENERGY</td>
<td>5th International Conference on Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries</td>
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<td>HFRUS</td>
<td>5th International Conference on Human Factors in Robots and Unmanned Systems</td>
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<td>5th International Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation</td>
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<td>5th International Conference on Human Factors in Training, Education, and Learning Sciences</td>
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<td>6th International Conference on Human Factors, Software, Service and Systems Engineering</td>
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<td>6th International Conference on Human Factors, Architecture, Sustainable Urban Planning and Infrastructure</td>
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<td>6th International Conference on Safety Management and Human Factors</td>
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<td>7th International Conference on Affective and Pleasurable Design</td>
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<td>7th International Conference on Ergonomics in Design</td>
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<td>AV/MAR/RR/SPACE</td>
<td>7th International Conference on Human Factors in Transportation: Aviation, Maritime, Road &amp; Rail, Space</td>
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<td>EHMD</td>
<td>8th International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices</td>
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<td>10th International Conference on Neuroergonomics and Cognitive Engineering</td>
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<td>10th International Conference on Physical Ergonomics and Human Factors</td>
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<td>SOE</td>
<td>10th International Conference on Social &amp; Occupational Ergonomics</td>
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<td>UUE</td>
<td>10th International Conference on Usability &amp; User Experience</td>
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<td>MFG</td>
<td>20th International Conference on The Human Aspects of Advanced Manufacturing (HAAMAHA): Manufacturing Enterprises in a Digital World</td>
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## Detailed Technical Program

**Friday, July 26, 2019**

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<td>1</td>
<td>Chair: Hasan Ayaz, USA</td>
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<tr>
<td></td>
<td>8:00-10:00 COLUMBIA 1</td>
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<tr>
<td></td>
<td>Collaborative brain computer interfaces for group cognitive augmentation</td>
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<td></td>
<td>Riccardo Poli, UK</td>
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<td></td>
<td>8:00-10:00 COLUMBIA 2</td>
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<td></td>
<td>Understanding people for human robot interaction</td>
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<td>Greg Trafton, USA</td>
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<th>Symposium: Digital Human Modelling by Women in Human Factors I</th>
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<td>Co-Chairs: Sofia Scataglini and Hyegjoo Choi, Belgium/USA</td>
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<td>8:00 -10:00 - COLUMBIA 3</td>
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<td></td>
<td>A new quantitative kinesiophobia assessment</td>
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<td></td>
<td>Sofia Scataglini, Tahar Ghenimi, Eddy Roosens, Veerle Stevens, Damien Van Tiggelen, Belgium</td>
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<td></td>
<td>Towards occupant protections for both men and women</td>
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<td>Fusako Sato, Karin Brolin, Mats Svensson, Astrid Linder, Japan</td>
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<td>Effects of body armor fit on the area of 3D surface coverage</td>
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<td>Hyegjoo Choi, Todd Garlie, Peng Li, Asbed Tashjian, USA</td>
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<td>Determination of electrical resistance for conductive textiles under simulated wearing environment using modified sweating guarded hotplate</td>
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<td>Hyunjin Koo, Jungsang Lee, Guira Park, Gyeongmin Yi, South Korea</td>
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<td>Estimation of preferred work envelope from simulated functional tasks in a spacesuit</td>
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<td>Elizabeth Benson, Sarah Jarvis, K. Han Kim, Jason Norcross, Sudhakar Rajulu, USA</td>
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<th>Sociotechnical Approach to Road Safety (STARS)</th>
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<td>Chair: Neville Stanton, UK</td>
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<td>8:00-10:00 - COLUMBIA 4</td>
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<td></td>
<td>Socio-technical approach to road safety (STARS)</td>
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<td>Neville Stanton, UK</td>
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<td>Application of Accimap methodology in road accident investigation in Bangladesh</td>
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<td>Md Shamsul Hoque, Mithun Debnath, Omar Faruque Hamim, Shahnawaz Hasanat-E-Rabbi, Rich McIlroy, Katie Plant, Neville Stanton, Bangladesh/UK</td>
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<td>Socio-technical approach to road safety: Attitudes to road traffic safety in Kenya: results of a survey in Nairobi</td>
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<td>Brenda Bunyasi, Gilbert Kokwaro, Sylvia Anyika, James Oyoo, Kevin Otieno, Annette Murunga, Kenya</td>
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<td>A comparison of schema-base differences in situation awareness between driver, motorcyclist and pedestrians in mixed traffic situation</td>
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<td>Nam Vu Hoai, Vietnam</td>
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<td>Moving from actor maps to systems theoretic accident model and processes models</td>
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<td>Rich McIlroy, Neville Stanton, Katie Plant, UK</td>
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<td>Attitudes, fatalistic beliefs and risk perception of pedestrians in China</td>
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<td>Adnan Yousaf, Wu Jianping, Mingyu Liu, Linyang Wang, China</td>
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### 5 Physical Ergonomics and Comfort  
Co-Chairs: Gunther Paul and Nelson Costa, Australia/Portugal  
**PEHF**

**8:00-10:00 - MORGAN**

Comparing the results of three methods used to predict heart rate-based on energy expenditure  
Sahar Arab, Daniel Imbeau, Philippe-Antoine Dubé, Denise Dubeau, Canada

Can the use of well-adjusted school furniture improve students’ performance?  
Agostinho Fernandes, Paula Carneiro, Nelson Costa, Ana Braga, Portugal

Influence of lumbar support prominence for a car seat in the seating pressure and discomfort perception.  
Luis Ortiz, Fernanda Maradei, Laura Tatiana Gerrero, Paula Andrea Galvis, Colombia

Analysis of work-related musculoskeletal disorders on office workers at the Industrial University of Santander  
Fernanda Maradei, Jenny Rodriguez, Javier Castellanos, Colombia

Human sweating measurements  
Xiaoli Fan, Chaoi Zhao, Hong Luo, Wei Zhang, China

Customization of the user-wheelchair seat interface through an iterative experimental-computational process  
Gunther Paul, Leyde Briceno, Joshua Condon, Peter Slattery, Australia

### 6 Information, Design and Visualization  
Co-Chairs: Joana Lessa and João Brandão, Portugal  
**ED**

**8:00-10:00 - HOLMEAD/WEST**

Water museums and digital media: Two case studies on digital media in water museums  
Joana Lessa, Portugal

A human-computer interaction framework for interface analysis and design  
Sónia Rafael, Victor Almeida, Marco Neves, Portugal

Collaboration: Critical roles of academia-business partnerships and challenges the workforce must face  
Sara Antunes, Rita Almendra, Portugal

The ‘place’ that shows the title of a TV series - what to name it and how it has evolved  
Ricardo Pestana, João Brandão, Portugal

Information design in presentation, interpretation and dissemination of natural and cultural heritage  
Cristina Santos, Maria João Neto Pereira, Marco Neves, Portugal

Communication design and medical procedures: Inform citizens to act in emergency situations  
Marco Neves, Ana Rafaela Poças, Portugal

Color and interaction in journalistic infographics: The case of online Portuguese media  
Rita Salomé Esteves, Marco Neves, Portugal

### 7 Ergonomics in Design: Application in Indian Context  
Co-Chairs: Ajita D. Singh and Manoj Majhi, India  
**ED**

**8:00-10:00 - FAIRCHILD EAST**

Effects of playing surface on physiological responses and performance variables of hockey players  
Ajita Dsingh, Ajay Deswal, India

Role of postural control exercises and pelvic floor muscle exercises on chronic non-specific low back pain of women with sitting jobs  
Ajita Dsingh, Amanpreet Kaur, India

The role of organizational factors in development and progression of wrist disorders: Psychosocial aspects  
Arunita Paul, Urmii Salve, India

Developing a framework that can assist designers to identify and incorporate notable cultural elements into products designed for tourists  
Wannisa Bok Kharkongor, Debkumar Chakrabarti, India

Design interventions of an Exergame for fall problem in Indian older adults  
Nilakshi Yen, Swati Pal, India

A re-look into the information in multimedia design and animation theme presentation  
Manoj Majhi, Debkumar Chakrabarti, India

www.ahfe.org
Artificial Intelligence and Social Computing I
Co-Chairs: Tomek Strzalkowski and Anthony Palladino, USA

Relevancy, bias, and coverage in news data scraped for automated social science analytics
Anthony Palladino, Elisa J.Bienenstein, Skaider Smith-Heisters, Timothy K. Perkins, Michael Salwen, USA

EmoVis – An interactive visualization tool to track emotional trends during crisis events
Samira Shaikh, Karthik Ravi, Tiffany Gallicano, Michael Brunswick, Bradley Aleshire, Omar El-Tayebey, Sara Levens, USA

Using information processing strategies to predict message level contagion in social media
Sara Levens, Omar Eltayebey, Samira Shaikh, Tiffany Gallicano, Michael Brunswick, USA

Social CONVOS: A new approach to modeling information diffusion in social media
Tomek Strzalkowski, Gregorios Katsios, Ning Sa, USA

Manipulated information dissemination and risk-adjusted momentum return in the Chinese stock market
Hung-Wen Lin, Jing-Bo Huang, Kun-Ben Lin, Shu-Heng Chen, Taiwan

Dimensionality reduction to improve the accuracy of recommendation systems
Remigio Hurtado, Remigio Hurtado, Rodolfo Bojorque, Ecuador

Advances in User Experience, Affordance and Technology
Co-Chairs: Adriano B. Renzi and Olnei Fonseca De Almeida, Brazil

Pharmaceutical online store project: Usability, afforances and expectations
Marcelo Guimarães, Rodrigo Zisman, Adriano Renzi, Brazil

Social event management system: Users’ recommendations
Thiago Gomes da Silva, Adriano Renzi, Brazil

User experience interaction in cross-channel systems: Comparing heuristic evaluations
Adriano Renzi, Olnei Fonseca De Almeida, Marcos Cesar, Brazil

Banking cross-channel system UX evaluation
Olnei Fonseca De Almeida, Adriano Renzi, Brazil

Desateno: Management system app for buildings
Evelin Daiane Barreto dos Santos, Adriano Renzi, Brazil

Towards machine translation of Chinese complex structures
Jiali Du, Pingfang Yu, China

Challenge of implanting educational management systems in Brazilian schools
Juliana Baptista dos Santos França, Brazil

Human Factors, Business Management and Society: Business Development
Co-Chairs: Jussi Kantola and Heikki Ruohomaa, Finland

Intermediary organization and collaboration platform for SMEs
Kodjovi Lotchi, Ebo Kwegyir-Afful, Afnan Zafar, Ari Silvia, Jussi Kantola, Finland

Company decision factors while choosing the future location for the future business
Heikki Ruohomaa, Vesa Salminen, Finland

Ecosystem-based development on managing digital transformation
Heikki Ruohomaa, Vesa Salminen, Finland

A model for capturing tacit knowledge in enterprises
Yehya Soliman, Hannu Vanharanta, Poland/Finland

Responsibility caps from strategy to operations in leadership and management - conceptual model
Tero Reunanen, Finland

ENGINE model- Changing higher education with industry cooperation
Rauni Jaskari, Timo Holopainen, Tero Reunanen, Martin Grotjahn, Thomas Röhr, Ludger Schneider-Störmann, Finland

Knowledge management model to support a supply chain for timely order delivery in a telecommunications equipment marketing company
Nicolle Vargas, Denisse Villaverde, Gino Viacava, Carlos Raymundo, Francisco Dominguez, Peru
11 Education in Medicine and Rehabilitation
Co-Chairs: Joanna Bartnicka and Mariusz Stepień, Poland

TEL S

8:00-10:00 - COLUMBIA 11

The Erasmus+ strategic partnership as a way to attract young people to engineering
Mariusz Stepień, Anton Rassolkin, Kévin Berger, Toomas Vaimann, Poland

Virtual reality in stroke rehabilitation: Educational challenges for medics and patients
Joanna Bartnicka, Agnieszka Aneta Zietkiewicz, Joanna Roział, Alicja Kasprzak, Poland

Functional evaluation as a new learning area against “functional disability epidemic”
Joanna Bartnicka, Katarzyna Młeczko, Agnieszka Aneta Zietkiewicz, Cristina Herrera, Constanza Valenzuela, Peter Dieter, Poland

Methods and tools for acquiring high-quality skills in digital era - innovative practices and results from 3DSPEC and e-MOTIVE projects
Dariusz Michalak, Magdalena Rozmus, Poland

A teaching experience of the human-computer interaction course in a Master Program
Freddy Paz, Freddy Asrael Paz, Arturo Moquillaza, Fiorella Falconi, Peru

Cyberloafing in academia: Determinants and impacts
Anees Baqir, Javed Anjum Sheikh, Hamaad Rafique, Pakistan

12 Human Factors for Apparel Design/Engineering
Co-Chairs: Longlin Luo and Jia Lyu, China

HFATE

8:00-10:00 - COLUMBIA 12

Research on human factors engineering for the innovative design of work clothes for couriers
Longlin Luo, Xiaoping Hu, China

The application and development of smart clothing
Jia Lyu, Yue Sui, Dongsheng Chen, China

Dynamic wardrobe from a user’s perspective
Carla Morais, Portugal

Performative approaches in designing costumes: Ergonomics in immersion and storytelling
Alexandra Cabral, Carlos M. Figueiredo, Portugal

Exploring fashion design methods: understanding human factors in new society contexts
Luís Santos, Gianni Montagna, Maria João Neto Pereira, Portugal

Apparel for aging users
Cristina Carvalho, Gianni Montagna, Carla Morais, Portugal

13 Leadership, Change Process and Technology
Co-Chairs: Christian Vocke and Diana Paola Moreno Alarcon, Germany/Spain

HFML

8:00-10:00 - CARDOZO

Technology start-up firms’ management of data security and trust in collaborative work with third-parties in a developing economy
Mohammed Aminu Sanda, Ghana

Work in the age of artificial intelligence - challenges and potentials for the design of new forms of human-machine interaction
Wilhelm Bauer, Christian Vocke, Germany

Production process improvement of automotive wire harnesses enterprise through work teams
Velia Herminia Castillo Pérez, Mario Corral-Chacón, Liliana Carrasco-Armendariz, Ramon Elizondo, Mexico

Applying safety leadership and systems thinking to the formal and informal controls approach used in safety and risk management within the French nuclear sector
Diana Paola Moreno Alarcon, Jean Francois Vautier, Guillaume Hernandez, Franck Guarnieri, France

Leadership and the human factor in an enterprise providing services to the Polish Armed forces
Artur Kobylanski, Zbigniew Wisiak, Malgorzata Wisiak, Poland

A study on concepts development of ‘Locavore’ for restaurant managers in Taiwan
Shao-Chieh Lin, Jen-Son Cheng, Shieh-Liang Chen, Peng-Iyun, Taiwan

A study of team structure to enable effective product development process implementation
Shasha Lu, Bin Yao, Chao Zhan, Hongtao Liu, Jin Zhefeng, China
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<th>Session Title</th>
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<tr>
<td>8:00-10:00</td>
<td>Gunston West</td>
<td>Algorithmic Design and Rapid Prototyping for Cultural Heritage I</td>
<td>Leonardo Baglioni &amp; Graziano</td>
<td>AMMSP</td>
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<td>An algorithmic approach to VIEWSHEDS analysis for cultural landscape: Manziana and the Bracciano lake area</td>
<td>Leonardo Baglioni, Graziano</td>
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<td>Design and digital fabrication of a parametric joint for bamboo sustainable</td>
<td>Leonardo Baglioni, Graziano</td>
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<td>Three renaissance vaults in Milan. Cultural heritage and digital workflows for BIM modelling</td>
<td>Leonardo Baglioni, Graziano</td>
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<td>Four projects of Pier Luigi Nervi. A methodology for the construction and 3D print of architectural models</td>
<td>Leonardo Baglioni, Graziano</td>
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<td>Parametric design of applied origami with a synthetic computational approach</td>
<td>Leonardo Baglioni, Graziano</td>
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<td>Generative design for printable mass customization jewelry products</td>
<td>Leonardo Baglioni, Graziano</td>
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<td>8:00-10:00</td>
<td>Embassy</td>
<td>Strategic Decision Making Models in Manufacturing and Service Systems</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
<td>APMPC</td>
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<td>Ergonomic risk evaluation in work stations based on FARE-KEMIRA-M integration</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>Prioritizing workers according to their exposure levels in manual lifting tasks by implementing MCDM approach</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>A component based model developed for machine tool selection decisions</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>A new formulation for level of repair analysis problem with multiple upstream approach in repair network</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>Multiple service home health care routing and scheduling problem:</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>A mathematical model</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>Order acceptance and scheduling problem: A proposed formulation and the comparison with the literature</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>Management model logistic for the use of planning &amp; inventory tools in a selling company of the automotive sector in Peru</td>
<td>Yusuf Tansel Ic &amp; Ismail Bıçakcı</td>
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<td>8:00-10:00</td>
<td>Gunston East</td>
<td>Emotional Evidence</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>In &amp; out of school: Capturing the lived experiences of Latinx students through images</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>How creative mindset is involved in positive emotions and attitude that affects creative design process</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>Happiness on Instagram – Content analysis and engagement based on attention theory</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>How color coding encourages emotional interactions while using smartphones</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>A journey of taking industrial design students into uncharted territories:</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>Designing crowd-sourced playful interactions for a public art event</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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<td>Teaching industrial design through real world markets and manufacturing</td>
<td>YoungAe Kim &amp; Joungyun Choi</td>
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| 17 | **Human Factors and Assistive Technology I**  
Co-Chairs: Anna Szopa and Lama Hamandi, USA/Lebanon | HFAT |
|---|---|---|
| 8:00-10:00 - JAY | **Evaluation of a multilingual workspace to practice math for visually impaired students**  
Islam Elkabani, Lama Hamandi, Rached Zantout, Lebanon  
**The auto-personalization computing project in libraries**  
Anna Szopa, Gregg Vanderheiden, Bern Jordan, David Folmar, USA  
**A comparative study of augmented reality assistant tools in assembly**  
Lea Daling, Anas Abdelrazeq, Christoph Sauerborn, Frank Hees, Germany  
**The effect of training with a prosthetic hand simulator in adult non-amputees: A controlled pilot study**  
Stijn Verwulgen, Erik Haring, Kristof Vaes, Anouck Mees, Bram Raeymaekers, Steven Truijen, Belgium  
**Human factors in all-terrain wheelchair design for rural population**  
Paula Chacon-Cifuentes, A. A. Zuleta, Gustavo Sevilla, Andres Valencia-Escobar, Esteban Correa-Bedoya, Felix Echeverria-Echeverria, Colombia  
**Usability of assistive technology in the workplace: A literature review**  
Carolina Alonso, Danielle Silva dox Santos, Francisco Duarte, Brazil | |
| 18 | **Healthcare Worker Risk and Diagnosis Systems**  
Co-Chairs: Chuliporn Sopajareeya and Riad Taha Al-Kasasbeh, Thailand/Russia | EHMD |
| 8:00-10:00 - HOLMEAD EAST | **Low back pain and work ability among Thai nurses**  
Chuliporn Sopajareeya, Thailand  
**Evaluation of the impact of the ergonomics of technical systems on the state of health of a human operator with regard to his functional reserve**  
Riad Taha Al-Kasasbeh, Nikolay Korenevskiy, Altyn Aikeyeva, Ilyash Maksim, Jordan/Russia  
**Are teachers more affected by burnout than physicians, nurses and other professionals? A systematic review of the literature**  
Myriam Squillaci, Switzerland  
**Understanding the challenges to the safe delivery of care in the Mexican healthcare system**  
Carlos D. de León Zuloaga, Carlos Aceves-Gonzalez, Elvira Perez Valiejos, Rosa Rosales-Cinco, Alexandra Lang, Sue Higness, Mexico/UK  
**Ergonomic injury risk across ten surgical specialties**  
John Vaughan, Yona Vaisbuch, Justin Moore, Ksenia Aaron, Yifei Ma, USA  
**Quantitative evaluation of pulse diagnosis using capillary blood flow of images**  
Yumie Osada, Fuminori Matsuura, Yoshinori Hirano, Xiaodan LU, Tomoko Ota, Hiroyuki Hamada, Noriyuki Kida, Japan  
**SENS: A motion feedback device to assist in improving joint motion**  
Jeff Feng, Rajeshree Jaiswal, USA | |
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<td>Systemic-Structural Activity Theory</td>
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<td>Co-Chairs: Inna Bedny and Alexander Yemelyanov, USA</td>
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| 10:30 - 12:30 - MORGAN | Self-regulation model of decision-making  
Alexander Yemelyanov, USA  
Application of systemic-structural activity theory to evaluation of innovations  
Inna Bedny, USA  
Goal-classification and the influence of activity-goal-formation on individuals’ systemic-consideration of activity-strategies and decision-outcomes  
Mohammedaminu Sanda, Ghana  
Performance evaluation process and express decision  
Alexander Yemelyanov, Alla Yemelyanov, USA  
Estimation of emotional processes in regulation of the structural afferentation of varying contrast by means of visual evoked potentials  
Sergey Lytaev, Mikhail Aleksandrov, Mikhail Lytaev, Russia |
| 21      | Physical Ergonomics & Human Factors |
|         | Co-Chairs: Xingwei Wang and Xiaoli Fan, Taiwan/China |
|         | PEHF |
| 10:30 - 12:30 - HOLMEAD WEST | Review of the evaluation methods of mental workload  
Xiaoli Fan, Chaoyi Zhao, Huimin Hu, Yuwei Jiang, China  
The understanding and influence of the connotation of semantics on the figurative product  
Ching-Yi Wang, Peng Jyun Liu, Taiwan  
Experts and novices on the recognition and cognitive differences of brand color  
Ching-Yi Wang, Peng Jyun Liu, Yu-Hsuan Chung, Yu-Ting Chen, Taiwan  
Deep learning model to recognize the different progression condition patterns of manual wheelchair users for prevention of shoulder pain  
Jen-Yung Tsai, Yih-Kuen Jan, Ben-Yi Liu, Chien-Liang Chen, Peng-Je Chen, Chih-Yang Lin, Yi-Chun Liu, Chi-Wen Lung, Taiwan/USA  
Time frequency analysis of pupillary oscillations sheds light on cognitive workload of operators  
Punit Kumar Bhavsar, Babji Srinivasan, Rajagopalan Srinivasan, India  
Development of ergonomic work station for sewing operations  
Yuvraj Garg, Manoj Tiwari, India  
Impact of handwheel size on valve-operators’ torque production capabilities  
Saíf Al-Qaisi, Jad Mansour, Yousef Al-Abdallat, Lebanon |
| 22      | Human Resilience in Aviation and Space Systems |
|         | Co-Chairs: Kimberly Stowers and Brandon Cuffie, USA |
|         | AVI/HERRP |
| 10:30 - 12:30 - FAIRCHILD EAST | Risk culture in commercial air transport industry  
Cengiz Turkoglu, UK  
STPA: An engineering method to improve aviation human resilience  
John Thomas, USA  
A management science perspective on resilience  
Kimberly Stowers, Yash Mehta, Youjeong Huh, Lisa Brady, Nicholas Kasdaglis, USA  
Alternatives for scheduling departures for efficient surface metering in ATD-2: Exploration in a human-in-the-loop simulation  
Bonny K. Parke, Lindsay K. Stevens, William J. Coupe, Hanbong Lee, Yoon C. Jung, Deborah L. Bakowski, Kimberly Jobe, USA  
Considerations for passenger experience in space tourism  
Tiziano Bernard, Brandon Cuffie, Sebastien Boulnois, Yash Mehta, Yassine Rayad, Lucas Stephane, USA  
Impact of plants in isolation: The EDEN-ISS human factors investigation in Antarctica  
Irene Lia Schlacht, Daniel Schubert, Giorgio Musso, Germany |
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<td>23</td>
<td>Social Design, Innovation and Ergonomics I</td>
<td>Nicos Souleles and Ana Margarida Ferreira, Cyprus/Portugal</td>
<td>SOE</td>
<td>10:30-12:30 - DU PONT</td>
<td>Social art: “Echoes of Machin”&lt;br&gt;Ana Nolasco, Portugal&lt;br&gt;Sustainable human environment: Mouraria, local color and sense of place of a historical Lisbon neighborhood&lt;br&gt;Cristina Pinheiro, Lambert Rozema, Ana Margarida, Portugal/Holland&lt;br&gt;Collaborative practices through design and engineering - pilot project to improve the human condition in vulnerable communities&lt;br&gt;Joao Bernarda, Ana Margarida Ferreira, Carlos Santos Silva, Rui Costa Neto, Portugal&lt;br&gt;Developing portable clean cart with broom and dustpan for street sweepers needs&lt;br&gt;Bing Cheng Zhu, Chien-Hsu Chen, Taiwan&lt;br&gt;Discuss the use of lip gloss and design improvement with universal design&lt;br&gt;Peng Jyun Liu, Ching-Yi Wang, Yi-Chung Hsieh, Pei Jyun Ku, Taiwan&lt;br&gt;Application of universal design for design improvement of hangers&lt;br&gt;Peng Jyun Liu, Ching-Yi Wang, Yi-Chung Hsieh, Chu-Lin Su, Taiwan&lt;br&gt;Case study of science communication in ergonomics: Introduction of ErgonomicThon workshop&lt;br&gt;Yasuyuki Yamada, Takeshi Ebara, Japan</td>
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<td>24</td>
<td>Ergonomics in Building and Architecture I</td>
<td>Jerzy Charytonowicz and Anna Jaglarz, Poland</td>
<td>SUPI</td>
<td>10:30-12:30 - COLUMBIA 1</td>
<td>Public toilets - Determinant of the progress of civilization and consciousness of societies or a necessary evil?&lt;br&gt;Anna Jaglarz, Poland&lt;br&gt;Reconstruction with a change of function – ergonomics of the hotel environment&lt;br&gt;Joanna Jablonska, Elzbieta Trocka-Leszczynska, Poland&lt;br&gt;T-house in shaping sustainable housing&lt;br&gt;Boguslaw Wojtyszyn, Alicja Maciejko, Poland&lt;br&gt;Ergonomics for children&lt;br&gt;Elzbieta Trocka-Leszczynska, Joanna Jablonska, Poland&lt;br&gt;Hygienic-sanitary zones in hotel objects&lt;br&gt;Joanna Jablonska, Elzbieta Trocka-Leszczynska, Poland&lt;br&gt;Building as a primary means of preventative care. The postulate of certification of buildings intended for use by the elderly in multi-family housing and collective housing&lt;br&gt;Agata Bonenberg, Poland&lt;br&gt;T-house: Shaping ergonomic and flexible interior in modular form connected with horticultural therapy zone&lt;br&gt;Jerzy Charytonowicz, Alicja Maciejko, Agnieszka Skrzypczak, Poland</td>
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<td>25</td>
<td>User Experience: Smart Phone and Mobile Applications</td>
<td>Soo Kim and Wei Wang, USA</td>
<td>UUE</td>
<td>10:30-12:30 - COLUMBIA 2</td>
<td>UTAUT-QIU: Technology acceptance evaluation model with integrated quality-in-use assessment for mobile UI adapted for low- and post-literate users&lt;br&gt;Nikhalesh Patel, Olga Ormandjieva, Kristina Pitula, Canada&lt;br&gt;The effects of progress indication on the usability of mobile wayfinding process&lt;br&gt;Shasha Li, Chien-Hsiung Chen, Taiwan&lt;br&gt;Utilizing wearable eye-tracking technology in mobile app design usability evaluation process&lt;br&gt;Wei Wang, USA&lt;br&gt;A training social media mobile app prototype for the elderly: A pilot study&lt;br&gt;Abdulrahman Hafez, Yuanqiong (Kathy) Wang, USA&lt;br&gt;Using established UX design techniques and visual enhancements to redesign an enterprise mobile app and improve employee productivity and engagement&lt;br&gt;Soo Kim, Ed McFadden, USA&lt;br&gt;Design and research on evaluation model of user experience on mobile terminal products&lt;br&gt;Zhaohui Huang, Yeyi Hong, Xiao Xu, China&lt;br&gt;A study on the landmark design for wayfinding maps in 3D virtual environments&lt;br&gt;Mengxi Chen, Chien-Hsiung Chen, Taiwan</td>
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| 26 | **Behavioral and Cognitive Science**  
Co-Chairs: Beth Atkinson and Juan Cristóbal Castro-Alonso, USA/Chile | TELS |
|---|---|---|
| **The modality effect of cognitive load theory**  
Juan Cristóbal Castro-Alonso, John Sweller, Chile | 10:30-12:30 - COLUMBIA 3 |
| **How can robotics be integrated into the field of care and acceptance by the population for the use of artificial intelligence be strengthened?**  
Ann Kathrin Stinder, Alexander-Maximilian Friche, Daniel Schilberg, Germany |  
A healthy smartphone application to enhance patient services in Saudi Arabia in a human centered design approach  
Saad Almesalm, May Alflowzan, Hadeel Alajouri, Saudi Arabia |  
A study of metacognitive problem solving in undergraduate engineering students  
Lisa Elliott, Heather Lum, Faisal Aqlan, Richard Zhao, Cathenne Dolores Lasher, USA |  
The effect of screen size on reading speed: A comparison of three screens to print  
Lisa Elliott, Medina Ljubijanac, Danielle Wieczorek, Sarah Hornick, USA |  
Utilizing a hybrid usability assessment for a new on-demand hypoxia training system  
Beth Atkinson, Emily Anania, Sarah Warnham, USA |

| 27 | **Panel: Human-Agent Teaming: Soldiers, Sailors, Airmen, and Marines and Their Alliance with Autonomous Unmanned Vehicles**  
Co-Chairs: Ralph Brewer and Lixiao Huang, USA | HFRUS |
|---|---|---|
| **Human–agent teaming with next generation combat vehicles (NGCV): Interaction metrics and models**  
Lixiao Huang, Craig Johnson, Nancy Cooke, Eric Holder, USA | 10:30-12:30 - COLUMBIA 4 |
| **Assessment of manned-unmanned team performance: Comprehensive after-action review technology development**  
An uncertainty principle for interdependence: Laying the theoretical groundwork for human-machine teams  
William Lawless, USA |  
Neurophysiological closed-loop control for competitive multi-brain robot interaction  
Bryan Hernandez, Elijah Sawyers, Landon Bentley, Chris Crawford, Marvin Andujar, USA |  
Human-robotic interactions (HRI) during natural disasters: Operator states assessments and improvements for effective HRI  
S. Camille Peres, Ranjana Mehta, Robin Murphy, Joseph Nuamah, Yibo Zhu, USA |

| 28 | **Occupational Safety, Defense and Security**  
Co-Chairs: Brianna Eiter and Jennica Bellanca, USA | HFSIM |
|---|---|---|
| **Naturalistic decision-making analogs for the combat environment**  
Thom Hawkins, USA | 10:30-12:30 - COLUMBIA 9 |
| **Risk perception with and without workers present in hazard recognition images**  
Jennica Bellanca, Brianna Eiter, Jonathan Hrica, Robert Weston, Terrance Weston, USA |  
EXAMiner: A case study of the implementation of a hazard recognition safety intervention  
Brianna Eiter, Jonathan Hrica, USA |  
Development of a mast climbing work platform visual inspection tool  
Bryan Wimer, USA |  
Development of visual elements for accurate simulation  
Timothy Orr, Jennica Bellanca, Jason Navosky, Brendan Macdonald, William Helfrich, Brendan Demich, USA |  
Influence of social norms on decision-making against landslide risks in interactive simulation tools  
Pratik Chaturvedi, Varun Dutt, India |  
Assessing a malodor’s affective rating in the absence of odor context  
William Pike, Mark Mazzeo, Basiel Makled, Conner Parsley, USA |
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<td>Digital cultural strategies within the context of digital humanities economics</td>
<td>Evangelos Markopoulos, Panagiotis Markopoulos, Mika Luimula, Younus Almufti, Chiara Romano, UK</td>
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<td>Peter Wozniak, Antonio Capobianco, Nicolas Javahiraly, Dan Curticapean, Germany</td>
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<td>Depth sensor based detection of obstacles and notification for virtual reality systems</td>
<td>Peter Wozniak, Antonio Capobianco, Nicolas Javahiraly, Dan Curticapean, Germany</td>
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<td>Mutian Niu, Cheng-Hung Lo, China</td>
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<td>An investigation of material perception in virtual environments</td>
<td>Mutian Niu, Cheng-Hung Lo, China</td>
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<td>Research on location of emergency sign based on virtual reality and eye tracking</td>
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<td>Design of virtual public resilience spaces of traditional cultures</td>
<td>Mutian Niu, Cheng-Hung Lo, China</td>
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<td>Design in Advertising and Media Communication</td>
<td>Understanding how advertising gamification influences consumers: The effect of image experience and interactivity</td>
<td>Huijie Yao, Yunbo Chen, China</td>
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<td>Locality and local identity discourses in post-handover Hong Kong brand advertisements</td>
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<td>Emotions in advertising: How emotions affect creativity and communication</td>
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<td>10:30-12:30</td>
<td>Algorithmic Design and Rapid Prototyping For Cultural Heritage II</td>
<td>Rapid prototyping for dissemination of perspective treatises</td>
<td>Leonardo Baglioni, Marta Salvatore, Italy</td>
<td>COLUMBIA 12</td>
<td>Semantic and procedural approaches in generative modeling for the representation of cultural heritage</td>
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<td>Jessica Romor, Italy</td>
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<td>Marta Salvatore, Graziano Mario Valenti, Italy</td>
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<td>Generative models for experimentation and knowledge of perspective principles</td>
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<td>Interdisciplinary Design and Education</td>
<td>Exploring a new future in collaborative design processes in education</td>
<td>Joyce Thomas, Jerrod Windham, Suresh Sethi, Manish Arora, USA</td>
<td>CARDOZO</td>
<td>Industrial design participation in project management</td>
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### Design for Health and Wellness

**Co-Chairs:** WonJoon Chung and Anna Kabjin Kim, Canada

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<td>GUNSTON WEST</td>
<td>Experiencing momentum through an effective use of technology in museums</td>
<td>Anna Kabjin Kim, Eileen Harris, Canada</td>
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<td>Better mental healthcare through the built environment</td>
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<td>Alex Close, Eileen Harris, Canada</td>
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<td>Interdisciplinary approach of the design process for the application of</td>
<td>Paula Chacon-Cifuentes, A. A. Zuleta-Gil, Gustavo Sevilla Cadavid,</td>
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<td>new materials in wheelchair design</td>
<td>Andres Valencia-Escobar, Esteban Correa-Bedoya, Felix Echeverria-Echeverria,</td>
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<td>Importance of involving children in designing recycling facilities: A</td>
<td>Kim Wai Michael Siu, Yi Lin Wong, Mei Seung Lam, China</td>
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<td>The role of affective design in sustainability</td>
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<td>Designing hospital wayfinding systems, touchscreen kiosks, environmental</td>
<td>Christy Harper, Tyler Duke, Andrea Crosser, Angie Avera, Spencer Jefferies, USA</td>
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<td>cues and mobile Apps: An evaluation of a mobile wayfinding application</td>
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### Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries

**Co-Chairs:** Susen Döbelt and Roger Lew, Germany/USA

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<td>Susen Döbelt and Maria Kreusslein, Germany</td>
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<td>resource systems business models</td>
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<td>Nuclear power plant accident diagnosis algorithm including novelty</td>
<td>Jaemin Yang, Jonghyun Kim, Subong Lee, South Korea</td>
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<td>detection function using LSTM</td>
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<td>Beyond COSS: Human factors for whole plant management</td>
<td>Roger Lew, Ronald Boring, Thomas Ulrich, USA</td>
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<td>Multivariate assessment of workload in the nuclear power plant main</td>
<td>Lauren Reinerman-Jones, Jinchao Lin, Gerald Matthews, Daniel Barber,</td>
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<td>control room: A pilot study in a full scope simulated environment</td>
<td>Niv Hughes, USA</td>
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### Brain - Machine Interface and Artificial Intelligence (AI) Systems

**Co-Chairs:** Umer Asgher and Noriyuki Oka, Pakistan/Japan

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<td>in minimally invasive surgery</td>
<td>Wolfgang Drewelow, Torsten Jeinsch, Germany</td>
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<td>A research agenda for neuroactivities in construction safety</td>
<td>Rita Yi Man Li, China</td>
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<td>Impact of auditory alert on driving behavior and prefrontal cortex</td>
<td>Noriyuki Oka, Toshiyuki Sugimachi, Kouji Yamamoto, Hideki Yazawa,</td>
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<td>response in a tunnel: An actual car driving study</td>
<td>Hideki Takahashi, Jongseong Gwak, Yoshihiro Suda, Japan</td>
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Co-Chairs: Carl Hult and Massimo Di Nicolantonio, Sweden/Italy

**Towards autonomous shipping – exploring potential threats and opportunities in future maritime operations**
- Gesa Praetorius, Carl Hult, Carl Sandberg, Sweden

**Design of a sustainable and accessible royal rig MAXY clipper for single-handed**
- Massimo Di Nicolantonio, Italy

**Evaluating the impact of increased volume of data transmission on teleoperated vehicles**
- Kiome Pope, Aaron Roberts, Christopher Fenton, Neville Stanton, UK

**A novel target motion analysis interface: helping operators get the gist?**
- Daniel Fay, Aaron Roberts, Neville Stanton, UK

**Enhancing maritime search and rescue capabilities with unmanned aerial systems – practical requirements and solution approach**
- Thomas Luebcke, Aylin Gözalan, Philipp Gorczak, Germany

**The interaction of basic regulations with imperfect decision aiding in simulated maritime collision avoidance**
- Nicholas Fitzgerald, Christopher Wickens, Cap Smith, Benjamin Clegg, Gautham Vijayaragavan, Adam Williams, USA

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### New Trends of Development and Application of Risk Analyses Methods in the Strategy of Industry 4.0

Co-Chairs: Juraj Sinay and Hana Pacaiova, Slovak Republic

**Risk-based thinking methodology and its influence on occupational health and safety processes**
- Hana Pacaiova, Anna Nagyova, Milan Oravec, Slovakia

**Effective tools to eliminate dangerous practices in the performance of work**
- Karol Habina, Jan Trcka, Slovakia

**Lift as a subject of risk analysis in the context of smart buildings**
- Juraj Glatz, Juraj Sinay, Marianna Tomášková, Marta Vargová, Slovakia

**Study of forklift cab shape design based on behavior analysis**
- Jing Ou, Yunshuang Zheng, Jun Yi, Bing Guo, China

**Risk assessment software tools**
- Jan Donic, Slovakia

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### Emotion, Culture and Society

Co-Chairs: Shuichi Fukuda, Yuuki Shigemoto and Matthias Hillner, Japan/Singapore

**A big shift in engineering: From product to society**
- Shuichi Fukuda, Japan

**Artificial intelligence and natural intelligence**
- Shuichi Fukuda, Japan

**Designing emotional product design: When design management combines engineering and marketing**
- Yuuki Shigemoto, Japan

**Design and research of infusion assistant products for children: Take the design of children's infusion hand plate and the mask of medical staff as an example**
- Qian Ji, Zhao Yiming, Lili Liu, Duanzhen Zhu, China

**User-centered design research: Case study of baby bottle sterilizer design**
- Ying Cao, Chen Chen, China

**Time consciousness in relation to emergent typography**
- Matthias Hillner, Singapore

**The lived experience of healthcare staff in the contemporary hospital environment in Montreal**
- Hammouni Zakia, Tiuu Poldma, Canada
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### Agile Manufacturing

**Co-Chairs:** Stefan Trzcielinski and Sebastian Pimminger, Poland/Austria

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  - The relation of pro-exploitation attributes with selected criterion of agility of public transport vehicles manufacturing  
    Joanna Kałkowska, Poland
  - The influence of macroenvironment changes on agility of enterprise  
    Stefan Trzcielinski, Poland
  - Lean manufacturing model in a make to order environment in the printing sector in Peru  
    Adriana Becerra, Alessandro Villanueva, Víctor Núñez, Carlos Raymundo, Francisco Dominguez, Peru
  - Agile management methods in an enterprise based on cloud computing  
    Michał Trziszka, Poland

### Safety and Human Factors at a Societal Level

**Co-Chairs:** Regina Pope-Ford and Paulo Maldonado, USA/Portugal

- **13:30-15:30 - COLUMBIA 2**
  - Dynamic façades: Optimization of natural light at workplaces  
    Sandra F. Preto, Portugal
  - Cubo: Communication system for children with autism spectrum disorders  
    Sofia Espadinha, Paulo Maldonado, Portugal
  - Parent awareness of smartphone use and its health impact  
    Regina Pope-Ford, USA
  - Human listener’s misperception between signal comprehension in noise and noise acceptability  
    Bankole Fasanya, USA
  - Development of working at height management system based on legislation in Malaysia  
    Ezrin Hani Sukadarin, Law Peng Hang, Malaysia
  - Inspiration mining: Intersecting improbable connections in a new landscape of cultural reflection and influence  
    Paulo Maldonado, Leonor Ferrão, Portugal

### Automation I

**Co-Chairs:** Neville Stanton and Ata Khan, UK/Canada

- **13:30-15:30 - COLUMBIA 3**
  - Bayesian artificial intelligence-based driver for fully automated vehicle with cognitive capabilities  
    Ata Khan, Canada
  - A survey study to explore comprehension of autonomous vehicle’s communication features  
    Shuchisnigdha Deb, Daniel Carruth, Lesley Strawderman, USA
  - A novel method for designing metaphor based driver-vehicle interaction concepts in automated vehicles  
    Jan Bavendiek, Emily Oliveira, Lutz Eckstein, Germany
  - How should automated vehicles communicate? – Effects of a light-based communication approach in a Wizard-of-Oz study  
    Ann-Christin Hensch, Isabel Neumann, Matthias Beggiato, Josephine Halama, Josef Krens, Germany
  - Pimp my ride - personalisation vs customisation of alerts and feedback in semi-autonomous vehicles  
    Kirsten Revell, Neville Stanton, James Brown, UK
  - Model of driving skills decrease in the context of autonomous vehicles  
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<td>Designing public toilets in the historic urban landscape. Analysis based on the polish cities</td>
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<td>Landscape-solutions of sports and tourist complexes in the Karkonosze Mountains: Examples of sustainable development</td>
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<td>An attempt to assess the need and potential of aesthetic regeneration to improve walkability and ergonomic experience of urban space</td>
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<td>Classification of similarly looking drugs by human perception as compared with unsupervised learning results</td>
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<td>Comparing formative and summative approaches in the usability testing of medical devices</td>
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<td>The effects of clinical task interruptions on subsequent performance of a medication pre-administration task</td>
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<td>Craig Williams, Phillip Morgan, Gary Christopher, Nancy Zook, Rebecca Hoskins, UK</td>
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<td>Prescriptive and descriptive similarity of team contexts</td>
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<td>Towards a mobile phone pupillometer</td>
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<td>RehabVisual: An application to stimulate visuomotor skills in preterm babies with developmental alterations</td>
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Co-Chairs: Evangelos Markopoulos and Ebo Kwegyir-Afful, UK/Finland  
HFBMS

Understanding the nature of entrepreneurial leadership in the startups across the stages of the startup lifecycle  
Evangelos Markopoulos, Nino Dvalidze, UK

Host country nationals’ perceptions of expatriates and social support: Does host country nationals’ position matter?  
Evans Sokro, Ghana

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Investigation on the value judgment criteria of customized garment products by mass consumers  
Jun Yin, Hui Tao, Xuewei Jiang, China

Econometric modeling of the efficiency in the generation of electric power in Chile  
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50  |  Internationalization in Learning Science  
Co-Chairs: Florentin Popescu and Mark Livingston, The Netherlands/USA  
TELS

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Comprehensive internationalization at HAN University of Applied Sciences. Administrative leadership, structure, and staffing  
Florentin Popescu, The Netherlands

Opening up higher education: An e-Learning program on service-learning for university students  
Covadonga Lorenzo, Epifanio Lorenzo, Spain

Human factors in digital transformation of education: Lessons learned from the Future Gate at Saudi K-12  
Yousef Al-Ouali, Mohammed Alhojailan, Nikos Palavitsinis, Jad Najjar, Anastasios Koutoumanos, Ahmed AlSuhaibani, Saudi Arabia

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Valentina Milenkova, Diliana Keranova, Dobrinka Peicheva, Bulgaria

A query generation technique for measuring comprehension of statistical graphics  
Mark Livingston, Derek Brock, Jonathan Decker, Dennis Perzanowski, Christopher Van Dolson, Joseph Mathews, Alexander Lukushi, USA

51  |  Human, Artificial Intelligence, and Robot Teaming  
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HFRUS

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Erin Chiou, USA

Predicting human performance for the optimization of human-robot collaboration  
Hong Cai, Yasamin Mostofi, USA

Team trust and resilience in human-autonomy teaming  
Mustafa Demir, Nancy Cooke, USA

Lessons learned in designing a synthetic task environment using Minecraft  
Glenn J. Lematta, Pamela B. Coleman, Erin K. Chiou, Nathan J. McNeese, Mustafa Demir, Nancy J. Cooke, USA

Human machine collaborative planning and optimization  
Lindsay Sanneman, Julie Shah, USA

Humans and robots in off-normal applications and emergencies  
Robin Murphy, USA

Conveying robot state and intent nonverbally in military-relevant situations: An exploratory survey  
Lauren Boos, Lilia Moshkina, USA
### Human Factors in Cybersecurity: Applications and Privacy Research

**Co-Chairs:** Rick van der Kleij and Isabella Corradini, The Netherlands/Italy

**CYBER**

- **13:30-15:30 - GUNSTON WEST**
  - Attempting to reduce susceptibility to fraudulent computer pop-ups using incentivized malevolence cue identification training
    - Phillip Morgan, Robinson Soteriou, UK
  - Cyber resilient behavior: Integrating human behavioral models and resilience engineering capabilities into cyber security
    - Rick van der Kleij, Rutger Leukfeldt, The Netherlands
  - An international extension of Sweeney’s data privacy research
    - Wayne Patterson, Cynthia Winston-Proctor, USA
  - The human factor in managing the security of information
    - Malgorzata Wisniewska, Zbigniew Wisniewski, Katarzyna Szaniawska, Michal Lehmann, Poland
  - Beyond passwords: Enforcing username security as the first line of defense
    - Nicholas Caporusso, Thaier Fandakly, USA
  - Social engineering and the value of data: The need of specific awareness programs
    - Isabella Corradini, Enrico Nardelli, Italy
  - Investigation and user’s web search skill evaluation for eye and mouse movement in phishing of short message
    - Takeshi Matsuda, Michio Sonoda, Masashi Eto, Hirounobu Satoh, Tomohiro Hanada, Nobuhiro Kanahama, Hiroki Ishikawa, Ryutaro Ushigome, Seiha Yoshimitsu, Japan

### Design for Inclusion: Building Environment, Public Spaces and Communities

**Co-Chairs:** Avril Accolla and Francesco Spagnoli, China/Italy

**DI**

- **13:30-15:30 - EMBASSY**
  - Development of an anthropometric protocol for wheelchair users: Guiding the decision-making for designing inclusive spaces
    - Libertad Rizo, Adrián Leal-Pérez, John Rey-Galindo, Carlos Aceves-Gonzalez, Elvia Luz González-Muñoz, Mexico
  - A new inclusive housing prototype
    - Francesco Spagnoli, Italy
  - Assessing accessibility and safety conditions in an urban environment: What do pedestrians perceive?
    - Carlos Aceves-González, Libertad Rizo-Corona, Rosa Rosales-Cinco, John Rey-Galindo, Karthikeyan Ekambaram, Maricela Ramos-Tachiquín, Mexico
  - Bioclimatic design approach for low-income dwelling at Monte Sinahí, Guayaquil
    - Boris Forero, Jesús Rafael Hechavarria Hernández, Robinson Vega Jaramillo, Ecuador
  - Creating an accessibility index for large built environments
    - Wajdi Wazzan, Saudi Arabia
  - Designing a pilot system for sustainable villages for all
    - Avril Accolla, China
  - Co-design of public spaces for intercultural communication, diversity and inclusion
    - Alessandra Rinaldi, Maurizio Caon, Leonardo Angelini, Omar Abou Khaled, Elena Mugellini, Italy

### Communication Design and Practices

**Co-Chairs:** Amic Ho and Joungyun Choi, Hong Kong/USA

**HFC**

- **13:30-15:30 - GUNSTON EAST**
  - Nudge users to healthier decisions: A design approach to encounter misinformation in health forums
    - Mahdi Ebnali, Cyrus Kian, USA
  - How the creative mindset operates with respect to creative performance: pedagogical factors that ignite the creative mindset in design education
    - Joungyun Choi, USA
  - Exploration and thinking on the cultural communication of Guangdong museum
    - Xiaobao Yu, Ting Wang, China
  - Bullet points: Applying emotional symbols in information management
    - Amic Ho, Hong Kong
  - Impact of inspiration sources on designer’s idea generation strategy
    - Xinyu Yang, Jianxin Cheng, China
### 55. Artificial Intelligence and Social Applications II
Co-Chairs: Stella Angova and Mireya Zapata, Bulgaria/Ecuador

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<tr>
<th>Session</th>
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<td>13:30-15:30 - JAY</td>
<td>Axonal delay controller for spiking neural networks based on FPGA</td>
<td>Mireya Zapata, Jordi Madrenas, Mirosлава Aracely Zapata, Jorge Alvarez, Ecuador</td>
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<td>Academic quality management system audit using artificial intelligence techniques</td>
<td>Rodolfo Bojorque, Fernando Pesántez, Ecuador</td>
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<td></td>
<td>Ensemble-based machine learning algorithms for classifying breast tissue based on electrical impedance spectroscopy</td>
<td>Sam Matiru Rahman, Md Asraf Ali, Omar Altawari, Mahdi Alqahtani, Nasim Ahmed, Nizam U. Ahmad, Bangladesh/Saudi Arabia/New Zealand/Malaysia</td>
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<tr>
<td></td>
<td>Cognitive solutions in the enterprise: A case study of UX benefits and challenges</td>
<td>Jon Temple, Brenda Burkhard, Ed McFadden, Claude Elie, Felix Portnoy, USA</td>
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<td>Research on accuracy of flower recognition application based on convolutional neural network</td>
<td>Jing-hua Han, Chen Jin, Li-Sha Wu, China</td>
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<td>AI-based children monitoring support system using artificial intelligence technologies</td>
<td>Rodolfo Bojorque, Fernando Pesántez, Ecuador</td>
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<td>Ensemble-based machine learning algorithms for classifying breast tissue based on electrical impedance spectroscopy</td>
<td>Sam Matiru Rahman, Md Asraf Ali, Omar Altawari, Mahdi Alqahtani, Nasim Ahmed, Nizam U. Ahmad, Bangladesh/Saudi Arabia/New Zealand/Malaysia</td>
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<td>AI-based children monitoring support system using artificial intelligence technologies</td>
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### 56. Human Factors and Assistive Technology II
Co-Chairs: Matteo Zallio and Brittani Washington, USA

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<td>13:30-15:30 - HOLMEAD EAST</td>
<td>Meaningful age-friendly design. Case studies on enabling assistive technology</td>
<td>Matteo Zallio, Damon Berry, Larry Leifer, USA</td>
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<td>Proper implementation of website features affecting the use of screen readers</td>
<td>Brittani Washington, Jinjuan Feng, USA</td>
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<td>Assistive technologies for elderly – review on recent developments in lower limb and back pain management</td>
<td>Murali Subramaniyam, Kishore Kumar Sampath, Dinesh Shanmugam, Dong Joon Kim, Kyung Sun Lee, Park Se Jin, Seung Nam Min, India/South Korea</td>
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<td></td>
<td>Proposal of a technological ergonomic model for people with disabilities in the public transport system in Guayaquil</td>
<td>Bryan Colorado Pastor, Milagros Fois, Maikel Leyva Vázquez, Jesús Rafael Hechavarría Hernández, Ecuador</td>
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<td>Sequaca – Cognitive rehabilitation game kit for treatment of neurocognitive disorders</td>
<td>Camila Ruttimann, Elyssar Karatli, Anna de Norões, Luiza Rebeiro, Giuseppe Amado, Brazil</td>
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<td>Implementation of an electronic device for multisensory stimulation: Visual, auditory, memory and attention for children from 2 to 5 years old</td>
<td>Omar Alvarado, Alejandro Alvarado, Jorge Prado, María del Carme Cordero, María Rosa Pazmiño, Tamara Vazquez, Ecuador</td>
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### 57. Artificial Intelligence and Social Applications I
Co-Chairs: Chuan-Jun Su and Nicholas Caporusso, Taiwan/USA

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<td>13:30-15:30 - FAIRCHILD WEST</td>
<td>Ubiquitous fitting: Ontology-based dynamic exercise program generation</td>
<td>Chuan-Jun Su, Yi-Tzy Tang, Shi-Feng Huang, Yi Li, Taiwan</td>
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<td>Machine self-confidence in autonomous systems via meta-analysis of decision processes</td>
<td>Brett Israelsen, Nisar Ahmed, Eric Frew, Brian Argrow, Dale Lawrence, USA</td>
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<td>Cascading convolutional neural network for steel surface defect detection</td>
<td>Chih-Yang Lin, Cheng-Hsuan Chen, Ching-Yuan Yang, Fityanul Akhyar, Chao-Yung Hsu, Hui-Fuang Ng, Taiwan</td>
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<td>A meta-language approach for machine learning</td>
<td>Nicholas Caporusso, Peng Zhang, Trent Helms, USA</td>
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<td>Framework of sensor inconsistency detection system for nuclear power plants</td>
<td>Jeonghun Choi, Seung Jun Lee, South Korea</td>
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15:30-16:00 Refreshments will be provided in Columbia West (Terrace Level)
## Emotional Interaction Design
**Co-Chairs:** Masashi Okubo and Yoshihiro Sejima, Japan

**16:00-18:00 - MORGAN**

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<tr>
<td>Influence of visual non-verbal information on information transmission to audience</td>
<td>Akihiro Tatsumi, Kazuyuki Seki, Masashi Okubo, Kazuyuki Seki, Japan</td>
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<td>Development of a pupil response system with empathy expression in face-to-face body contact</td>
<td>Yoshihiro Sejima, Yoichiro Sato, Tomio Watanabe, Japan</td>
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<td>An experimental study on evaluating glare in blue light exposure</td>
<td>Daisuke Miyazaki, Kimi Ueda, Hirotake Ishii, Hiroshi Shimoda, Souma Kawamoto, Wakako Takekawa, Japan</td>
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<td>Analysis of answering time data for cognitive task to investigate intellectual concentration</td>
<td>Kimi Ueda, Shota Shimonaka, Kosuke Sugita, Wakako Takekawa, Hiroshi Shimoda, Hirotake Ishii, Fumiaki Obayashi, Japan</td>
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<td>Research on platform design with tolerance of non-errors in user successive design</td>
<td>Kun Chen, Dingbang Luh, China</td>
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<td>Evaluating similarities in visual product appearance for brand affiliation</td>
<td>Matthias Sebastian Fischer, Daniel Holder, Thomas Maier, Germany</td>
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<td>Case study on innovative design of PTC peripheral products based on caring people</td>
<td>Huabin Wang, China</td>
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## Human-Machine Teaming and Leadership at the U. S. Air Force Academy
**Co-Chairs:** Chad Tossell and Ewart de Visser, USA

**16:00-18:00 - HOLMEAD WEST**

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<th>Title</th>
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<tr>
<td>Teaming with agents: Agent mitigated decision making and conflict mediation</td>
<td>Kerstin Haring, Jessica Tobias, Justin Waligora, Gale Lucas, Jonathan Gratch, Ewart de Visser, Chad Tossell, USA</td>
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<td>Autonomy in operational environments</td>
<td>Nathan Tenhundfeld, Ewart de Visser, Chad Tossell, Victor Finomore, USA</td>
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<td>The critical mission: Human-machine teaming and leadership at the U. S. Air Force Academy</td>
<td>Ewart de Visser, Chad Tossell, USA</td>
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<td>Future horizons with human-machine teaming and leadership at the U. S. Air Force Academy</td>
<td>Ewart de Visser, Chad Tossell, USA</td>
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<tr>
<td>Communication and control for human-robot teaming</td>
<td>Elizabeth Phillips, USA</td>
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<td>Basic influence process in human machine teaming</td>
<td>Christopher Kelley, Kerstin Haring, USA</td>
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## Cultural Aspects in Design
**Co-Chairs:** João Brandão and Elisabete Rolo, Portugal

**16:00-18:00 - FAIRCHILD EAST**

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<tr>
<td>The italic style, understanding the shape through history</td>
<td>João Brandão, Catarina Almeida, Portugal</td>
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<td>Lighting design at workplaces: What should be the concerns for an architect?</td>
<td>Sandra Preto, Portugal</td>
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<td>Design for the model of shared office space based on the logic of behavior: A case study of Chinese users</td>
<td>Zhang Ping, Yang Simeng, Liu Tingyu, Zhang Liang, China</td>
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<td>The preservation of the built environment: A process of ergonomic design</td>
<td>Conceição Trigueiros, Mario Saleiro Filho, Portugal</td>
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<td>Graphic design and cinema: Portuguese movie posters from the Nouvelle Vague period</td>
<td>Elisabete Rolo, Maria do Carmo Kattau Tierno de Andrade Lopes, Portugal</td>
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<td>At hand, the brain of men</td>
<td>Luis Miguel Francisco Ginja, Portugal</td>
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### Design for People
**Co-Chairs:** John Smallwood and Marek Bures, South Africa/Czech Republic

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<th>Session Time</th>
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<tr>
<td>16:00-18:00</td>
<td>DU PONT</td>
<td>Strength and motor function in an aging population in dependence to work position</td>
<td>Marek Bures, Věra Čadková, Czech Republic</td>
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<td>Observing or experiencing - the effect of age simulation on the sensitivity to age-related impairment in elderly care</td>
<td>Danny Rueffert, Angelika C. Bullinger, Germany</td>
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<td>The evaluation of mechanical properties of soft tissue on pressure ulcers among bedridden elderly patients</td>
<td>Chi-Wen Lung, Yih-Kuen Jan, Jin-Huei Lu, Chien-Liang Chen, Fang-Chuan Kuo, Ben-Yi Liu, Taiwan</td>
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<td>Ergonomics in automotive glass manufacturing: Workers’ perceptions of strain</td>
<td>John Smallwood, Claire Deacon, South Africa</td>
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<td>Enhancing the life of the elderly - an application of design thinking</td>
<td>Ravindra S. Goonatileke, Emily Yim Lee Au, China</td>
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<td>Ergonomic requirements in the design of high performance sports suits: BMX clothing</td>
<td>Fausto Zuleta Montoya, Gustavo Sevilla Cadavid, Blanca Echavaria Bustamante, Johana Hoyos-Ruiz, Colombia</td>
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<td>Development and validation of a dynamic time warping based algorithm to evaluate motion similarity for home-based fall interventions in older people</td>
<td>Xiaoqun Yu, Shuping Xiong, South Korea</td>
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### Automation II
**Co-Chairs:** Dustin Souders and Kirsten Revell, USA/UK

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<td>16:00-18:00</td>
<td>COLUMBIA 1</td>
<td>Vocal guidance of visual gaze during an automated vehicle handover task</td>
<td>Jediah Clark, Neville Stanton, Kirsten Revell, UK</td>
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<td>Tailoring introductory information to the level of automation: Effects on attitudes and usage of a simulated level 3 automated driving system</td>
<td>Dustin Souders, Shubham Agrawal, Irina Benedyky, Yujie Li, Srinivas Peeta, USA</td>
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<td>How do you want to be driven? Investigation of different highly-automated driving styles on a highway scenario</td>
<td>Patrick Roßner, Angelika C. Bullinger-Hoffmann, Germany</td>
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<td>Using technology acceptance model to explain driver acceptance of advanced driver assistance systems</td>
<td>Md Mahmudur Rahman, Shuchisnigdha Deb, Daniel Carruth, Lesley Strawderman, USA</td>
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<td>The user and the automated driving: A state-of-the-art</td>
<td>Sara Ferreira, Anabela Simões, José Pedro Tavares, Antonio Lobo, Antonio Couto, Liliana Cunha, José Carvalhais, Daniel Silva, Portugal</td>
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<td>Investigating drivers’ behaviour during diverging maneuvers using an instrumented vehicle</td>
<td>Fabrizio D’Amico, Alessandro Calvi, Chiara Ferrante, Luca Bianchini Ciampolli, Fabio Tosti, Italy</td>
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### Macroergonomic Systems Design and Improvement
**Co-Chairs:** Leszek Pacholski and Joanna Kalkowska, Poland

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<td>COLUMBIA 2</td>
<td>The reporting system as a feedback tool to improve the process of entering data in IT systems</td>
<td>Maciej Siemieniak, Katarzyna Siemieniak, Poland</td>
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<td>The conditioning of macroergonomic design and improvement of the intelligent building’s use and service</td>
<td>Joanna Kalkowska, Leszek Pacholski, Poland</td>
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<td>The macroergonomic improvement of total quality management industrial systems</td>
<td>Milena Drzewiecka-Dahlke, Leszek Pacholski, Poland</td>
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<td>The ergonomics of work conditions as force element of the OHS management</td>
<td>Adam Gorny, Poland</td>
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<td>The improvement of women professional entrepreneurial attitude in a context of social expectations</td>
<td>Paulina Siemieniak, Poland</td>
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<td>Monitoring personnel presence and displacement in production facilities using RFID technology</td>
<td>Robert Waszkowski, Tadeusz Nowicki, Andrzej Walczak, Poland</td>
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### 64 Ergonomics and Material Environment Design I
**Co-Chairs:** Anna Jaglarz and Joanna Jabłonska, Poland

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<td>Ideas behind the changes in the 20th c. avant-garde architecture</td>
<td>Teresa Bardzinska-Bonenberg, Poland</td>
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<td>The role of cultural heritage in sustainable development: Values and valuation as</td>
<td>Wojciech Bonenberg, Poland</td>
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<td>key factors in spatial planning of rural areas</td>
<td>Wojciech Bonenberg, Xia Wei, Mo Zhou, China</td>
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<td>The application of BIM in the “China Beautiful Rural” design project: Yangyou</td>
<td>Wojciech Bonenberg, Xia Wei, Mo Zhou, China</td>
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<td>Village river ecological landscape reconstruction design project</td>
<td>Wojciech Bonenberg, Xia Wei, Mo Zhou, China</td>
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<td>The method of designing an architectural compositions applying images reflected in</td>
<td>Zdzislaw Pelczarski, Poland</td>
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<td>water mirror</td>
<td>Inclusive healthcare waiting rooms: A comparison study for improving the user experience</td>
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<td>within a built environment</td>
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<td>Claudia Fernández, Carlos Aceves-Gonzalez, Matteo Zallio, Mario Mireles-Ramirez, Mexico/USA</td>
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### 65 Usability Evaluation and Interface Design
**Co-Chairs:** Xingyi Zhong and Cigdem Altin Gumussoy, China/Turkey

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<td>Usability evaluation of the set top box and TV interfaces</td>
<td>Cigdem Altin Gumussoy, Aycan Kaya, Murat Koprulu, Turkey</td>
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<td>Effects of gender and prior experience on immersive user experience with virtual reality</td>
<td>Camille Sagnier, Emilie Loup-Escande, Gérard Valléry, France</td>
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<td>Humanized design of interaction interfaces for small screen devices</td>
<td>Na Lin, Zhongting Wang, Chaoyi Zhao, China</td>
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<td>Take intelligent lock as an example</td>
<td>Xingyi Zhong, Mengyi Cao, Ting Han, China</td>
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<td>Research on application model of unconsciousness in user interface</td>
<td>Ying Cao, Bijing Li, Jiaxin Liu, China</td>
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<td>Research on interface design of venue monitoring system based on product semantics</td>
<td>Lei Wu, Lijun Mou, Juan Li, Yao Su, Yue Sun, Yekai Wei, Huai Cao1, Sijie Dong, China</td>
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<td>Usability evaluation of intelligent medical imaging diagnostic interface based on SD method</td>
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### 66 Human Factors in Sports, Injury Prevention and Outdoor Recreation
**Co-Chairs:** Reuben Burch and Stijn Verwulgen, USA/Belgium

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<td>The importance of baselining Division 1 football athlete jumping movements for injury mitigation and</td>
<td>Reuben Burch, Lesley Strawdeman, Anthony Piroli, Harish Chander, Wenmeng Tian, Fredrick</td>
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<td>return to play</td>
<td>Murphy, USA</td>
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<td>Foot arc and jumping ability of athletes and non-athletes</td>
<td>Ajita Dsingh, Mansi Batra, India</td>
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<td>Relationship between prosthesis and training in prosthetic marathon runner</td>
<td>Fuminori Matsuura, Yumie Osada, Isao Matsumoto, Yoshinori Hirano, Xiaodan Lu, Tomoko Ota,</td>
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<td>Hiroyuki Hamada, Noriyuki Kida, Japan</td>
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<td>Effective measures for minimizing playing-related musculoskeletal disorders among tertiary education</td>
<td>Titi Rahmawati Hamedon, Chia-Ying Ling, Fung Chiat Loo, Malaysia</td>
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<td>student pianists in Malaysia</td>
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<td>Thermal performance of equestrian helmets</td>
<td>Merlin Bauwens, Sarah de Graaf, Alexandra Vermeer, Shiriram Mukunthan, Guido De Bruyne,</td>
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<td>Belgium</td>
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<td>Disorders of female athlete triad in college girls of Punjab</td>
<td>Ajita Dsingh, Amanpreet Brar, Jeewanjot Kaur, India</td>
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### Detailed Technical Program

**Friday, July 26, 2019**

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<td>The role of context and perception of road rules in the pedestrian crossing decision: A challenge for the autonomous vehicle</td>
<td>Marie-Axelle Granié, Florent Varet, Béatrice Degraeve, Achet Khalafian, France</td>
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<td>Pedestrian receptivity and their interaction with autonomous vehicles</td>
<td>Daniel Carruth, Shuchisnigdha Deb, USA</td>
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<td>Are older adults at greater “risk” of missing out on the potential benefits of vehicle automation?</td>
<td>Bruce Mehler, USA</td>
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<td>Automated vehicles and schools: An analysis of deployment issues</td>
<td>Michael Clamann, USA</td>
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<td>Impact of vehicle automation on driving behaviors of novice teen drivers</td>
<td>Anuj Pradhan, USA</td>
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<td>Visualization of the wisdom cube - scientific knowledge space for management and leadership</td>
<td>Hannu Vanharanta, Evangelos Markopoulos, Finland/UK</td>
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<td>Enhanced higher education - industry cooperation improving work capabilities of sales engineering graduates</td>
<td>Ludger Schneider-Störmann, Thomas Röhr, Rauni Jaskari, Timo Holopainen, Tero Reunanen, Germany</td>
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<td>Value creation in three clusters focusing on chemistry</td>
<td>Timo Holopainen, Jukka Rantala, Finland</td>
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<td>Leadership role models for young professionals – case study from Finnish university students</td>
<td>Tero Reunanen, Eyal Eckhaus, Finland</td>
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<td>UDA-ERP: Theory, development and conflicts</td>
<td>Catalina Astudillo-Rodriguez, Esteban Crespo-Martínez, Juan-Manuel Maldonado-Matute, Ecuador</td>
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<th>Designing for Inclusion: Learning Experiences, Methodology and Future Trends</th>
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<td><strong>Co-Chairs:</strong> Giuseppe Di Bucchianico and Alessandra Rinaldi, Italy</td>
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<td><strong>16:00-18:00 - COLUMBIA 12</strong></td>
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## Product and System Design (ED)

**Co-Chairs:** Huimin Hu and Hong Luo, China

- **A JACK-based ergonomic analysis and design of the cockpit of agricultural material-handling vehicles**
  Sen Gu, Cheng Huang, Zhiqiang Song, Shasha Yuan, China
- **Study on the influence of BMI difference on pressure distribution of mattress**
  Huimin Hu, Pu Hong, Mengjing Cai, Yinxia Li, Hong Luo, Haimei Wu, China
- **Research on body pressure distribution of mattress for different genders**
  Huimin Hu, Pu Hong, Mengjing Cai, Hong Luo, Yinxia Li, Ling Luo, Haimei Wu, China
- **Research on comfort of mattresses with different hardness based on body pressure distribution**
  Huimin Hu, Pu Hong, Mengjing Cai, Hong Luo, Haimei Wu, China
- **Toothbrush innovation design based on man-machine engineering research**
  Peng Han, China
- **Effect of body weight of wheelchair care recipient on physical activity intensity of assistant person**
  Haruka Sugiyama, Yohsuke Yoshioka, Masaki Takahashi, Mitsuaki Shiraiishi, Fumitake Hakozaki, Satoshi Kamen, Yoshiohide Tokuda, Ken Nunaota, Cheng Jiayu, Japan
- **The importance of ergonomics in the development of sustainable materials applied to footwear design**
  Ana Fernandes, Portugal

## Ergonomics in Manufacturing (MFG)

**Co-Chairs:** Cristina Mora and Edmund Pawlowski, Italy/Poland

- **Impact of industry 4.0 on occupational health and safety**
  Aleksandra Polak-Sopinska, Anna Maczewska, Anna Walaszczyn, Zbigniew Wisniewski, Poland
- **Ergonomics principles for the design of an assembly workstation for left-handed and right-handed users**
  Lucia Bott, Alice Caporale, Maddalena Coccagna, Cristina Mora, Italy
- **Lean production management model for SMEs waste reduction in the processed food sector in Peru**
  Carlos Raymundo, Ernesto Altimirano, Jose Chavez, Fernando Osorio, Francisco Dominguez, Peru
- **Development of an intelligent robotic additive manufacturing cell for the nuclear industry**
  Richard French, Hector Marin-Reyes, Gabriel Kapellmann Zafra, Samantha Abrego, UK
- **Manageable and scalable manufacturing IT through an app based approach**
  Christian Knecht, Andreas Schuller, Andrei Miclaus, Germany
- **Qualitative features of the human capital in the formation of the agility of enterprises. Research results in Polish companies**
  Hanna Wlodarkiewicz-Klimek, Poland
- **Human factors/ergonomics in eWorld: Methodology, techniques and applications**
  Oleksandr Burov, Ukraine

## Human Factors in Transportation: Rail (RR)

**Co-Chairs:** Tobias Heine and Denis Miglianico, Germany/France

- **Engineering the right change culture in a complex (GB) rail industry**
  Michelle Nolan-McSweeney, Brendan Ryan, Sue Cobb, UK
- **Analysis of driving performance data to evaluate brake manipulation by railway drivers**
  Daisuke Suzuki, Naoki Mizukami, Nobuyuki Tsuyuki, Yutaka Kakizaki, Japan
- **Decrease driver’s workload and increase vigilance in light rail vehicle**
  Denis Miglianico, Vincent Pargade, France
- **Application of cognitive work analysis to explore passenger behaviour change through provision of information to help relieve train overcrowding**
  Jisun Kim, Kirsten Revell, John Preston, UK
- **The effect of tram driver’s cab design on posture and physical strain**
  Tobias Heine, Marco Käppler, Barbara Deml, Germany
### Driver Training, Education and Hazards
**Co-Chairs:** Mohammed Al Eisaei and Minerva Rajendran, UAE/India

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<td>Impact of mind wandering on driving</td>
<td>Minerva Rajendran, Venkatesh Balasubramanian, India</td>
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<td>Russell Marshall, Stephen Summerskill, James Lenard, UK</td>
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**Co-Chairs:** Wojciech Bonenberg and Agata Bonenberg, Poland

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### User Experience and HMI: Automation and Transportation
**Co-Chairs:** Samineh Gillmore and Timo Schempp, USA/Germany

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Naomi Hills, USA  
Task engagement inference within distributed multiparty human-machine teaming via topic modeling  
Nia Peters, USA  
Decision making using automated estimates in the classification of novel stimuli  
Amber Hoenig, Joseph Stephens, USA  
Participant perception and HMI preferences during simulated AV disengagements  
Syeda Sheherbano Rizvi, Francesca Favaro, Sumaid Mahmood, USA | CARDOZO         | -                                           | -                                         | HFRUS          | Co-Chairs: Jessica Reichters and Nia Peters, USA                        |
| 8:00-10:00   | **Human Factors in Virtual Environments II** | Understanding user interface preferences for XR environments when exploring physics and engineering principles  
Brian Sanders, Yuzhong Shen, Dennis Vincenz, USA  
Appreciation of proportion in architecture: A comparison between facades primed in virtual reality and on paper  
Stijn Verwulgen, Sander Van Goethem, Gustaaf Cornelis, Jouke Verlinden,  
Tom Coppens, Belgium  
Immersive virtual reality beyond available physical space  
Nicholas Caporusso, Gordon Carlson, USA  
Gazing pattern while using AR route-navigation on smartphone  
Asami Tanabe, Yohsuke Yoshioka, Japan  
Healthcare design based on virtual reality technology: Enhance the user’s engagement in the rehabilitation process  
Yu Qiao, Siyi Yang, China  
Research on virtual simulation evaluation system for passenger compartments lighting of subway trains in China  
Jian Xu, Ze-rui Xiang, Jin-yi Zhi, Xiao-fei Xu, Si-jun He, Jin Wang, Yang Du,  
Gang Xu, China | GUNSTON WEST    | -                                           | -                                         | HFGD           | Co-Chairs: Brian Sanders and Stijn Verwulgen, USA/Belgium               |
| 8:00-10:00   | **Human Factors in Aging and Gerontology I** | Alterations in thyroid function testing with aging  
Jay Kalra, Zoher Rafid-Hamed, Patrick Seitzinger, Canada  
A grip force training and testing device for old people  
Shijian Luo, Ze Bian, Yufei Zhang, Ping Shan, Hebo Gong, China  
Optimized design of accompanying smart car for the elderly based on humanization design methods  
Mengyi Cao, Xingyi Zhong, Ting Han, China  
Measuring ways research on public facilities of the elderly’s physical flexibility  
Xing-Rong Wen, Ding-Bang Luh, China  
Individual 3D behavior capture method for elderly people with dementia under everyday life environment with RGBD camera  
Kei Hirano, Yoshifumi Nishida, Yusuke Miyazaki, Koji Kitamura, Japan | EMBASSY        | -                                           | -                                         | AGE            | Co-Chairs: Jay Kalra and Mengyi Cao, Canada/China                       |
### Detailed Technical Program

**Saturday, July 27, 2019**

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<td><strong>Modeling in-plane deviations of shapes to come based on prior deviation features in additive manufacturing</strong>&lt;br&gt;Arman Sabbaghi, USA</td>
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<td><strong>Ushering the digital twin in metal additive manufacturing – a case for model-based monitoring of porosity in directed energy deposition.</strong>&lt;br&gt;Prahalada Rao, USA</td>
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<td><strong>Cyber-coordinated simulation models for multi-stage additive manufacturing of energy products</strong>&lt;br&gt;Hongyue Sun, USA</td>
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<td><strong>Toward defect-free additive fabricating of flexible and hybrid electronics: Physics-based computational modeling and control of aerosol jet printing</strong>&lt;br&gt;Roozbeh (Ross) Salary, Jack Lombardi, Darshana Weerawarne, Prahalada Rao, Mark Poliks, USA</td>
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<td><strong>Sensitivity analysis of intercultural relationship based on DMIS model</strong>&lt;br&gt;Zhenbin Wu, Baocui Chen, Xuebo Chen, China</td>
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<td><strong>Cross-cultural analysis of top page design among Brazilian, Chinese, Japanese and United States web sites</strong>&lt;br&gt;Toshihisa Doi, Atsuo Murata, Japan</td>
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<td><strong>Globalisation, cultural differentiation and pluralism processes and proactive dimension of human world of “boundary-less careers”</strong>&lt;br&gt;Agnieszka Cybal-Michalska, Poland</td>
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<td><strong>Research on steering wheel interaction design for middle class consumers</strong>&lt;br&gt;Xiyao Wang, Jiong Fu, China</td>
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**10:00 - 10:30** Refreshments will be provided in Columbia West (Terrace Level)
| 96 | **Toward a Unified Approach for Studying Long-Term Bonding Between Humans and Autonomy**  
Chair: Frank Krueger, USA | CN  
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10:30-12:30 - MORGAN  
The role of mind perception in bonding between humans and autonomy  
Jonathan Gratch, USA  
Monitoring brain function during human robot interaction with mobile fNIRS in natural settings  
Hasan Ayaz, USA  
The role of oxytocin in shaping long-term human bonding  
Mary Lee, USA  
A neuropsychological model of long-term bonding between humans and autonomy  
Frank Krueger, USA  
Long-term bonding with social robots  
Ewart de Visser, USA  
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| 97 | **Human-Machine Interaction in Systems**  
Co-Chairs: Umer Asgher and Salman Nazir, Pakistan/Norway | ICEEP  
--- | --- | ---  
10:30-12:30 - HOLMEAD WEST  
Black hole illusion: Functions of temporal and spatial cues  
Ming Chang, Lei Huang, China  
Research on interactive performance optimization strategy of complex systems based on information coding  
Tian Qin, Siyi Wang, China  
Novel metaheuristic approach: Integration of variables method (IVM) and human-machine interaction for subjective evaluation  
Umer Asgher, Rolando Simeón Monet, Riaz Ahmad, José Arzola-Ruiz, Pakistan/Cuba  
Modeling and multi-objective optimization of insulating lining using Heuristic technique “Exploration of Variables Codes (ECV)”  
Umer Asgher, José Arzola-Ruiz, Osmel Martínez-Valdés, Riaz Ahmad, Yasar Ayaz, Sara Ali, Pakistan/Cuba  
Using adaptive integration of variables algorithm for analysis and optimization of 2D irregular nesting problem  
José Arzola-Ruiz, Arlys Michel Lastre, Alexis Cordovés-García, Umer Asgher, Cuba/Pakistan  
Predicting operator performances and cognitive efficiency by monitoring physiological and cognitive states to improve risk management  
Eva Hansenne, Jerome Wertz, Mathieu Jaspar, Anne-Sophie Nyssen, Clementine Francois, Belgium  
Evaluation of fatigue and comfort of blue light under general condition and low blue light condition  
Yunhong Zhang, Na Liu, Hong Chen, China  
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| 98 | **Safety Management and Behavior Analysis**  
Co-Chairs: Kapo Wong and Alan H. S. Chan, Hong Kong | SMHF  
--- | --- | ---  
10:30-12:30 - FAIRCHILD EAST  
Gender differences in risk-taking-related personality traits and risk perception: implications for safety training and awareness programs  
Kapo Wong, Alan H. S. Chan, Saad A. Alabdulkarim, Hong Kong  
Socially oriented design of technical systems and objects: Safety and accident prevention  
Yulia Salnikova, Evgeny Kolbachev, Russia  
Compliance supervision or self-regulation? A new research perspective based on game theory  
Yuan Gao, Yunxiao Fan, China  
Issues of human error management in introducing new technology for bridge inspection drones  
Riku Tsunori, Yusaku Okada, Japan  
Driving risk assessment under the effect of alcohol through an eye tracking system in virtual reality  
Chiara Ferrante, Valerio Veraldi, Maria Rosaria De Blasis, Italy  
The impact of autonomous vehicles’ active feedback on trust  
Ana Mackay, Inês Fortes, Catarina Santos, Dário Machado, Patrícia Barbosa, Vera Vilas Boas, João Ferreira, Nelson Costa, Carlos Silva, Emanuel Sousa, Portugal  
An assessment of the potential risk of hearing loss from earphones based on the type of earphones and external noise  
Alethea Diana Villa, Ysabel Neena Gayahan, Manuel Vincent Vi Chanco, Jeriko Merlo Reyes, Lizbeth Mariano, Philippines  
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| 99      | The Present and Future of Macroergonomic Systems | Marcin Butlewski and Ana Margarida Ferreira, Poland/Portugal | SOE | 10:30-12:30 - DU PONT | Gamifying onboarding: How to increase both engagement and integration of new employees  
Louisa Heimburger, Rúben Gouveia, Oliver Korn, Lea Buchweitz, Germany  
Well-being through design for dynamic diversity: The voice of minorities in design for all  
Marcin Butlewski, Poland  
Social design, innovation and ergonomics: Reflections on education, transdisciplinarity, and new blurred models for sustainable social change  
Ana Margarida Ferreira, Nicos Souleles, Stefania Savva, Portugal  
Towards an expert system for assigning optimal workplaces to workers with disabilities  
Gregor Harih, Nataša Vujica-Herzog, Slovenia  
The role of building construction project planning in accommodating ergonomic considerations of the aging workforce  
Steven Kangisser, Young Mi Choi, USA  
Ergo + 50: Ergonomic assessment methodology aimed at older workers  
Alberto Ferreras Remesal, Carlos Chirivella Moreno, Alicia Piedrabuena Cuesta, Rakel Poveda Puente, Sonia Serna Arnau, Consuelo Latorre Sánchez, Mercedes Sanchís Almenara, Raquel Marzo Rosello, Spain |
| 100     | Ergonomics in Urban Design I | Joanna Jablonska and Anna Jaglarz, Poland | SUPI | 10:30-12:30 - COLUMBIA 1 | Landscape parks in China: Steering and handling growing tourism  
Teresa Bardzinska-Bonenberg, Shoufang Liu, Poland  
Smart village as a model of sustainable development: Case study of Wielkopolska region in Poland  
Wojciech Bonenberg, Mo Zhou, Xia Wei, Poland  
The growing house – The way to solve the housing problem in Interwar Germany  
Jadwiga Urbanik, Poland  
Architectural challenges of designing front entrance area at city schools  
Andrzej Dudzinski, Poland  
Smart eco-villages and tourism development based on rural revitalization with comparison Chinese and Polish traditional villages experiences  
Ling Qi, Mo Zhou, Wojciech Bonenberg, Zixuan Ma, China  
Management balance between nature and rural settlements in China  
Shoufang Liu, Lin Li, Wojciech Bonenberg, Teresa Bardzinska-Bonenberg, Mo Zhou, China  
Active city for healthy ageing and “anti-globesity”  
Cristiana Cellucci, Michele Di Sivo, Italy |
| 101     | Usability and User-Centered Design II | Hashim Chunpir and Lauren LaSpina-Paoletti, Germany/USA | UUE | 10:30-12:30 - COLUMBIA 2 | Comparison of information technology service management (ITSM) practices in e-science, libraries, public administration and the private sector  
Hashim Chunpir, Germany  
GDPR considerations in recruiting participants for human factors research  
Richard Horst, Yasmin Diedenks, USA  
Heuristic and bias information on ship engine operation alarm display  
Adi Mas Nizar, Takashi Miwa, Makoto Uchida, Masumi Nakamura, Japan  
Closing the gap of creating design concepts for DSS by applying the situation awareness oriented design principles  
Elena Dalinger, Daniel Feiser, Germany  
Building a house with a limited tool set: Overcoming the challenge of incorporating usability in the acquisition process  
Jade Driggs, Alice Diggs, Richard Steinberg, USA  
Are you prepared for the ISO 11607 medical device packaging changes?  
Lauren LaSpina-Paoletti, USA |
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<td>Human Interaction with Small Unmanned Aerial Systems</td>
<td>Durant Bridges and Antti Väätänen, USA/Finland</td>
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<td>Nicholas Caporusso and Jeremiah Still, USA</td>
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<td>Giuseppe Mincolelli and Alessandra Rinaldi, Italy</td>
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**1030-12:30 - COLUMBIA 3**

- Small unmanned aircraft-systems-operations augmented reality user interface types
  - Durant Bridges, USA
- Human–drone interaction: Virtues and vices in systemic perspective
  - Khavanova Inna, Olga Burukina, Russia
- Development of a concept of operations for autonomous systems
  - Antti Väätänen, Jari Laarni and Marko Höyhtyä, Finland
- Visual detection of trespassing of a small unmanned aerial vehicle into an airspace
  - Kai Li, S Chang, Lu Peng, Caijun Zhao, Taiwan
- Taking advantage of swarming to support consistent and predictable behavior of an autonomous system following loss of communications
  - Serge Chaumette, France
- Spatiotemporal analysis of “Jello Effect” in drone videos
  - Yang Cai, Eric Lam, Todd Howlett, Alan Cai, USA

**1030-12:30 - COLUMBIA 4**

- Perceiving behavior of cyber malware with human-machine teaming
  - Yang Cai, Jose Morales, Neta Ezer, USA
- Human-centered cyber situation awareness
  - Vincent Mancuso, Sarah McGuire, Diane Staheli, USA
- Over-the-shoulder attack resistant graphical authentication schemes impact on working memory
  - Jeremiah Still, Ashley Cain, USA
- Comparative evaluation of security and convenience trade-offs in password generation aiding systems
  - Nicholas Caporusso, Michael Stainbrook, USA
- HackIT: A human-in-the-loop simulation tool for realistic cyber deception experiments
  - Palvi Aggarwal, Aksh Gautam, Vaibhav Aggarwal, Cleotilde Gonzalez, Varun Dutt, USA
- Mathematical model of intrusion detection based on sequential execution of commands applying Pagerank
  - Cesar Guevara, Jairo Hidalgo, Marco Yandún, Hugo Arias,
  - Lorena Zapata-Saavedra, Ivan Ramirez-Morales, Fernando Aguilar-Galvez,
  - Lorena Chalco-Torres, Dioselina Pimbosa Ortiz, Ecuador
- Why drive license-free on information highway?
  - Aftab Ahmad, Hak J. Kim, USA

**1030-12:30 - COLUMBIA 9**

- Media convergence in information transmission in museum space
  - Yongbin Wang, Yongbin Wang, China
- User interaction and scenario-based experience design for new media technology in museum spatial experience
  - Jian Yu, Yongbin Wang, China
- Inclusive design practices for natural parks. Products and services for experience-focused solutions in places of high naturalistic value
  - Ivo Caruso, Vincenzo Cristallo, Carlo Martino, Italy
- Inclusive participation design methodologies for digital cultural heritage
  - Giuseppe Mincolelli, Michele Marchi, Italy
- An application for mobile systems developed with the community involvement.
  - An open source mobile application project of a perceptive city map
  - Francesca Bozza, Italy
- The effect of sliding door hardware design on opening operation
  - Satoshi Kose, Yoshiaki Goto, Ken Nunota, Shinji Tanaka, Japan
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| 105 | Advances in Computational Social Sciences  
Co-Chairs: Zining Yang and Sekwen Kim, USA | HFSIM |
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| 10:30-12:30 - COLUMBIA 10 | Diffusion of environmental protectionism: single-use plastic bags ban policy in California  
Zining Yang, Sekwen Kim, USA  
The urban renew case study on a feasibility profit sharing in different development intensity by game theory  
Yuan Yuan Lee, Zining Yang, Oliver Shyr, USA  
Nefarious actors: An agent based analysis of threats to the democratic process  
Nicholas Stowell, Norvell Thomas, USA  
Train intelligent detection system based on convolutional neural network  
Zhang Qiang, Zining Yang, Gao Chunhai, Cheung Virginia, USA | |

| 106 | Human Factors in Game Design II  
Co-Chairs: Kun Chen and Ricardo Navarro, China/Peru | HFGD |
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| 10:30-12:30 - COLUMBIA 11 | Logic evaluation through game-based assessment  
Carlos Arce-Lopera, Alan Perea, Colombia  
Designing experiences: A virtual reality video game to enhance immersion  
Ricardo Navarro, Vanessa Vega, Sergio Martinez, Maria José Espinosa, Daniel Hidalgo, Brian Benavente, Peru  
The design of a WebGL-based 3D virtual roaming system for the “Batu Hitam” shipwreck  
Gantian Bian, Baosheng Wang, China  
Virtual reality and its effect on intrinsic motivation during simulator training  
Salman Nazir, Steven Mallam, Norway  
The design of card game for leukemia children based on narrative design  
Hongzhi Pan, Long Ren, Chenyue Sun, Jiali Zhang, China | |

| 107 | Human Factors and Wearable Technologies II  
Co-Chairs: Chantal Lidynia and Chih-Yu Hsiao, Germany/Taiwan | HFWT |
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| 10:30-12:30 - COLUMBIA 12 | A novel joint angle measurement system to monitor hip movement in children with hip diseases  
Donato Giuseppe Leo, Badr M. Abdullah, Daniel C. Perry, Helen Jones, UK  
Nudging vs. budging: Users’ acceptance of nudging for more physical activity  
Chantal Lidynia, Julia Offermann-van Heek, Martina Ziefle, Germany  
Evaluation of suitable rest times for the use of optical head-mounted displays  
Chih-Yu Hsiao, Yi-An Liu, Mao-Jiun Wang, Taiwan  
Smartphone-based human fatigue detection for daily activities using gait analysis  
Swapnali Karvekar, Ehsan Rashedi, Masoud Abdollahi, USA  
Wearable smart emotion-aware gloves: Development of a new way for people to interact with others  
Shijian Luo, Ping Shan, Chengyi Shen, Zhitong Cui, Ze Bian, Huan Lin, Wenyin Zou, China | |
### Human Error Considerations in Design

**Co-Chairs:** Xiaoli Wu and Salvador Ávila Filho, Japan/Brazil  
**HERRP**

- **Mining human error incident patterns with text classification**  
  Toru Nakata, Japan
- **A risk analysis method for human-machine system based on risk scenario and interaction interface analysis**  
  Xing Pan, Yuhang Jiang, Wenjin Zhang, Xiaoheng Zhao, China
- **Human factors engineering analyses for human system interface of severe accident management support system based on human factors engineering program**  
  Lee Sungheon, Jonghyun Kim, South Korea
- **Research on the evaluation method of human factors for the display and warning system of power plant in aircraft cockpit**  
  Zongpeng Wang, Yundong Guo, Youchao Sun, China
- **Optimization of information interaction interface based on error-cognition mechanism**  
  Xiaoli Wu, Chengcí Xue, Feng Zhou, Linlin Wang, Weiwei Zhang, Tingting Zhang, Ling Xia, China
- **‘To err is human’ but it’s time to go deeper. An analysis of human and system level challenges in the educational testing industry**  
  Irenka Suto, Jo Ireland, UK
- **A pilot error analysis method for the human-machine interface design process of civil aircraft cockpit**  
  Shasha Lu, Yang Zhou, Hongtao Liu, Zhefeng Jin, China

### Human Factors for Technologies in Apparel and Textile Design/Engineering

**Co-Chairs:** F. Moreira da Silva and Gianni Montagna, Portugal  
**HFATE**

- **Distribution of clothing pressure in support knee-high socks and its evaluation**  
  Tamaki Mitsuno, Aya Yamagishi, Mayuko Takenaka, Japan
- **Reliability of anthropometric reference data for children’s product design**  
  Su-Jeong Shin, Mona Maher, USA
- **Formation of the 3D virtual models for clothing fit assessment applied in human factors**  
  Hyunjung Lee, Su-Jeong Shin, USA
- **Research on the characteristics of hand shape in different countries**  
  Jing Zhao, Gang Wu, Chao Zhao, Fan Zhang, Haitao Wang, Xinyu Cao, China
- **Clothing pressure alters brain wave activity in the occipital and parietal lobes**  
  Yunjuan Liu, Yan Wang, Dongsheong Chen, Yingjin Gan, China
- **Development of flame retardant Fiber Reinforced Plastics products embedded with Japan-specific traditional design**  
  Tetsuo Kukuchi, Japan

### Recent Developments in Rapid Prototyping for Assistive Technologies

**Co-Chairs:** Frode Eika Sandnes and Fausto Orsi Medola, Norway/Brazil  
**AMMSP**

- **Using virtual reality and rapid prototyping to co-create together with hospitalized children**  
  Vanessa Ghirardeli Usó, Frode Eika Sandnes, Fausto Orsi Medola, Brazil
- **Avoiding product abandonment through user centered design: A case study involving the development of a 3D printed customized upper limb prosthesis**  
  Amanda Coelho Figliolia, Fausto Orsi Medola, Frode Eika Sandnes, Luis Carlos Paschoarelli, Ana Claudia Tavares Rodrigues, Brazil
- **Evaluation of orthosis rapid prototyping during the design process: Analysis of verification models**  
  Ana Lyra Moya Ferrari, Aline Darc Piculo dos Santos, Guilherme da Silva Bertolaccini, Fausto Orsi Medola and Frode Eika Sandnes, Brazil
- **3D printing as a tool for guiding product design: A teaching experience in the ergonomics course**  
  Rodolfo Nucci Porsani, Bruno Borges da Silva, Luiz Antonio Vasques Hellmeister, Fausto Orsi Medola, Luis Carlos Paschoarelli, Brazil
- **Design and development of a myoelectric upper limb prosthesis with 3D printing: A low-cost alternative**  
  Bruno Borges da Silva, Rodolfo Nucci Porsani, Luiz Antonio Vasquez Hellmeister, Fausto Orsi Medola, Luis Carlos Paschoarelli, Brazil
- **Manufacturing technology in rehabilitation practice: Implications for its implementation in assistive technology production**  
  Idiene Francisco Pires de Carvalho Filho, Fausto Orsi Medola, Frode Eika Sandnes, Luis Carlos Paschoarelli, Brazil
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<td>Analysis of operational efficiency in picking activity on a pipes and fittings</td>
<td>Gustavo Moresco,</td>
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<td><strong>Beyond physical domain, understanding workers cognitive and emotional status to enhance worker performance and wellbeing</strong>&lt;br&gt;Juan Manuel Belda-Lois, Carlos Planell Palop, Andrés Soler, Nicolás Palomares Olivares, Purificación Castelló Mercé, Consuelo Latorre Sánchez, Jose Laparra Hernández, Spain</td>
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Co-Chairs: Paulo Noriega and Francisco Rebelo, Portugal

- Evaluation of behavioral compliance with safety warnings at different levels of cognitive load in warehouses
  - Ana Almeida, Francisco Rebelo, Paulo Noriega, Portugal
- Locomotion-in-place and teleport: Which is the best technique to be used in human behavior research using virtual reality?
  - Inês Galrão, Francisco Rebelo, Paulo Noriega, Portugal
- Influence of distance from observation point to hanging wall on feeling of depth of space behind wall
  - Daiya Nagakura, Yohsuke Yoshioka, Japan
- Openness feeling on height direction in high ceiling room and bending pattern of leading passage
  - Takuya Sugiyama, Yohsuke Yoshioka, Japan
- Exploratory study to investigate the influence of a third person on an individual emergency wayfinding decision.
  - Paulo Noriega, Elisângela Vilar, Francisco Rebelo, Daniel Semedo, Nuno Graça, Portugal
- Emotion through narrative: Validation for user engagement in game context
  - Yanick Trindade, Francisco Rebelo, Paulo Nonege, Portugal
- How deep is a virtual reality experience: Virtual environments, emotions and physiological measures?
  - Paulo Noriega, Tiago Oliveira, José Carvalhais, Francisco Rebelo, Vanessa Cristina Gonçalves Lameira, Portugal

### 119 Communication Design
Co-Chairs: Daniel Raposo and Elsabete Rolo, Portugal

- Communication design as tool for social transformation: A co-design project with the residents of the Rego Neighborhood, in Lisbon
  - Inês Coimbra, Teresa Olazabal Cabral, Portugal
- Boundary dimension design of graphical symbols based on user preference
  - Zhongting Wang, Ling Luo, Linghua Ran, Liang Zhang, China
- An ergonomic assessment on the detectability design of the New Generation Currency (NGC) coin series and Bangko Sentral ng Pilipinas (BSP) coin series
  - Diane Denise Francisco, Patricia Michaela C. Gregorio, Ninna Ysabel G. Layug, Nikole Andrei B. Mallare, Philippines
- The brand mark competitors map as visual research tool. Using graphic and symbolic data in the brand visual identity project
  - Daniel Raposo, Rogério Ribeiro, Mariana Martins Amaral, Juan-R. Martin-Sanroman, Portugal
- A methodology for the analysis of brand visual identity of food products: comprehension and valuation of graphic signs
  - Daniel Raposo, Catarina Laginha, João Neves, Jose Silva, Fernando Moreira da Silva, Portugal

### 120 Innovative Methods and Approaches for System Interaction Design
Co-Chairs: Isabel L. Nunes and Maximilian Zarte, Portugal/Germany

- Learning from employee perceptions of human-work and work-organization in digitized production-drilling activity in mines
  - Mohammed Aminu Sanda, Ghana/Sweden
- Vehicle multi-sensory user interaction design research based on the minds methods
  - Qianqian Wu, Zhang Zhang, China
- System-of-systems approach for sustainable production planning and controlling in manufacturing companies
  - Maximilian Zarte, Agnes Pechmann, Isabel L. Nunes, Germany/Portugal
- Set-top box automated lip-reading controller based on convolutional neural network
  - Yuanyao Lu, Haiyang Jiang, China
- Prototyping in human computer interaction
  - Maryam Afzal, Sidra Perveen, Khadija Akbar, Nazifa Nazir, Mahnoor Dar, Pakistan
### Workplace Safety and Human Factors I
**Co-Chairs:** Nanthawan Am Eam and Mohamed Mokdad, Thailand/Bahrain

**SMHF**

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1. **An evaluation of work posture by REBA: A case study in maintenance department**
   - Nanthawan Am Eam, Thaweeuk Noosom, Kunthara Ninhappho, Patompong Jankaew, Thailand

2. **Welders’ knowledge of personal protective equipment usage and occupational hazards awareness in the Ghanian informal auto-mechanic industrial sector**
   - Mohammed Aminu Sanda, Bouhafs Mebarki, Lahcene Bouabdellah, Ibrahim Mokdad, Bahrain

3. **Safety in date palm tree work in Algeria: The role of belt design and use**
   - Mohamed Mokdad, Bouhafs Mebarki, Lahcene Bouabdellah, Carlo Alberto Avizzano, Massimo Bergamasco, Italy

4. **The Sailport project: A trilateral approach to the improvement of workers’ safety and health in ports**
   - Alessandro Filippeschi, Mauro Pellicci, Federico Vanni, Giulia Forte, Giulia Bassani, Lorenzo Landolfi, Diego De Merich, Giuseppe Campo, Carlo Alberto Avizzano, Massimo Bergamasco, Italy

5. **Human-system interaction design requirements to improve machinery and systems safety**
   - Peter Nickel, Peter Bärenz, Siegfried Radandt, Urs Kaufmann, Luigi Monica, Hans-Jürgen Bischoff, Manobhiram Nellutla, Germany

### Physical Ergonomics and Work-Related Musculoskeletal Disorders I
**Co-Chairs:** Henrijs Kalkis and Zenija Roja, Latvia

**PEHF**

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1. **Quantification of the impact of existing vs. enhanced radiation therapy workspace configuration on human performance**
   - Prithima Reddy Mosaly, Lukasz Mazur, USA

2. **Influence of the upper limb position on the forearm EMG activity-Preliminary results**
   - Ilona Kačerová, Marek Bures, Martin Kába, Tomáš Görner, Czech Republic

3. **Physical workload analysis in processing operations: Metal processing manufacturing**
   - Zenija Roja, Henrijs Kalkis, Kristine Bokse, Inara Roja, Sandis Babris, Ansis Ventins, Latvia

4. **The role of stakeholders in E-occupational health and safety system in Estonia**
   - Inese Vilcane, Tarmo Koppel, Henrijs Kalkis, Olga Tsenter, Pia Tint, Estonia

5. **The effects of different resting methods on musculoskeletal disorders after prolonged standing tasks**
   - Ei-Wen Lo, Wan-Hui Chen, Taiwan

### Social and Occupational Ergonomics: Evaluation, Optimization and Job Design
**Co-Chairs:** Hebert Roberto da Silva and Zbigniew Wisniewski, Brazil/Poland

**SOE**

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1. **The ergonomics of sorting recyclable materials: A case study of a Brazilian cooperative**
   - Hebert Roberto da Silva, Brazil

2. **Effectiveness of prosthetic adaptation and users’ satisfaction: Comparison between different technologies**
   - Maria Patrizia Orlando, Claudia Giliberti, Fabio Lo Castro, Raffaele Maricone, Lucia Longo, Italy

3. **Handheld grass cutter machine with supporting wheel**
   - Mayur Mhamunkar, Sagar Bagane, Lokesh Kolhe, Vikrant Singh, Mohit Ahuja, Yueqing Li, USA

4. **Ergonomic evaluation in the Ecuadorian workplace**
   - Oswaldo Jara, Fanny Ballesteros, Esteban Carrera, Pablo Davila, Ecuador

5. **Path analysis of the antecedents and occupational stress among managers of the textile industries: a cross-sectional study from Pakistan using PLS-SEM**
   - Aftab Ahmad, Amjad Hussain, Mohammad Pervez Mughal, Nadeem Ahmad Mufti, Muhammad Qaiser Saleem, Pakistan

6. **Inclusion of the informal sector pension provision under the new pensions act**
   - Olivia Anku-Tsede, Ghana
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Margaret Bailey, Teresita Sotomayor, Ian Dykens, USA

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Angela Jeter, Valerie Rice, Jessica Villarreal, Cory Overby, USA

The medical synthetic training environment (mSTE): Supporting the Army’s STE Cross Functional Team (CFT)
Beth Pettitt, Jack Norfleet, USA

Optimizing occupational safety through 3D simulation and immersive virtual reality
Ebo Kwewiyir-Afful, Maria Lindholm, Jussi Kantola, Sulaymon Tajudeen, Sara Tilabi, Finland

Same task, different place: Developing novel simulation environments with equivalent task difficulties
Benjamin T. Files, Ashley H. Oiknine, Jerald Thomas, Peter Khooshabeh, Anne M. Sinatra, Kimberly A. Pollard, USA

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Hung Tran, USA

3D user interface for a multi-user augmented reality mission planning application
Simon Su, Vincent Perry, Heather Roy, Katherine Gamble, Sue Kase, USA

131 Design and Innovation for 3D Printing
Co-Chairs: Massimo Di Nicolantonio and Martijn ten Bhömer, Italy/China
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Ma(r)kers: Digital fabrication as opportunity for enhancing territories through hacking, personalization, traces
Annapaola Vacanti, Xavier Ferrari, Raffaella Fagnoni, Andrea Vian, Italy

Sustainable 3D Printing: Design opportunities and research perspectives
Emilio Rossi, Massimo Di Nicolantonio, Paola Barcarolo, Jessica Lagatta, Italy

3D printing to innovate the guitar design
Antonio Marano, Italy

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Gabriele Goretti, Elisabetta Cianfanelli, Benedetta Tenerzi, Margherita Tufarelli, Eleonora Trivellin, Italy

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Marco Marseglia, Eleonora Trivellin, Elisabetta Cianfanelli, Margherita Tufarelli, Gabriele Goretti, Italy

CAD/CAM technology application in treatment of complex craniofacial bone defects
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APMPC

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Maria Marcela Solís-Quinteros, Luis Alfredo Avila Lopez, Carolina Zayas-Marquez, Teresa Carrillo-Gutierrez, Kanra Arredondo-Soto, Mexico

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Zhang Fan, Yue Zhang, Zhao Chao, Jing Zhao, Gang Wu, Haitao Wang, Xinyu Cao, China

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Kevin Rojas, Vidal Aramburu, Carlos Raymundo, Javier M. Moguerza, Edgar Ramos, Peru

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Marcio Filomeno, Josemaria Heracles, Vidal Aramburu, Carlos Raymundo, Javier M. Moguerza, Peru

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Co-Chairs: Zining Yang and Tim Lauer, USA/Germany

**AISC**

- **13:30-15:30 - FAIRCHILD WEST**
  - Association matrix method and its applications in mining DNA sequences
    Guojun Mao, China
  - Siri, how to design a procedure? Applying machine learning & natural language processing in procedure design
    Nilesh Ade, Camille Peres, Noor Qudus, USA
  - Deep-learning artificial intelligence and system-informational culture ergonomics
    Nicolay Vasilyev, Vladimir Gromyko, Stanislav Anosov, Russia
  - Deep learning-based real-time failure detection of storage devices
    Chuan-Jun Su, Lien-Chung Tsai, Shi-Feng Huang, Yi Li, Taiwan
  - Behavioral analysis of human-machine interaction in the context of demand planning decisions
    Tim Lauer, Rebecca Welsch, S. Ramlah Abbas, Henke Michael, Germany
  - Identifying touristic interest using big data techniques
    Maritzol Tenemaza, Edison Loza, Myriam Peñafiel, Juan Pablo Zaldumbide, Angélica De Antonio, Jaime Ramirez, Ecuador

**15:30-16:00** Refreshments will be provided in Columbia West (Terrace Level)

### 134 Neurobusiness Applications
Co-Chairs: Rajneesh Suri and Hasan Ayaz, USA

**CN**

- **16:00-18:00 - MORGAN**
  - Using fNIRS and EDA to investigate the effects of messaging related to a dimensional theory of emotion
    Jan Watson, Amanda Sargent, Yigit Topoglu, Hongjun Ye, Wenting Zhong, Rajneesh Suri, Hasan Ayaz, USA
  - Brain based assessment of consumer preferences for cognition enhancing hot beverages
    Amanda Sargent, Jan Watson, Yigit Topoglu, Hongjun Ye, Wenting Zhong, Rajneesh Suri, Hasan Ayaz, USA
  - The effects of advertising on cognitive performance
    Hongjun Ye, Siddharth Bhatt, Wenting Zhong, Amanda Sargent, Jan Watson, Yigit Topoglu, Rajneesh Suri, Hasan Ayaz, USA
  - The effects of incentives in a choice-based conjoint pricing study
    Hongjun Ye, Siddharth Bhatt, Wenting Zhong, Jan Watson, Amanda Sargent, Yigit Topoglu, Rajneesh Suri, Hasan Ayaz, USA
  - Electrodermal activity in ambulatory settings: A narrative review of literature
    Yigit Topoglu, Jan Watson, Rajneesh Suri, Hasan Ayaz, USA
  - Reliability of consumer choices for conflicting price promotions
    Amanda Sargent, Jan Watson, Yigit Topoglu, Hongjun Ye, Wenting Zhong, Hasan Ayaz, Rajneesh Suri, USA
  - The neuromodulation of attention: How to be a more effective speaker
    Merrill Liechty, Robert Phillips, Hasan Ayaz, Siddharth Bhatt, USA

### 135 Simulation, Altered Reality and Swarm Supervisory Control
Chair: Ryan McKendrick, USA

**CN**

- **16:00-18:00 - HOLMEAD WEST**
  - Twisted: Performance implications of presence and task difficulty in virtual command and control planning
    Robert Noneman, Erin Cherry, USA
  - Towards a model of mutualistic human-machine teaming
    Ryan McKendrick, USA
  - Designing a graphical user interface to allow users to accurately interpret fNIRS data with minimal training
    Amanda Harwood, Norman Greenberg, Ryan McKendrick, Carmen Sims, USA
  - Identifying groups of people with similar patterns of brain activation using fNIRS time series data and unsupervised machine learning
    Brian Falcone, Bradley Feest, Amanda Harwood, Ryan McKendrick, USA
  - S-SMART: Sliding-window spline-based motion artifact reconstruction technique for functional near infrared spectroscopy
    Adrian Curtin, Hasan Ayaz, USA
  - Non-visual human-robot communication for superior battlefield situation awareness
    Ryan McKendrick, USA
  - Human-machine sensory fusion for indoor localization with a hyper-reality helmet
    Yang Cai, USA
| 136 | **User Research**  
Co-Chairs: Pedro Mendonca and Jarosław Tokarczyk, Portugal/Poland | ED |
|-----|------------------------------------------------------------------------------------------------------------------|----|
| **Research on human-computer interaction design of bed rehabilitation equipment for the elderly**
Zhijuan Zhu, Wenzhen Pan, Xin Ai, Renjun Zheng, China |
| **Comparative analysis of body measurement and morphology between subjects with different body mass index**
Caelen Teger Silva, Maria Lucia Okimoto, Brazil |
| **A new tool for cognitive workload assessment in system design prototypes**
Pedro Mendonca, Manuel Abreu, Portugal |
| **A study on the correlation of head and face data of Chinese adults**
Linghua Ran, Chaoyi Zhao, Hong Luo, Xin Zhang, Taijie Liu, Huimin Hu, Zhongting Wang, China |
| **Development of an ergonomically designed back pack for junior high school students**
Emmanuel Oliver Porciuncula, Leonard Aquino, Daniel Araneta, Jeremiah Austria, Briant Angelo Censon, John Michael Cruz, Patrick Henry Fernandez, Kent Xavier Moreno, Joshua Ng, Genhino Glenn Reyes, Aroma Santillan, Wendy Jimver De Guia, Philippines |
| **Review of the research on car seating comfort**
Xiaoli Fan, Chaoyi Zhao, Xuemei Chen, Yuwei Jiang, Yongjia Shen, Tong Shen, China |

| 137 | **Medical Device Development**  
Co-Chairs: Helen Fuller and Timothy Arnold, USA | EHMD |
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| **Multi-frameworks development for the medical device design process as a critical factor for innovation**
Fabiola Cortes Chavez, Alberto Rossa-Sierra, Elvia Luz González-Muñoz, Carlos Acues-Gonzalez, Paulina Manzano-Hernandez, Mana Giovanna Trotta, Mexico |
| **Research on sleeping posture recognition method based on pressure sensor**
Huihan Wang, Wan Chang Yuan, China |
| **Finding health care usability and safety issues in consumer product reviews**
Helen Fuller, Timothy Arnold, USA |
| **A guide to drive medical devices development through human factors inclusion: Building a value proposition for local projects.**
Ilse Ivette Reyes Bautista, Gloria Adriana Mendoza Franco, Angel Luis Rodriguez Morales, Mexico |
| **Preventing chemotherapy-induced onycholysis with the use of an active local cooling device**
Muriel De Boeck, Jochen Vleugels, Marc Peeters, Guido De Druyne, Belgium |
| **A national coalition to address safe integration of complex healthcare technology**
James Piepenbrink, USA |

| 138 | **Transportation: Aviation**  
Co-Chairs: Amelia Kinsella and Lauren Thomas, USA | AVI |
|-----|----------------------------------------------------------------------------------------------------------------|----|
| **Considering single piloted airliners for different flight durations: An issue of fatigue management**
Daniela Schmid, Neville Stanton, Germany/UK |
| **Ergonomic assessment of instructors’ capability to conduct personality-oriented training for air traffic control personnel**
Oleksii Reva, Sergii Borsuk, Valeri Shulgin, Serhii Nedbay, Ukraine |
| **The human element in performance based navigation: Air traffic controller acceptance of established on required navigation performance procedures**
Lauren Thomas, Alicia Serrato, USA |
| **How does national culture help pilots in navigating in different environment**
Xiaoyu Wu, USA |
| **Human reliability quantification in flight through a simplified CREAM method**
Yundong Guo, Youchao Sun, China |
| **An eye in the sky: Developing a novel framework for visual air traffic control tower tasks**
Amelia Kinsella, Lori Smith, Rebecca Collins, Katherine Berry, USA |
| **Monitoring performance measures for radar air traffic controllers using eye tracking techniques**
Hong Jie Wee, Sun Woh Lye, Jean-Philippe Pinheiro, Singapore |
| 139 | Workplace Safety and Human Factors II  
Co-Chairs: Douglas Minnema and Yang Song, USA/China | SMHF |
|---|---|---|
| Development of assistive technologies in additive manufacturing (AM) for people with disabilities  
Eloiza Aparecida Silva de Matos, Ângela Paloma Zelli Wiedemann, Brazil | 16:00-18:00 - COLUMBIA 2 |
| How ergonomics is contributing to overall equipment effectiveness: A case study  
Isabel Loureiro, Celina Leão, Nelson Costa, Mariana Rodrigues, Portugal |  |
| A susceptibility model for organizational accidents  
Douglas Minnema, Monique Helfrich, USA |  |
| Theory of safety quantification and equivalence oriented industrial system  
Yang Song, Xuefei Yang, China |  |
| Determination of safe work practiced in a confine space work:  
A case study research of an organization in Onne, Nigeria  
Mercy Osato Omoifo-Irefo, Nigeria |  |
| Management of atmospheric hazards in a confined work space in Nigeria:  
A case study research of an organization in River State, Nigeria  
Mercy Osato Omoifo Irefo, Nigeria |  |
| Recognition and assessment of ergonomic stressors in VDT workstations  
Namrata Arora Charpe, Vandana Kaushik, India |  |

| 140 | Safety Culture, Climate, Training and Education  
Co-Chairs: Jacky Yu Ki Ng and Barry Kirwan, China/France | SMHF |
|---|---|---|
| Aggregate-level data characteristics of safety climate with different Likert-type scales  
Siu Shing Man, Jacky Yu Ki Ng, Kar Ying Law, Alan Hoi Shou Chan, China | 16:00-18:00 - COLUMBIA 3 |
| Next generation safety culture  
Barry Kirwan, France |  |
| Role of human safety intervention on the impact of safety climate on workers safety behaviours in construction projects: A conceptual model  
Emmanuel B. Boateng, Peter Davis, Manikam Pillay, Australia |  |
| Developing a safety culture index for construction projects in developing countries: A proposed fuzzy synthetic evaluation approach  
Emmanuel Boateng, Manikam Pillay, Peter Davis, Australia |  |
| Safety culture as a team sport: The football metaphor  
Frank Guldenmund, Dylan Smibert, The Netherlands |  |
| Safety training and occupational accidents – is there a link?  
Susana Costa, Celina Leão, Portugal |  |
| Process safety competence of vocational students  
Sari Tappura, Noora Nenonen, Sanna Nenonen, Jouni Kivistö-Rahnasto, Finland |  |

| 141 | Road and Rail: Usability  
Co-Chairs: Sabrina Moran and Kirsten Revell, USA/UK | RR |
|---|---|---|
| Development of a prototype steering wheel for simulator-based usability assessment  
James Brown, Neville Stanton, Kirsten Revell, UK | 16:00-18:00 - COLUMBIA 4 |
| User-centered development of a public transportation vehicle operated in a demand responsive environment  
Alexander Mueller, Stefanie Beyer, Oliver Deisser, Gerhard Kopp, Germany |  |
| Human factors concerns: drivers’ perception on electronic side view system in 21st century cars  
Bankole Fasanya, Yashwanth Avula, Kunta Sivaramakishna, Bharath Kummari, Supraja Aragattu, Swetha Keshavula, USA |  |
| Should I stay or should I go? - Influencing context factors for users’ decisions to charge or refuel their vehicles  
Ralf Philipsen, Teresa Brell, Hannah Bierrmann, Waldemar Brost, Teresa Eickels, Martina Ziefle, Germany |  |
| Are you sitting comfortably? How current self-driving car concepts overlook motion sickness, and the impact this has on comfort and productivity  
Joseph Smyth, Paul Jennings, Stewart Birrell, UK |  |
### 142 Social and Occupational Factors of Comfort, Risk Assessment and Pain

**Co-Chairs:** Alessio Silvetti and Z. Shaghayegh Bagheri, Italy/Canada

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<td>Ergonomic risk assessment of sea fisherman part III: Manual handling and static posture</td>
<td>Alessio Silvetti, Elio Munafò, Alberto Ranavolo, Antonella Tatarella, Lorenzo Fiori, Sergio Iavicoli, Pasquale Di Palma, Francesco Draicchio, Italy</td>
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<td>Comparisons of three observational ergonomic tools for risk assessment on upper extremities in a pump assembly plant – a pilot study</td>
<td>Meng-Chuan Ho, Ei-Wen Lo, Taiwan</td>
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<td>Reducing the risk of falls by 78% with a new generation of slip resistant winter footwear</td>
<td>Z. Shaghayegh Bagheri, Jose Diaz Beltran, Paul Holyoke, Kenneth Hutchinson, Gioconda (Joco) Del Sole, Tilak Dutta, Canada</td>
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<td>Ergonomics during the construction of the stations and the drilling of the tunnel in the metro of the city of Quito</td>
<td>Esteban Carrera, Oswaldo Jara, Pablo Davila, Fanny Ballesteros, Pablo Susnavas, Ecuador</td>
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<td>The prediction models of the maximum power grip strength and pinch strength in Taiwan manufacturing workers</td>
<td>Shu-Min Chao, Ei-Wen Lo, Yi-Chen Chiu, Taiwan</td>
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### 143 Management of Productivity by Using Assistance Systems

**Co-Chairs:** Tim Jeske and Benjamin Adrian, Germany

**SYSI**

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<td>16:00-18:00</td>
<td>COLUMBIA 10</td>
<td>Method for measuring the application potential of assembly assistance systems</td>
<td>Sven Bendzioch, Benjamin Adrian, Sven Hinrichsen, Manfred Bornemann, Germany</td>
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<td>Automatic particle classification through deep learning approaches for increasing productivity in the technical cleanliness laboratory</td>
<td>Ronny Zwinkau, Roman Möhle, Simon Frentrup, Jochen Deuse, Germany</td>
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<td>Digital assembly assistance systems - a case study</td>
<td>Alexander Nikolenko, Philip Sehr, Sven Hinrichsen, Sven Bendzioch, Germany</td>
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<td>How to combine lean, human factors and digital manufacturing - a teaching concept</td>
<td>Benjamin Adrian, Sven Hinrichsen, Alexander Nikolenko, Frederic Meyer, Germany</td>
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<td>Automation configuration evaluation in adaptive assembly systems based on worker satisfaction and costs</td>
<td>Peter Burggraef, Matthias Dannapfel, Tobias Adlon, Aaron Riegauf, Jessica Schimied, Germany</td>
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<td>Towards a mobile assistance system to raise productivity in maintenance</td>
<td>Michael Wächter, Thomas Löffler, Angelika C. Bullinger, Germany</td>
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<td>Smart devices evaluation and dynamic cognitive assistance system for repair processes in production</td>
<td>Rainer Müller, Leenhard Hoerauf, Attique Bashir, Christoph Speicher, Matthias Vette-Stéenkamp, Ralf Mueller-Polyzou, Germany</td>
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### 144 Management and Leadership of Company and Organizational Cultures

**Co-Chairs:** Aleksandra Polak-Sopinska and Zbigniew Wisniewski, Poland

**HFBMS**

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<td>16:00-18:00</td>
<td>COLUMBIA 11</td>
<td>The use of ergonomic methods for ensuring the competitiveness of business structures</td>
<td>Yulia Salnikova, Larisa Namestnikova, Inna Marahovskaya, Antonina Pakhomova, Russia</td>
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<td>Attracting tertiary international students to the EHEA: Does continent of origin matter?</td>
<td>Timjen Weber, Florentin Popescu, The Netherlands</td>
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<td>The role of leadership in organizations managed in conformity with ISO 9001 quality management system standard</td>
<td>Anna Walaszczyk, Aleksandra Polak-Sopinska, Poland</td>
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<td>Computer-aided occupational risk assessment of physical workload in the Logistics 4.0</td>
<td>Anna Maczewska, Aleksandra Polak-Sopinska, Zbigniew Wisniewski, Poland</td>
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<td>Resistance in the change process</td>
<td>Zbigniew Wisniewski, Aleksandra Polak-Sopinska, Anna Maczewska, Tomasz Berner, Poland</td>
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<td>Selecting the business information security officer with ECU@Risk and the critical roles model</td>
<td>Esteban Crespo-Martínez, Ecuador</td>
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<td>Julia L. Wright and Shan G. Lakhmani, USA</td>
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<td>Communication Design I</td>
<td>Laura Giraldi and Edward Chor Kin Hung</td>
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<td>Kansei Engineering I</td>
<td>Tetsuo Inoue and Jiayin Lu</td>
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### Human Factors and Assistive Technology III
Co-Chairs: Hyung Nam Kim and Stijn Verwulgen, USA/Belgium

**16:00-18:00 - HOLMEAD EAST**

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<td>Voice technology for self-care in older adults with visual impairments</td>
<td>Hyung Nam Kim, USA</td>
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<td>Abstract vocabulary as base for training with pattern recognition EMG control</td>
<td>Erik Haring, Seth Van Akeleyen, Kristof Vaes, Steven Truijen, Stijn Verwulgen, Belgium</td>
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<td>An eye tracking system to perform the Wechsler Intelligence Scale for children (WISC-V) test</td>
<td>Karla Andrade, Omar Alvarado, Patricia Margarita Ortega Chasi, Martha Cobos, Ecuador</td>
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<td>Study of voice-based crowdsourcing platform for the enhancement of self-support for the visually impaired</td>
<td>Ga Ram Song, Jini Kim, Ha Yeong Kim, Eunseo Kim, South Korea</td>
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<td>Design of health control applied to elderly people’s resistance exercise device</td>
<td>Tang-Yung Hsu, Fong-gong Wu, Hsi-Jen Chen, Taiwan</td>
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### Affective Value and Kawaii Engineering
Co-Chairs: Michiko Ohkura and Hiroko Shoji, Japan

**8:00-10:00 - MORGAN**

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<td>Age and gender differences in expression of two-color impressions</td>
<td>Takashi Sakamoto, Toshikazu Kato, Japan</td>
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<td>Gender differences in the influence of interaction with product information on selection results</td>
<td>Yuri Hamada, Kenta Fukuda, Hiroko Shoji, Japan</td>
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<td>Communication in which ambiguity triggers value creation</td>
<td>Hiroko Shoji, Yuri Hamada, Japan</td>
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<td>Evaluation of kawaii feelings caused by stuffed animals to reduce stress</td>
<td>Michiko Ohkura, Takafumi Tombe, Hina Arashina, Peeraya Sripian, Japan</td>
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<td>The analysis of kawaii fashion in Thailand and Japan using colorfulness metrics</td>
<td>Peeraya Sripian, Keiko Miyatake, Kejkaew Thanasuan, Michiko Ohkura, Japan</td>
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<td>Sensory engineering in the IoT connected society</td>
<td>Shuichi Fukuda, Japan</td>
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### Transportation: Aviation and Space
Co-Chairs: Daniela Schmid and Simon Cookson, Germany/Japan

**8:00-10:00 - HOLMEAD WEST**

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<td>Overwritten or unrecorded: A study of accidents &amp; incidents in which cockpit voice recorder data were not available</td>
<td>Simon Cookson, Japan</td>
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<td>Using human factors methods to optimise Sydney tower’s digitisation</td>
<td>Damien Armenis, Australia</td>
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<td>Applying virtual and augmented reality to train air traffic controllers</td>
<td>Jason Kring, Rafael Patrick, Michael Sawyer, USA</td>
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<td>Predicting error on the flight deck: What can go wrong when dealing with an aircraft engine oil leak?</td>
<td>Victoria Banks, Katie Parnell, Katie Plant, Craig Allison, Neville Stanton, UK</td>
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<td>Flight Eye Tracking Assistant (FETA): Proof of concept</td>
<td>Christophe Lounis, Vsevolod Peysakhovich, Mickael Causse, France</td>
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<td>Cognitive architecture based mental workload evaluation for spatial fine manual control task</td>
<td>Yanfei Liu, Zhiqiang Tian, Yuzhou Liu, Jusong Li, Feng Fu, China</td>
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<td>Eye tracking-based workload and performance assessment for skill acquisition</td>
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<td>Towards trustworthy man-machine synchronization</td>
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<td>Promoting soldier cognitive readiness for battle tank operations through biosignal measurements</td>
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<td>A change in the dark room: Effects of human factors and cognitive loading issues for NextGen TRACON air traffic controllers</td>
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<td>Study on mental workload assessment of tank vehicle operators</td>
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<td>Can you expand the mind? Examining the effectiveness of a digital cognitive intervention on working memory capacity and transfer to submarine tasks</td>
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<td>Comparative analysis of machine learning techniques in assessing cognitive workload</td>
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<td>Design ergonomics for human beings and wild animals in densely populated cities: A design case in Hong Kong country parks</td>
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<td>Influence of misdirecting of street orientation on identification speed of known street scape</td>
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<td>Body movement while walking and spatial frequencies of corridor wall texture</td>
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<td>Relationship with the self-position detection by using landmarks and peripheral vision</td>
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<td>Exploring design requirements of outdoor fitness equipment for young people</td>
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<td>Research on guiding sign ergonomic setting based on visual sensitivity in long and narrow passageway</td>
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<td>Pattern of postural sway of diabetic peripheral neuropathy people</td>
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<td>Medical error disclosure: A Canadian perspective in improving quality of health care</td>
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<td>Quality assessment and management: An overview of concordance and discordance rates between clinical and autopsy diagnoses</td>
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<td>An interactive device for reducing risk of infusion therapy and blood transfusions</td>
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<td>Towards a deeper understanding of conceptual models that incorporate patient safety</td>
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<td>Analysis of the factors affecting occupational health of nursing personnel in Indian context</td>
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**COLUMBIA 2**

- **Threshold concepts and design for social change**
  Nicos Souleles, Ana Margarida Ferreira, Stefania Savva, Cyprus/Portugal
- **Sustainable collaborative design practices: Circular economy and the new context for a fashion designer**
  Lucinda Morrissey, Roberta Barban Franceschi, Ana Margarida Ferreira, Spain/Portugal
- **Cultural heritage, collaborative practices and sustainable fabric design: Ottoman sultans’ life stories on jacquard design**
  Pınar Arslan, Ana Margarida Ferreira, Hatice Feriha Akpinarli, Turkey/Portugal
- **The common-sense assessment of sustainability**
  David Camocho, José Vicente, Ana Margarida Ferreira, Portugal
- **Analysis of the short-term absences of poultry slaughterhouse workers in Brazil**
  Natália Fonseca Dias, Adriana Seára Tirloni, Diogo Cunha dos Reis, Antônio Renato Pereira Moro, Brazil
- **Construction ergonomics: Temporary works’ manufacturers’ perceptions and practices**
  John Smallwood, South Africa

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<td>Workplace Safety and Human Factors III</td>
<td>Nelson Costa and Bettina Mrusek, Portugal/USA</td>
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**COLUMBIA 3**

- **Integrated management is disaster: A discussion of competences in a real simulation**
  Salvador Ávila Filho, Ivone Cerqueira, Julio Nascimento, Pedro Arezes, Valter Conceição Mascarenhas Junior, Cassio Brunoro Ahumada, Camille Peres, Brazil
- **Implementing the REPAIRER human factors safety reporting system through MRM(MxHF) to meet SMS compliance in aviation maintenance**
  Bettina Mrusek, Mark Miller, USA
- **Influence of the human factor on the risk of work on scaffolding**
  Katarzyna Szaniawska, Krzysztof Czarnocki, Zbigniew Wisniewski, Małgorzata Wisniewska, Poland
- **Occupational psychosocial toxicity in health workers of radiological units in Bogotá-Colombia**
  Olga Helena Piñeros Mora, Carlos Armando Marin Valencia, Colombia
- **Occupational exposure to heat in outdoor activities in building construction in southeastern Brazil**
  Thais Santiago Barros, Adriana Amorim, Lucila Labaki, Paulo Maia, Alex Marcelo, Brazil
- **Flow down of safety influenced by working on commercial construction projects**
  Ann Marie Dale, Bradley A. Evanoff, USA

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<td>160</td>
<td>Social and Occupational Ergonomics Stress, Mental Factors and Musculoskeletal Disorders</td>
<td>Francesco Draicchio and Ardiyanto Ardiyanto, Italy/USA</td>
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**COLUMBIA 4**

- **The contribution of myoelectric parameters to biomechanical overload risk assessment in an industrial printing plant**
  Lorenzo Fiori, Alessio Silvetti, Antonella Tatarelli, Francesco Draicchio, Italy
- **Prevalence, risk factors and impact on low back pain among nurses in a Thai public hospital**
  Manutchanok Jongprasithporn, Thailand
- **The development of a comprehensive list of risk factors for hip work-related musculoskeletal disorders: Delphi survey**
  Ardiyanto Ardiyanto, Steven Lavender, Stephanie Di Stasi, Carolyn Sommerich, USA
- **Psychosocial risk and psychological attachment: The mediating role of job satisfaction**
  Michael Ntow, Evans Sokro, Noble Osei-Bonsu, Ophelia Zungbey, Ghana
- **Mobbing in service companies in Colombia. A silent enemy**
  Carlos Armando Marin Valencia, Olga Helena Piñeros Mora, Colombia
- **Neck and shoulder muscle fatigue in high performance aircraft pilots: A case study of effects of a training program**
  Giorgia Chini, Alessio Silvetti, Marco Lucertini, Roberto Vitalone, Valeria Di Nuzio, Elena Lucertini, Francesco Draicchio, Italy
- **Comparative analysis of the assessment methods of the rehabilitative-prosthetic path of the patient with lower limb prosthesis**
  Francesco Draicchio, Antonella Tatarelli, Simona Castellano, Ida Poni, Lorenzo Fiori, Alessio Silvetti, Patrizio Rossi, Italy
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<td>161 UUE</td>
<td>Usability and User Experience Applications III</td>
<td>Xiuxia Wang and Tong Shen, China</td>
<td>COLUMBIA 9</td>
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<td>Research on electronic lock structure evaluation based on user experience</td>
<td>Zhongting Wang, Na Lin, Ling Luo, Linghua Ran, Chaoyi Zhao, China</td>
<td>COLUMBIA 9</td>
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<td>The usability of interactive interfaces design of intelligent household appliances: Take smart sweeping robots as an example</td>
<td>Na Lin, Tong Shen, Chaoyi Zhao, China</td>
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<td>Research on emotional design of electric power products in experience economy era</td>
<td>Huajie Wang, Shanwei Zhang, Jingping Li, Jiaming Bao, Qingqin Zhu, China</td>
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<td>Research on the regeneration of endangered traditional handicraft art in modern life: Taking the bamboo knitting art of Dongyang as an example</td>
<td>Xiuxia Wang, Shanwei Zhang, Siyuan Zhang, Yuan Chen, China</td>
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<td>Interface design of GIS system based on visual complexity</td>
<td>Siyi Wang, Chengqi Xue, Jing Zhang, Junkai Shao, China, China</td>
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<td>Enabling SMEs to conduct user research: experience with and adaption of UX concept exploration</td>
<td>Doris Janssen, Nora Fronemann, Kathrin Pollmann, David Blank, Germany</td>
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<td>Design principles for increasing the comprehensibility of Icons in HMIIs through motion design</td>
<td>David Blank, Ravi Kanth Kosuru, Germany</td>
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<td>162 TELSI</td>
<td>Human Computer Interaction in e-Health and Environmental Applications</td>
<td>Jorge Luis Pérez Medina and Patricia Acosta-Vargas, Ecuador</td>
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<td>8:00-10:00</td>
<td>Evaluation of the usability of a mobile application for public air quality information</td>
<td>Jorge Luis Pérez Medina, Rasa Zalakevičiute, Yves Rybarczyk, Ecuador</td>
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<td>User experience assessment of a tele-rehabilitation platform: The physiotherapist perspective</td>
<td>Jorge Luis Pérez Medina, Karina Jimenes-Vargas, Patricia Acosta-Vargas, Yves Rybarczyk, Mario Gonzalez, Ecuador</td>
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<td>Evaluation of smart phone open source applications for air pollution</td>
<td>Rasa Zalakevičiute, Katuska Alexandrino, Patricia Acosta-Vargas, Jorge Luis Pérez Medina, Wilmar Hernandez, Ecuador</td>
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<td>Heuristic method of evaluating accessibility of mobile applications for air quality monitoring</td>
<td>Patricia Acosta-Vargas, Luis Salvador-Ullauri, Jorge Luis Pérez Medina, Rasa Zalakevičiute, Wilmar Hernandez, Ecuador</td>
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<td>Remote monitoring air quality in dangerous environments for human activities</td>
<td>David Pozo, Santiago Solórzano, Jorge Luis Pérez Medina, Kevin Jaramillo, Ricardo-Armando López-Molina, Rasa Zalakevičiute, Ecuador</td>
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<td>Improving web accessibility: Evaluation and analysis of a telerehabilitation platform for hip arthroplasty patients</td>
<td>Patricia Acosta-Vargas, Mario Gonzalez, Jorge Luis Pérez Medina, Karina Jimenes Vargas, Yves Rybarczyk, Ecuador</td>
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<td>Paweł Pietras and Yulia Salnikova, Poland/Russia</td>
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<td>Job interview game for high functioning autist</td>
<td>Johan de Heer, Rafal Hryniewicz, Thomas de Groot, Emine Poyraz, The Netherlands</td>
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<td>Antecedents to training engagement</td>
<td>Nadzia Alimon, Roziana Shaari, Lily Suriani Mohd Arif, Shah Rollah Abdul Wahab, Nazry Yahya, Malaysia</td>
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<td>The impact of employees’ own knowledge on the effectiveness of project managers’ development programs</td>
<td>Paweł Pietras, Maciej Szczepańczyk, Poland</td>
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<td>Students’ independent learning activity as an effective method of acquiring professional competencies</td>
<td>Yulia Salnikova, Margarita Salnikova, Valentina Stolyarova, Marina Soroka, Russia</td>
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<td>Analysis of types, positioning and appearance of visualizations in online teaching environments to improve learning experiences</td>
<td>Jessica Brandenburger, Manfred Constapel, Horst Hellbrück, Monique Janneck, Germany</td>
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Global and Industrial Perspectives on People-Centered Design
Co-Chairs: Carlos Aceves-Gonzalez, Daniele Busciantella and Gian Andrea Giacobone, Mexico/Italy

A new approach for an inclusive yacht design
Paolo Ferrari, Italy

Human centered design and quality function deployment: understanding needs on a multidisciplinary automotive research
Gian Andrea Giacobone, Giuseppe Mincolelli, Italy

Accessibility evaluation of automated vending machines
Nicholas Caporusso, Kingsley Udenze, Asibi Imaji, Spencer Romeiser, Yanjun Li, Yangyang Cui, USA

Design of a wheelchair for low-income countries, the second stage of a project
Alberto Rossa-Sierra, Fabiola Cortes Chavez, David Vidana-Zavala, Maria Giovanna Trotta, Mexico

User attitudes towards wheelchairs - a Mexican case study with special focus on vulnerable wheelchair users and wheelchair assistants.
Paulina Manzano-Hernandez, Fabiola Cortes Chavez, Maria Giovanna Trotta, Alberto Rossa-Sierra, Carlos Aceves-Gonzalez, Mexico

Inclusion of children with Down Syndrome through the creation and use of a learning object
Rita Almendra, Mariana Elvas, Portugal

Understanding visual information processing for American vs. Saudi Arabian users
Yahya Alqahtani, Michael McGuire, Joyram Chakraborty, Jinjuan Feng, USA

Applications in Software, Service and Systems Engineering II
Co-Chairs: Francesca de Rosa and Obaid Aljobaly, Italy/Saudi Arabia

Evaluation of the Saudi construction industry for adoption of building information modeling
Abdulaziz Banawi, Obaid Aljobaly, Saudi Arabia

Cognitive ergonomic evaluation metrics and methodology for information interactive system
Yu Zhang, Ting Jiang, Jianhua Sun, China

Towards a coherent assessment of situational awareness to support system design in the maritime context
Francesca de Rosa, Anne-Laure Jousselme, Italy

Parametric study of pin-fins microchannel heat exchanger
Fadi Alnaimat, Bobby Mathew, Mohammed Ziauddin, UAE

Energy-efficient analysis in wireless sensor networks applied to routing techniques for internet of things
Carolina Del-Valle-Soto, Gabriela Durán-Aguilar, Fabiola Cortes Chavez, Alberto Rossa-Sierra, Mexico

Modelling an adjustable autonomous multi-agent internet of things system for elderly smart home
Salama A. Mostafa, Saraswathy Shamini Gunasekaran, Aida Mustapha, Mazin Abed Mohammed, Wafaa Mustafa Abdulllah, Malaysia/Iraq

Internet of things: Analyzing the impact on businesses and customers
Mandeep Pannu, Iain Kay, Canada

Communication Design II
Co-Chairs: Amic Ho and Sunny Sui Kwong Lam, China

Digital generation's meaning-making in web-based communication activities
Pui Wa Chau, China

Study on how television commercials affect the consumer reactions with specific visual strategies
Pik Ki Fung, Amic Ho, China

The advertising effects of typotectural: Associated learning factors and emotions
Man Yee Mak, Amic Ho, China

Viral marketing in political communication: Case study of John Tsang's campaign in the 2017 Hong Kong chief executive election
Poon Daren, Lam Sunny, Hong Kong

Research on branding of historic cities under the background of social change: A case study of Suzhou
Shan Huang, China
### 167 Kansei Engineering II

Co-Chairs: Toshio Tsuchiya and Suresh Sethi, Japan/USA

**KE**

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<td>Five years of Hiroshima Kansei innovation council: Local government promotion activities of Kansei engineering and ergonomics to local industries</td>
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<td>Shigekazu Ishihara, Hideki Harada, Futoshi Idei, Daisuke Ochi, Yayoi Watanabe, Koji Hashimoto, Noritsune Yokoyama, Kunihiro Shibata, Tsukasa Watarai, Akira Maekawa, Takahide Nouzawa, Japan</td>
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| 2D FFT and AI-based analysis of wallpaper patterns and relations between Kansei |
| Shigekazu Ishihara, Mitsuo Nagamachi, Kosuke Morinaga, Keiko Ishihara, Taku Ishihara, Japan |

| Role of narratives in visualizing product form |
| Suresh Sethi, USA |

| Affective design of store window displays for selected Philippine retail brands: Guidelines for an affective visual merchandising |
| Shigekazu Ishihara, Mitsuo Nagamachi, Kosuke Morinaga, Keiko Ishihara, Taku Ishihara, Japan |

| Improving garbage receptacles: Designing an affective garbage receptacle that influences human behavior towards littering |
| Mari Yasibe, Billy Joe Balderas, Renzo Daniel Cabilzo, Keneth Sedilla, Philippines |

| Kansei engineering and quality function deployment: Development of methodology for the identification of user-centralized project improvements |
| Waldemar Freitas Neto, Antônio Ramos Pires, Portugal |

| Research on dress style design for girls aged between 3 and 6 based on Kansei Engineering |
| Mei Xu, Yun Mu, Chenqiu Yu, China |

### 168 Panel: Democratization of Augmented and Virtual Reality to Enable Mass Adoption

Co-Chairs: Nina M. Berry and Bill Prugh, USA

**SYSI**

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<td>The virtual immersive teaching and learning (VITaL) initiative at San Diego State University</td>
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<td>Sean Hauze, USA</td>
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| Democratization of augmented and virtual reality to enable mass adoption |
| Nina Berry, William Prugh, Leonel Garcia, USA |

| Lessons learned from the initial usage of augmented reality |
| William Prugh, Nina Berry, Leonel Garcia, John Masterson, USA |

| Vantage: Democratization of augmented and virtual reality to enable mass adoption |
| Jonathan Wilson, Joe Chimento, Drew Massey, USA |

| THERA Inc. How virtual reality can be used for psychotherapy and prevention of mental health issues |
| Erin Bogdanski, USA |

### 169 Ergonomics Design of Wearables

Co-Chairs: Hassan Iftikhar and Yan Luximon, China

**PEHF**

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<td>Exploring the balance between utilitarian and hedonic values of wearable products</td>
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<td>Hassan Iftikhar, Parth Shah, Yan Luximon, China</td>
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| A comparison of traditional and 3D scanning measurement in ear anthropometry |
| Fang Fu, Amee Luximon, Yan Luximon, China |

| A novel hybrid personal cooling system incorporated with dry ice and ventilation fans to mitigate the heat strain of mascot performers in a hot and humid environment |
| Cathy Sin Wei Chow, Faming Wang, China |

| Modern textile-based compression device for improving venous haemodynamics of lower extremities |
| Xinbo Wu, Rong Liu, China |
### Human Factors and Assistive Technology IV
Co-Chairs: Hongliu Yu and Maria Lucia Okimoto, China/Brazil

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<td>8:00-10:00</td>
<td>HOLMEAD EAST</td>
<td>Development of a hand rehabilitation therapy system with soft robotic glove</td>
<td>Julio Cesar Cabrera Hidalgo, Nathalia Michelle Peralta Vásconez, Vladimir Robles-Bykbaev, Angel Andrés Pérez Muñoz, Marco Vásquez Cabrera, Marco Esteban Amaya Pinos, Hernán Tenorio Carpio, Ecuador</td>
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<td>Target of physiological gait: Realization of speed adaptive control for a prosthetic knee during swing flexion</td>
<td>Hongliu Yu, Wujing Cao, China</td>
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<td>Including users in the evaluation process of assistive technology: Applied methods and techniques</td>
<td>Kelli C. A. Silva Smythe, Maria Lucia Okimoto, Dominique Adam, Caeleon Teger Silva, Brazil</td>
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<td>Research and development in assistive technology: Academic Experience</td>
<td>Maria Lucia Okimoto, Kelli C. A. Silva Smythe, Dominique Adam, Caeleon Teger Silva, Brazil</td>
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<td>The design of walking sticks: Use, manufacturing and abandonment</td>
<td>Rebeca Cabral, Renata Vilanova, João Lutz, Luiza Rebelo, Brazil</td>
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<td>Requirements to design of directional signs in VR: The case of people with low visual</td>
<td>Sabrina Oliveira, Francisco Rebelo, Maria Lucia Okimoto, Brazil</td>
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#### 10:00 - 10:30
Refreshments will be provided in Columbia West (Terrace Level)

### Ergonomics in Design: Applications I
Co-Chairs: Laura Giraldi and Aditya Jayadas, Italy/USA

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<td>Design for children - ergonomics in a ceramic tile’s project</td>
<td>Cristina Salvador, Portugal</td>
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<td>Role of ergonomics and biophilic design on perceived comfort and stress when reading, writing and sitting at workstations</td>
<td>Andre Ferreira, Courtney Coston, Aditya Jayadas, USA</td>
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<td>Feasibility of low cost sensors to acquire 3D breast images</td>
<td>Lucia Regina, Jose Aguiomar Foggiatto, Brazil</td>
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<td>Can the synthesized 20 sociotechnical principles discriminate between winning and losing teams: A collaborative design project case study</td>
<td>Amangul Imanghaliyeva, UK</td>
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<td>Effects of distance between corner and step on pedestrian gazing pattern</td>
<td>Kota Suzuki, Yohsuke Yoshioka, Japan</td>
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### Design Methods and Creativity
Co-Chairs: João Brandão and Byungsoo Kim, Portugal/USA

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<td>Human factors engineering research on folding umbrellas design</td>
<td>Xiaohan Zhou, Xiaoping Hu, China</td>
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<td>The role of design in technology driven ergonomics product</td>
<td>Byungsoo Kim, Sharon Joines, USA</td>
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<td>Design, objects and memory: a sustainability-oriented project itinerary</td>
<td>Myrla Torres, Paulo Maldonado, Leonor Ferrão, Brazil</td>
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<td>Brand identity in motion. Structural models of brand identity on TV opening credits</td>
<td>João Brandão, Ricardo Pestana, Daniel Raposo, Portugal</td>
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<td>Teenagers postural effects through videogames therapeutic approach</td>
<td>Ernesto Filgueiras, Gustavo Desouzart, Ana Silva, Portugal</td>
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## Agile Manufacturing and Competencies in Work Environment

**Co-Chairs:** Leif Goldhahn and Robert Eckardt, Germany

**10:30-12:30 - FAIRCHILD EAST**

- **Competency model for logistics employees in smart factories**
  Markus Kohl, Carina Heimeldinger, Michael Brieke, Johannes Fottner, Germany

- **Competency profiles as a means of employee advancement for a resource-efficient chipping production**
  Leif Goldhahn, Robert Eckardt, Christina Pietschmann, Sebastian Roch, Germany

- **Reflections on production working environments in smart factories**
  Sebastian Pimminger, Werner Kurschil, Mirjam Augstein, Thomas Neumayr, Christine Ebner, Josef Altman, Johann Heinzelreiter, Austria

- **Management system of intelligent, autonomous environment IAEMS:**
  The methodological approach to designing the organizational structure of IAEMS
  Edmund Pawlowski, Krystian Pawlowski, Poland

### Safety Methods for Assessment and Evaluation

**Co-Chairs:** Jouni Kivistö-Rahnasto and Jerry Purswell, Finland/USA

**10:30-12:30 - CDU PONT**

- **How workplaces actually carry out OSH-related risk assessment and management**
  Noora Nenonen, Jouni Kivistö-Rahnasto, Sanna Anttila, Finland

- **Risk assessment of upper limb musculoskeletal disorders in a poultry slaughterhouse**
  Diogo Cunha dos Reis, Adriana Seára Tirloni, Antônio Renato Pereira Moro, Brazil

- **Evaluation method for safety management characteristic of medical workers**
  Haruna Yamazaki, Yusaku Okada, Kana Kimura, Risako Shiraishi, Japan

- **An ergonomic assessment of lighting conditions of the pedestrian overpasses in Commonwealth Avenue, Quezon City**
  Commuter’s perception of safety
  Hillary Chelsea Cruz, Alessandro Armani Aspi, Aurelio Banzon, Keneth Sedilla, Philippines

### Vulnerable Road Users

**Co-Chairs:** Rich McIlroy and Susanne Gruner, UK/Germany

**10:30-12:30 - COLUMBIA 1**

- **Sharing the road: Experienced cyclist and motorist knowledge and perceptions**
  Mary Still, Jeremiah Still, USA

- **Examination of corner shape for reducing mental stress by pedestrian appearing from blind spot of intersection**
  Wataru Kobayashi, Yohsuke Yoshioka, Japan

- **Facilitating cyclists’ commuter route choice into efficiency optimizations**
  Susanne Grüner, Germany

- **Pedestrian attitudes to shared-space interactions with autonomous vehicles – a virtual reality study**
  Christopher Burns, Vivien Hung, Luis Oliviera, Peter Thomas, Stewart Birrell, UK

### Human Factors, Sustainable Urban Planning and Infrastructure II

**Co-Chairs:** Christianne Falcao and Joanna Jablonska, Brazil/Poland

**10:30-12:30 - COLUMBIA 2**

- **Village regeneration through cultural creativity. Polish case study**
  Wojciech Bonenberg, Poland

- **Synergistic processes in functional-spatial development of communes in a metropolitan area**
  Hanna Borucinska-Bienkowska, Poland

- **Planning regenerative infrastructure of the Szczecin Metropolitan Railway – Ad hoc urbanism and glocal activity development**
  Leszek Świątek, Poland

- **Mountain home eco hotel - diversity and sustainability of green roofs**
  Anjun Huang, Shengxuan Zhao, China

- **The perception reshaping strategy of campus public space**
  Huifang Shang, Maiqi Lin, Yongtao Zheng, China
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<td>System Interactions Design</td>
<td>Isabel L. Nunes and Kenneth Light, Portugal/USA</td>
<td>SYSI</td>
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<td>10:30-12:30</td>
<td>A dialogue system for elderly people considering impression formation and user’s character&lt;br&gt;Identifying design issues “beyond the checklist”&lt;br&gt;Design and evaluation methodology for cockpit human factor of civil transport aircraft&lt;br&gt;Specificities of organizational communication in European universities’ digitalized environments&lt;br&gt;Towards the development of a universal testing environment for attention guiding techniques</td>
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<td>179</td>
<td>Human Factors, Business Management and Society: Employment Views</td>
<td>Estela Rodríguez and Kazuhiro Fujimura, Chile/Japan</td>
<td>HFBMS</td>
<td>COLUMBIA 4</td>
<td>10:30-12:30</td>
<td>Constructing a work-motivation model based on “benefit delay” and “benefit enjoyment”&lt;br&gt;Benefits of employees social network sites profiles for job applicants&lt;br&gt;Econometric modeling of wage discrimination towards women in the accounting profession&lt;br&gt;A leadership and demographic view of the nexus between emotional intelligence and job satisfaction in Ghana’s banking sector&lt;br&gt;High-performance work systems and employee turnover intentions: Moderation effect of psychological attachment</td>
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<td>Instructional Design and Learning Strategies</td>
<td>Daniel Acosta-López and Joanna Bartnicka, Mexico/Poland</td>
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<td>10:30-12:30</td>
<td>Learning as a systemic activity&lt;br&gt;Design of design: Learning dynamics in design&lt;br&gt;Convergence of goals on learning operations research, case of a Mexican institute&lt;br&gt;Educational training system for university students at initial levels through coaching strategies and student mentoring&lt;br&gt;The application of clustering analysis in the assessment of eye movements during flight training intervention</td>
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| 181 DI  | Designing for Inclusion in the Information Society | Giuseppe Mincolelli and Matteo Zallio, Italy/USA | Defining a shared platform in China to propose a social, cultural and technological bridge  
Avril Accolla, China  
Collaborative quality function deployment. A methodology for enabling co-design research practice  
Giuseppe Mincolelli, Silvia Imbesi, Matteo Zallio, Italy  
Usability analysis of the payment method with an application of digital parking meters with younger and older users  
Paula González-Torres, Ileana Chávez-Sánchez, Andrea Tejada-Gutiérrez, Claudia M. Fernández-Rivera, Carlos Aceves-González, Mexico  
Methods and techniques used in the evaluation of interfaces in Brazilian studies focusing on visually impaired people  
Dominique Adam, Mana Lucia Okimoto, Brazil  
The influence of screen brightness and moving speed of visual icons on visual acuity  
Linghua Ran, Xin Wu, Hong Luo, Chaoyi Zhao, Xin Zhang, China  
Design of a 3D printed age simulator as a tool supporting the process of designing for seniors  
Beata Fabisiak, Robert Klos, Poland | 10:30-12:30 - COLUMBIA 10 |
| 182 HFML | Teamwork and Leadership Development | Salman Nazir and Leonie Webster, Norway/UK | Evaluating the effectiveness of a novel team development intervention on teamwork  
Leonie Webster, Aaron Roberts, Neville Stanton, UK  
A triangulated approach to measurement of teamwork  
Sarah Twist, Aaron Roberts, Leonie Webster, Neville Stanton, UK  
ERP research on the influence of different types of leadership behavior on the performance of quality management  
Yunhong Zhang, Zhaohong Zheng, Jian Kang, Chaoyi Zhao, Hong Luo, Aixian Li, Na Liu, China  
Mind matters 2: Engage and develop teams  
Johan de Heer, Rafal Hryniewicz, Edward Faber, Thomas de Groot, Tije Oortwijn, The Netherlands  
Leader as an effective strategy implementer in public higher education institutions  
Joanna Mnich, Zbigniew Wisniewski, Poland  
Leadership as a key component of competence model of medium-level managers in higher education institution  
Anna Stankiewicz-Mróz, Poland  
Leadership styles and workplace wellness among Ghanaian SME workers  
Kwasi Dartey-Baah, Ghana | 10:30-12:30 - COLUMBIA 11 |
| 183 HFSIM | Human Factors and Simulation: Transportation | Ellie Abdi and Xiaonan Yang, USA | Pupillary response and EMG predict upcoming responses to collision avoidance warning  
Xiaonan Yang, Jung Hyup Kim, USA  
Gender differences measured on driving performances in an urban simulated environment  
Chiara Ferrante, Valerio Veraldi, Maria Rosania De Blasis, Italy  
Evaluating rear-end vehicle accident using pupillary analysis in a driving simulator environment  
Rui Tang, Jung Hyup Kim, China  
Study on operation simulation and evaluation method in the ship limited space  
Zhang Yumei, Jiang Lei, Wang Songsha, Ding Li, China | 10:30-12:30 - COLUMBIA 12 |
### Human Factors in Virtual Environments III
Co-Chairs: Florentin Popescu and Jonathan Hurter, The Netherlands/USA

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<td>Global virtual teams course at Arnhem Business School</td>
<td>Florentin Popescu, Rob Warmenhoven, The Netherlands</td>
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<td>A usability and workload investigation: Using video games to compare two virtual reality systems</td>
<td>Crystal Maraj, Jonathan Hurter, USA</td>
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<td>Virtual and augmented reality gamification technology on reinventing the F1 sponsorship model not purely focused on the team’s and car’s performance</td>
<td>Evangelos Markopoulos, Panagiotis Markopoulos, Mika Luimyla, Yi Chi Chang, Vasu Aggarwal, Jumoke Ademola, UK</td>
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<td>Enhancing multimodal interaction for virtual reality using haptic mediation technology</td>
<td>Ahmed Farooq, Grigori Evreinov, Roope Raisamo, Finland</td>
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<td>Mapping the monetization challenge of gaming in various domains</td>
<td>Evangelos Markopoulos, Panagiotis Markopoulos, Mika Luimyla, Younus Almufti, Vasu Aggarwal, UK</td>
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### 3D Printing Technology
Co-Chairs: Chor-Kheng Lim and Keun Park, Taiwan/South Korea

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<td>Automatic design of 3D lightweight structures based on finite element mesh</td>
<td>Keun Park, Young-Eun Lim, Jung-Hwan Park, South Korea</td>
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<td>Kinematic optimization of a robot head movements for the evaluation of human-robot interaction in social robotics</td>
<td>Jorge Alvarez, Mireya Zapata, Dennys Paillacho, Ecuador</td>
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<td>EZ-print: Transparent string-like pottery design system</td>
<td>Chor-Kheng Lim, Taiwan</td>
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<td>3D printed hybrid flexible electronics with Direct Light Synthesis</td>
<td>Andrei-Alexandru Popa, Brian Zellers, Simon Iversen, Dillon Kennedy, Pedro Cortes, Jerome Jouflroy, Lars Duggen, Kirk Rogers, Brett Conner, Eric MacDonald, Denmark</td>
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<td>Personalized human factor and ergonomics: Usability design of 3D printed patient-specific fracture external fixator</td>
<td>Hongwei Li, Feng Qiao, Dichen Li, Liang Jixiang, China</td>
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### Research-Driven Design
Co-Chairs: Adam Feld and Tufail Muhammad, USA/Pakistan

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<td>A critical usability problem-solving case of ‘maze cube’ through scientific experiment and design exploration</td>
<td>Jihyeon Yang, Hwisu Jeon, Muhammad Tufail, Kwanmyung Kim, South Korea</td>
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<td>Project pilot run: A sewn collaboration</td>
<td>Adam Feld, USA</td>
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<td>Discomfort with low-back pain relief exercise training for older adult women</td>
<td>Muhammad Tufail, Sangjin Park, Haebin Lee, Yang gyu Moon, Kwanmyung Kim, South Korea</td>
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<td>From digital to analogue: An interdisciplinary case study to enhance the communication of design products through physical constraints</td>
<td>Simge Esin Orhun, Turkey</td>
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<td>Innovative product design for hand-muscle weakness therapy in the elderly people</td>
<td>Parichart Rattanapol, Thailand</td>
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<td>The end of the freeze out: using digital modeling and rapid prototyping to mediate airflow in a cold studio environment</td>
<td>Adam Feld, Liane Hancock, Thomas Cline, USA</td>
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| 187 | Design, Anthropometry and Posture | Jaimin Patel and Stijn Verwulgen, USA/Belgium | GUNSTON EAST | Comparative assessment of classroom desk dimensions with respect to students anthropometry for females middle schools  
Ahamed Altaboli, Aisha Akrim, Entsar Omar, Fatima Hamad, Sarah Ahmed, Libya  
Incidence and postural risk factors for low back pain among informal garment female workers  
Sunita Chaiklieng, Thanawat Homsombat, Thailand  
Ergonomic improvements in heavy duty four wheel cart with pelvis support  
Jaimin Patel, Guru Prasadi Rao, Nader Madkour, Jay Jani, Pawan Kumar Sharma, Yueqing Li, USA  
The influence of the transformation between standing and cycling position on upper body dimensions  
Thomas Peeters, Jochen Vleugels, Stijn Verwulgen, Guido De Bruyne, Belgium  
A study on the correlation of foot data with body height and weight of Chinese Adults  
Linghua Ran, Hong Luo, Chaoyi Zhao, Xin Zhang, Huimint Hu, Zhongtang Wang, China |
| 188 | Physical Ergonomics and Work-Related Musculoskeletal Disorders II | Antônio Renato Pereira Moro and Wang Wei, Brazil/China | JAY | Preschool children’s product design based on heart flow theory  
Wang Wei, Li Fangyu, China  
Ergonomic risk evaluation of the manual handling task of bovine quarters in a Brazilian slaughterhouse  
Adriana Seara Tirloni, Diogo Cunha dos Reis, Natalia Fonseca Dias, Antônio Renato Pereira Moro, Brazil  
To investigate the lower back muscle activity during cardiopulmonary resuscitation chest compression with or without exoskeleton  
Chun Lung Billy So, China  
Dynamic response of seated human body exposed to whole body vibration: influence of tractor ride conditions on ride comfort in harrowing operation  
Amandeep Singh, Sarbjit Singh, Harwinder Singh, Chander Prakash, Lakhwinder Pal Singh, India  
Whole body vibration exposure in powered two wheelers used for commuting: A study in India  
Sai Praveen Velagapudi, India |
| 189 | Non-Traditional Sensing for Job Performance, Health and Well Being and Cognitive Constructs | Matthias Ziegler and Hasan Ayaz, USA | HOLMEAD EAST | Predictions of job performance and cognitive constructs using a combination of individual, interpersonal and environmental sensors  
Matthias Ziegler, Robert Ha, Amanda Kraft, Alison Perez, Alexander Danvers, Matthias Mehl, Esther Sternberg, Altaf Engineer, Erica Baranski, USA  
A smartphone application for multi-sensor large scale data collection  
Brad Galego, Matthew Gerber, Laura Barnes, Mehdi Boukhechba, Peter Rokowski, USA  
The use of human sensors in a human machine interface evaluation of a semi-autonomous vehicle  
Raquel Galvan, Sophia Mayne-DeLuca, Eric Shieh, USA  
Association between physicians’ burden and performance during interactions with electronic health records (EHRs)  
Natalie Grace Castellano, Lukasz Mazur, USA  
Assessment of interface driven task difficulty and mental effort during interaction with electronic health record system  
Prithima Reddy Mosaly, Lukasz Mazur, USA  
Towards better understanding of physician burnout: Can neurofeedback help?  
Alana Campbell, Lukasz Mazur, Mae Yefimov, Samantha Meltzer-Brody, Prithima Mosaly, Timothy Farrell, USA  
A systems engineering analysis approach to understanding provider burden and identifying short- and long-term interventions  
Sara Stokes, Lukasz Mazur, Samantha Meltzer-Brody, USA |

Lunch Break 12:30 - 13:30 • Enjoy lunch at the restaurant of your choice
### Detailed Technical Program

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<td>Qian Ji, Zhao Yiming, Lili Liu, China</td>
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<td>Evaluating the interaction between human walking and two-dimensional</td>
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<td>emotion variation by using physiological signals</td>
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<td>Jyun-Rong Zhuang, Guan-Yu Wu, Ya-Jing Cuan, Keiichi Muramatsu,</td>
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<td>Keichi Watanuki, Eiichiro Tanaka, Japan</td>
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<td>The influence of culture in product form preference as momentary</td>
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<td>experience in online shopping</td>
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<td>Chajoong Kim, Youngjun Park, James Self, South Korea</td>
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<td>Engineering for tomorrow: Make it simpler and more enjoyable</td>
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<td>Shuichi Fukuda, Japan</td>
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<td>Gamified sharing economy: The role of game elements in sharing economy</td>
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<td>in an [really] accessible app?</td>
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<td>Walter Correia, Weynner Kenneth, Walter Lima, Rodrigo Oliveira,</td>
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<td>Jonysberg P. Quintino, Fernanda Pellegrini, Marcelo Anjos, Fabiana</td>
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<td>Florentini, Valeska Alves, Tatiane Levreiro, Daniele Zandon, André</td>
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<td>L. M. Santos, Fabio Q. B. Silva, Brazil</td>
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<td>Virtual assistants: An accessibility assessment in virtual assistants</td>
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<td>for people with motor disability on mobile devices</td>
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<td>Walter Franklin Marques Correia, Jefté De Assumpção Macêdo, Marcelo</td>
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<td>Penha, Jonysberg Quintino, Fernanda Pellegrini, Marcelo dos Anjos,</td>
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<td>Fabiana Florentini, André Santos, Fabio Q. Silva, Brazil</td>
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<td>Disabled user role on mobile accessible application development</td>
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<td>Bruno Ribeiro, Fernanda Pellegrini, Marcelo Anjos, Fabiana Florentini,</td>
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<td>Jonysberg Quintino, Jefté Macêdo, Brazil</td>
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<td>How to overcome the challenges of developing responsive and accessible</td>
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<td>websites - a case study</td>
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<td>Fernanda Pellegrini, Marcelo dos Anjos, Fabiana Florentini, Bruno</td>
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<td>Ribeiro, Valeska Alves, Daniele Zandon, Walter Franklin Marques</td>
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<td>Correia, Jonysberg Quintino, Jefté Macêdo, Brazil</td>
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<td>How to prioritize accessibility in agile projects?</td>
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<td>Fernanda Pellegrini, Marcelo Anjos, Fabiana Florentini, Bruno Ribeiro,</td>
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<td>CasaE Xperience - creation method focused in accessibility</td>
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<td>Aender Ferreira, Luciano do Nascimento, Vitório Kuroda, Daniele</td>
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<td>based on eye movement analysis</td>
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<td>Guilei Sun, Qin Li, Yanhua Meng, Linghua Ran, China</td>
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<td>Effectiveness of coach marks or instructional overlay in smartphone</td>
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<td>apps interfaces</td>
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<td>Paulo Noriega, José Luís Alves, Diana Carvalho, Igor Correia, Tiago</td>
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<td>Oliveira, Francisco Rebelo, Portugal</td>
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<td>Study on the effect of key-to-key distance on touch-sensitive key</td>
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<td>Xiaoli Fan, Huimin Hu, Chaoyi Zhao, Wei Zhang, China</td>
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<td>Eye-tracking examination of the anthropological race, gender and verbal-</td>
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<td>Rafal Michalski, Joanna Koszela-Kulinska, Poland</td>
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<td>Research on standardization of public information guidance systems</td>
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<td>Chuanyu Zou, Yongquan Chen, Ziding Chen, China</td>
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**Sunday, July 28, 2019**

#### 194  Revitalizing Safety Management and Practice

Co-Chairs: Manikam Pillay and Andrew Enya, Australia

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<td>Who causes accident, employee or employer?</td>
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<td>Ercan Sahin, USA</td>
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<td>Collective mindfulness as a preventive strategy against workplace incidents:</td>
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<td>A comparative study of Australia and the United States</td>
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<td>The occupational risk assessment method: A tool to improve organizational</td>
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<td>resilience in the context of occupational health and safety management</td>
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<td>Risk assessment of compressor gold mining at Camarines Norte, Philippines</td>
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<td>Isachar Bernaldez, Virginia Soriano, Philippines</td>
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<td>The gap in the safety knowledge between the small-scale miners and local</td>
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<td>mining monitoring body in the Philippines</td>
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<td>Virginia Soriano, Isachar Bernaldez, Philippines</td>
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#### 195  Road and Rail: Usability and Comfort

Co-Chairs: Sabrina Moran and James Brown, USA/UK

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<td>Shubham Agrawal, Irina Benedyk, Srinivas Peeta, USA</td>
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<td>Investigation of the effectiveness of autostereoscopic 3D displays for parking</td>
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<td>maneuver tasks with passenger cars</td>
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<td>Andre Dettmann, Angelika C. Bullinger-Hoffmann, Germany</td>
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<td>Transport realities and challenges for low income peripheral located settlements in Gauteng province: Are we witnessing the genesis of a new transport</td>
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<td>Database driven ergonomic vehicle development via a fully parametric seating buck</td>
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<td>Experimental investigation of the relationship between human discomfort and involuntary movements in vehicle seat</td>
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<td>An ergonomic assessment of mass rapid transport trains in Metro Manila, Philippines</td>
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<td>Anna Patricia F. Martinez, Angela Jasmin B. Caingat, Raine Alexandra S. Robielos, Benette P. Custodio, Philippines</td>
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#### 196  Information Systems

Co-Chairs: Sevgin Hunt and Pradip Ray, USA/India

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<td>Shifeng Zhao, Jie Shen, Huanzhen Weng, China</td>
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<td>Electronic health records in hospitals: Preventing dosing errors in the medication administration context</td>
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<td>Sevgin Hunt, Joyram Chakraborty, USA</td>
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<td>Developing instructions for use that encourage safe behaviour</td>
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<td>Determining patient’s interest in patient portal use in a primary care clinic to improve portal adoption</td>
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<td>Martina Clarke, Kelly Karls, USA</td>
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<td>Isabel Duarte de Almeida, Maria Joao Delgado, Portugal</td>
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<td>Modelling and analysis of prescription behaviour-based medicine inventory management systems</td>
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<td>Usability and User Experience Applications IV</td>
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### Visual Ergonomics and Visual Performance

**Co-Chairs:** Leonor Ferrão and João Neves, Portugal

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<td>13:30-15:30 - COLUMBIA 10</td>
<td>ED</td>
<td>Effects of screen brightness on visual performance under different environments</td>
<td>Qi Tian, Linghua Ran, China</td>
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<td>Influence of the restrictions on the range of view from the cockpit in operation of a hydraulic excavator</td>
<td>Kazuyuki Matsumura, Masaru Ito, Seiji Saiki, Yoichiro Yamazaki, Yuichi Kurita, Japan</td>
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<td>Color in glossolalia: Red in western culture (Part II)</td>
<td>Leonor Ferrão, Portugal</td>
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<td>Contribution of visual ergonomics to a holistic view of the symbols applied in touristic and cultural signage: The Portuguese case</td>
<td>João Neves, Fernando Moreira da Silva, Daniel Raposo, Jose Silva, Portugal</td>
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<td>Universal design for enhancing accessibility of the visually impaired in touristic environments</td>
<td>Carlos Arce-lopera, Juan Jimenez, Camilo Montoya, Jose Giraldo, Colombia</td>
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### Applications in Software, Service and Systems Engineering III

**Co-Chairs:** Ronda Caswell and Xiaoli Wu, USA/China

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<tr>
<td>13:30-15:30 - COLUMBIA 11</td>
<td>HFSSSE</td>
<td>The role of change readiness in determining existing relationship between TQM practices and employee performance</td>
<td>Timothy Laseinde, Ifetayo Oluwafemi, Janharm Pretorius, Jesusetemi Oluwafemi, Ajayi Makinde, South Africa</td>
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<td>Analysis on visual information structure in intelligent control system based on order degree and information characterization</td>
<td>Linlin Wang, Xiaoli Wu, Weiwei Zhang, Yiyou Zou, Xiaoshan Jiang, China</td>
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<td>An IT project management methodology generator based on an agile project management process framework</td>
<td>Evangelos Markopoulos, UK</td>
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<td>A modernization story – Sociotechnical challenges in the journey from legacy to modern systems</td>
<td>Ronda Caswell, Alfred Shoetan, Megan Reiling, USA</td>
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<td>An analysis of mobile questionnaire layouts</td>
<td>Helge Nissen, Yi Zhang, Monique Janneck, Germany</td>
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<td>Modelling decision-making with intelligent agents to aid rural commuters in developing nations</td>
<td>Patricio Julián Gerpe, Evangelos Markopoulos, UK</td>
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<td>Human interaction with the output of information extraction systems</td>
<td>Erin Zaroukian, Justine Caylor, Michelle Vanni, Sue Kase, USA</td>
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### Physical, Mental and Social Effects in Simulation

**Co-Chairs:** Sylvia Kaduk and Martina Scafà, UK/Italy

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<td>13:30-15:30 - COLUMBIA 12</td>
<td>HFSIM</td>
<td>Surviving in Frankenstein’s lab - how to build and use a laboratory that applies multiple physiological sensors</td>
<td>Sylvia Kaduk, Aaron Roberts, Neville Stanton, UK</td>
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<td>Assessment of students’ cognitive conditions in medical simulation training: A review study</td>
<td>Martina Scafà, Eleonora Brandoni Serrani, Alessandra Papetti, Agnese Brunzini, Michele Germani, Italy</td>
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<td>Investigating human visual behavior by hidden Markov models in the design of marketing information</td>
<td>Jerzy Grobelny, Rafał Michalski, Poland</td>
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<td>Modeling of airflow and dispersion of aerosols in a thanatopraxy room</td>
<td>Jihen Chebil, Geneviève Marchand, Maximilien Debia, Loïc Wingert, Stéphane Hallé, Canada</td>
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<td>Dynamics of interactions</td>
<td>Zbigniew Wisniewski, Aleksandra Polak-Sopinska, Malgorzata Wisniewska, Marta Jedraszek-Wisniewska, Poland</td>
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<td>Three-dimensional finite element analysis of the finger exposed to handle vibration</td>
<td>Alphin Masilamany Santha, Jain A R Tony B, India</td>
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<td>203</td>
<td>Human Factors and Wearable Technologies III</td>
<td>Xiangyu Ge and Zeeshan Shaukat, China</td>
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<td>13:30-15:30 - CARDOZO</td>
<td>Ergonomic evaluation of pilot helmet and neck injury</td>
<td>Xiangyu Ge, Qianxiang Zhou, China</td>
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<td>Eye tracking in the diagnosis of aggressive behaviors and emotions: A systematic review of the literature</td>
<td>Gabriela Gómez-Ochoa, P. Ortega-Chasi, O. Alvarado-Cando, M. Cobos-Calí, M. Artega-Sarmiento, Ecuador</td>
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<td>Research on smart wearable device design based on semiotic approach to product architecture design</td>
<td>Lu Han, Huaxiang Yuan, Hongzhi Pan, China</td>
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<td>Integrating Markov chain model in wireless body sensor networks for improving patients’ remote monitoring systems</td>
<td>Rabee Raad Ali, Salama A. Mostafa, Saraswathy Shamini Gunasekaran, Wafa Mustafa Abduallah, Mazin Abed Mohammed, Malaysia/Iraq</td>
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<td>204</td>
<td>Human Reliability Analysis for Safety Critical Industries</td>
<td>Tun Liu and Ronald Boring, China/USA</td>
<td>HERRP</td>
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<td>13:30-15:30 - GUNSTON WEST</td>
<td>Experimental research on measurement of team situation awareness in nuclear power plants</td>
<td>Guimei Zuo, Jianhua Chen, Licao Dai, China</td>
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<td>A simulator experimental study on individual SA and Team SSA in digital MCRs of NPPs</td>
<td>Pengcheng Li, Xiao Jin, Yanxing Wang, Jianhua Chen, Licao Dai, China</td>
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<td>Safety risk assessment of space launch site considering human reliability</td>
<td>Tun Liu, Wenjin Zhang, Xing Pan, Xiaoxia Wang, China</td>
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<td>Method for crew human reliability analysis based on CREAM</td>
<td>Xiaoxia Wang, Wenjin Zhang, Xing Pan, Tun Liu, China</td>
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<td>A model for automatically detecting and classifying human errors with procedural basis in nuclear power plants</td>
<td>Jeeyea Ahn, Seung Jun Lee, South Korea</td>
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<td>205</td>
<td>Macro 3D Printing</td>
<td>Hemang Kumar Jayant and Nate Watson, India/USA</td>
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<td>Evaluation of early-age concrete structural build-up for 3D concrete printing by oscillatory rheometry</td>
<td>Wilson Ricardo Leal da Silva, Herve Fryda, Thomas Juul Andersen, Per Norelius, Jean-Noel Bousseau, Denmark</td>
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<td>Induction heating based 3D metal printing of eutectic alloy using vibrating nozzle</td>
<td>Hemang Kumar Jayant, Manish Arora, India</td>
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<td>Additive manufacturing of Portland cement based cementitious materials</td>
<td>Jonathon Piasente, Aleksandra Radlinska, Maryam Hojati, USA</td>
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<td>Scaling from paste to mortar for 3D printing</td>
<td>Scott Jones, Nicos Marty, USA</td>
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<td>Safety and performance of reinforced concrete additive construction</td>
<td>Eric Kreiger, Brandy Diggs-McGee, Tanner Wood, Bruce MacAllister, Megan Kreiger, USA</td>
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| APMPC 206 | Human Aspects in Industrial Environment | Co-Chairs: Akihiko Goto and A. A. M. Macias, Japan/Mexico | Cognitive analyses for the improvement of service orders completion in an information technology center: A case of study  
Aide Maldonado, Manuel Alejandro Barajas-Bustillos, Margarita Ortiz-Solis, Arturo Realyvásquez, Juan Luis Hernández-Arellano, Mexico  
Motion analysis of manufacturing of large “Echizen Washi” Japanese traditional paper  
Yuji Kawamori, Hiroyuki Nakagawa, Kozo Igarashi, Yoshikiyo Yamada, Naoki Sugiyama, Kauaaki Yamashiro, Akihiko Goto, Hiroyuki Hamada, Japan  
Cognitive and organizational criteria for workstation design  
Salvador Ávila Filho, Jade Ávila, Beata Mrugalska, Magdalena K. Wyrwicka, Érica Cayres, Júlia Ávila, Maralsa Souza, Poland/Brazil  
Job strain index by gender among middle and high managers of the Maquiladora industry Ciudad Juarez, Mexico  
Aide Maldonado, Margarita Ortiz-Solis, Oziely Armenta-Hernández, Karla Hernández-Luna, Jorge García-Alcaraz, Mexico  
Organizational culture requirements for the achievement of world class manufacturing  
Zbigniew Wisniewski, Michal Paszkowski, Malgorzata Wisniewska, Poland  
Evaluation of “Jiai” of large “Echizen Washi” Japanese traditional paper  
Hiroyuki Nakagawa, Yuji Kawamori, Kozo Igarashi, Yoshikiyo Yamada, Mitsunori Suda, Naoki Sugiyama, Kauaaki Yamashiro, Hiroyuki Hamada, Akihiko Goto, Japan |
| HFAT 207 | Human Factors and Assistive Technology V | Co-Chairs: Stijn Verwulgen and Chor-Kheng Lim, Belgium/Taiwan | The design of the paediatric prosthesis: Questionnaire assessment of stigm-inducing factors in primary children school  
Steven Truijen, Kristof Vaes, Erik Haring, Hilde Feys, Anouche Van den Eynde, Emilie Meyvis, Eric van Breda, Evi Schaerlaken, Stijn Verwulgen, Belgium  
Design of a low cost 3d scanner for anthropometric measurements  
Pablo Davila, Esteban Carrera, Oswaldo Jara, Horfayt Bassantes, Ecuador  
Human factors product design for a prototype of hair loss prevention machine for cancer patients during chemotherapy treatments  
Nantakrit Yodpijit, Manutchanok Jongprasithporn, Thailand  
An ergonomic assessment of accessible pedestrian signal sound types for the University of the Philippines Diliman  
Evander Del Rosario, Camilla Isabel Suarez, Alexander Go Tian, Philippines  
Pillow fight: Application of conductive fabric technology in activities for dementia  
Chor-Kheng Lim, Taiwan |
| AISC 208 | Artificial Intelligence and Social Computing II | Co-Chairs: Rita Yi Man Li and Xinyu Cao, China | Fourth industrial revolution: An impact on health care industry  
Prisilla Jayanthi, V. Murali Krishna Iiyanki, Aruna Mothkuri, Prakruthi Vadakattu, India  
Detection of cutaneous tumors in dogs using deep learning techniques  
Cesar Guevara, Matilde Lorena Zapata Saavedra, Ivan Ramirez-Morales, Fernando Aguilar-Galvez, Lorena Elizabeth Chalco Torres, Ecuador  
Human-AI collaboration development: Interim communication rivalry of generation  
Olga Burukina, Finland/Russia  
Multicriteria analysis in the proposed environmental management regulations for construction in Aurora, Guayas, Ecuador  
Christian Zambrano Munillo, Jesús Rafael Hechavarría Hernández, Maikel Leyva Vázquez, Ecuador  
Random samplings using Metropolis Hastings algorithm  
Miguel Arcos-Argudo, Rodolfo Bojorque, Andrea Plaza, Ecuador  
The research on automatic acquisition of the domain terms  
Liangliang Liu, Haitao Wang, Zhang Fan, Jing Zhao, Zhao Chao, Gang Wu, Xinyu Cao, China |
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<th>15:30-16:00</th>
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| **210** | Virtual Reality and Machine Learning for Neuroergonomics  
Co-Chairs: Hasan Ayaz and Adrian Curtin, USA | CN |
| 16:00-18:00 - MORGAN | Integration of virtual reality and motor imagery based brain computer interface  
Callan Powell, Hasan Ayaz, USA  
A test setting to compare spatial awareness on paper and in virtual reality using EEG signals  
Sander Van Goethem, Kimberly Adema, Britt van Bergen, Emilia Viaene,  
Eva Wenborn, Stijn Verwulgen, Belgium  
Multimodal fNIRS-EEG classification using deep learning algorithms for brain-computer interfaces purposes  
Marjan Saadati, Jill Nelson, Hasan Ayaz, USA  
Convolutional neural network for hybrid fNIRS-EEG mental workload classification  
Marjan Saadati, Jill Nelson, Hasan Ayaz, USA  
Impacts of the time interval on the choice blindness persistence:  
A visual cognition test-based study  
Qiuzhu Zhang, Yi Lu, Huayan Huangfu, Shan Fu, China |
| **211** | Ergonomics in Design: Applications II  
Co-Chairs: Luciana Cruz and Yumeng Zhang, Brazil/China | ED |
| 16:00-18:00 - HOLMEAD WEST | Service mapping: Case study of university waste management system  
Flavia Azevedo, Luciana Cruz, Brazil  
Current theoretical developments and applications of Fitts’ Law:  
A literature review  
Rong Jiang, Zhenyu Gu, China  
Ergonomic research in Civil aircraft external service design  
Yu Chen, China  
Research on ergonomic design and evaluation of office backrest curve  
Yumeng Zhang, Ling Luo, China  
A synthesis of sociotechnical principles for system design  
Amangul Imanghaliyeva, Pauline Thompson, Paul Salmon, Neville Stanton, UK |
| **212** | Cross-Cultural Decision Making II  
Co-Chairs: Atsuo Murata and Noriko Okabe, Japan | CCDM |
| 16:00-18:00 - FAIRCHILD EAST | Cross-cultural motivations for information sharing in incident management at major events  
Guadalupe Hernández-Escobedo, David K. Allen, Alan D. Pearman,  
Claudia Alejandra Iturbe-González, Mexico  
Cross-cultural difference of free agent system between MLB and NPB (Nippon Professional Baseball)  
Atsuo Murata, Japan  
Design benchmarking study between Alessi products and Chinese commodities  
Lixia Hua, Junnan Ye, China  
Language and cultural learning in a short-term study abroad: An Investigation of Japanese sojourners in Canada  
Chihiro Tajima, Japan  
English education for young learners in China and Europe  
Jiali Du, Pingfang Yu, China |
### Sunday, July 28, 2019

#### 213 Applications in Human Interaction and Design
Co-Chairs: Peter Thorvald and Fang Guo, Sweden/UK

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<td>DU PONT</td>
<td>Embodied interactions in cognitive manufacturing</td>
<td>Peter Thorvald, Jessica Lindblom, Ari Kolbeinsson, Sweden</td>
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<td>Assessment of user interpretation on various vibration signals in mobile phones</td>
<td>Giorgio Romero, Nikko Marcelo Palomares, Jean Louie Victor, Philippines</td>
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<td>Hand gesture based control of NAO Robot using MYO armband</td>
<td>Sara Ali, Mohammad Samad, Faisal Mehmood, Yasar Ayaz, Wajahat Mehmood Qazi, Muhammad Jawad Khan, Umer Asgher, Pakistan</td>
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<td>Changing the role of design</td>
<td>Fang Guo, Zaili Yang, Ian Jenkinson, Johanna Ender, UK</td>
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<td>Effect of different visual stimuli on joint attention of ASD children using NAO robot</td>
<td>Sara Ali, Faisal Mehmood, Yasar Ayaz, Umer Asgher, Muhammad Jawad Khan, Pakistan</td>
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#### 214 Designing Autonomy in Transportation: Age and Inclusion
Co-Chairs: Patrick Langdon and Nermin Caber, UK

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<td>Designing adaptation in cars: An exploratory survey on drivers’ usage of ADAS and car adaptations</td>
<td>Nermin Caber, Patrick Langdon, John Clarkson, UK</td>
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<td>An inclusive, fully autonomous vehicle simulator for the introduction of human-robot interaction technologies</td>
<td>Theocharis Amanatidis, Patrick Langdon, John Clarkson, UK</td>
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<td>The impact of different human machine interface feedback modalities on older participants’ user experience of CAVs in a simulator environment</td>
<td>Iveta Eimontaite, Alexandra Voinescu, Chris Alford, Praminda Caleb-Solly, Philip Morgan, UK</td>
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<td>Supporting older drivers’ visual processing of intersections - effects of providing prior information</td>
<td>Matthias Beggio, Franziska Hartwich, Tibor Petzoldt, Josef Krems, Germany</td>
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<td>User experience in immersive VR-based serious game: An application in highly automated driving training</td>
<td>Mahdi Ebnali, Cyrus Kian, Majid E Heidari, Adel Mazlomi, USA</td>
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<td>Comparison of child and adult pedestrian perspectives of external features on autonomous vehicles using virtual reality experiment</td>
<td>Shuchisnigdha Deb, Daniel Carruth, Muztaba Fuad, Laura Stanley, Darren Frey, USA</td>
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#### 215 Panel: Practical State of the Art Augmented and Virtual Reality for Operational Usage
Co-Chairs: Nina M. Berry and Bill Prugh, USA

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<td>Practical state of the art augmented and virtual reality for operational usage</td>
<td>William Prugh, USA</td>
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<td>SEE: Synthetic environment enhancement</td>
<td>Vaughn Whisker, USA</td>
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<td>The virtual standardized patient for medical education simulation</td>
<td>Sean Hauze, USA</td>
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<td>Vantage: Practical state of the art augmented and virtual reality for operational usage</td>
<td>Jonathan Wilson, Drew Massey, Joe Chimento, USA</td>
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<td>The challenges of mass adoption of AR/VR for nuclear security</td>
<td>Tam Le, USA</td>
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<td>SUPI 216</td>
<td>Human Factors, Sustainable Urban Planning and Infrastructure III</td>
<td>Christianne Falcao and Eduardo Navarro, Brazil/UK</td>
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<td>16:00-18:00 - COLUMBIA 3</td>
<td>A sociotechnical systems approach for assessing university campus developments</td>
<td>Eduardo Navarro, Graeme Bowles, Guy Walker, UK</td>
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<td>Current situation and countermeasures of Chinese street furniture design in intelligent development context</td>
<td>Tongwen Wang, Wuzhong Zhou, China</td>
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<td>Research on the transformation model of spiritual requirement in elderly-oriented design</td>
<td>Maiqi Lin, Huifang Shang, Chuanshun Wang, Yongtao Zheng, China</td>
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<td>The various factors affecting occupants' satisfaction in the open-plan shared office</td>
<td>Shaoning Ren, Linong Dai, China</td>
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<td>Effects of the urban form on the external thermal comfort in low-income settlements of Guayaquil, Ecuador</td>
<td>Maria Virginia Ricaurte Romero, Byron Almeida, Jesús Rafael Hechavarria Hernández, Boris Forero, Ecuador</td>
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<td>Identification of residential well-being factors in urban community design</td>
<td>Xintong Wei, Guangtian Zou and Kin Wai Michael Siu, China</td>
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<td>UUE 217</td>
<td>Usability and User Experience Applications V</td>
<td>Yiwen Pan and Xin Chen, China</td>
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<td>16:00-18:00 - COLUMBIA 4</td>
<td>Emotional effects of smart aromatherapeutic home devices</td>
<td>Jiashan Pan, Tao Xi, Rong Jiang, China</td>
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<td>Research on visitors experience of Chinese family group in domestic child-orientated exhibition</td>
<td>Yiwen Pan, Ding-Bang Luh, China</td>
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<td>Personalized design of food packaging driven by user preferences</td>
<td>Yan Yan, Chen Tang, Liqun Zhang, China</td>
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<td>The new thinking in emotional user experience: From visual metaphor to interactive affordance</td>
<td>Xin Chen, China</td>
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<td>Let’s make this personal: Improving the user experience on support portals through personalization</td>
<td>Jon Temple, Kenn Roberson, Paula Nezbedova, USA</td>
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<td>System of recommendation and automatic correction of web accessibility using artificial intelligence</td>
<td>Paulina Morillo, Diego Chicaiza Herrera, Diego Vallejo-Huanga, Ecuador</td>
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<td>TELS 218</td>
<td>Educational Strategies</td>
<td>Graziela Sousa and Martin Kröll, Portugal/Germany</td>
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<td>16:00-18:00 - COLUMBIA 9</td>
<td>Entrepreneurship education and digitization</td>
<td>Martin Kröll, Germany</td>
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<td>Entrepreneurship education for fashion design</td>
<td>Graziela Sousa, Ines Simoes, Paulo Maldonado, Portugal</td>
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<td>Analyzing phonological factor criteria by measuring information processing traits contributed to effectiveness through educational support system</td>
<td>Keiko Tsujioka, Japan</td>
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<td>Educational strategies for coping with problems of stay up late based on the psychological characteristics of contemporary Chinese college students</td>
<td>Lin Yueyi, Zhou Wuzhong, China</td>
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<td>Manguinhos’ shanty-town: Investigating low income students’ education problems and their environmental and social context</td>
<td>Nathalia Pompeu, Luiza Rebello, Arlene Pompeu, Brazil</td>
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### Theoretical Advances in Human Error and Performance (HERRP)

**219**  
**Time**: 16:00-18:00 - COLUMBIA 10  
**Co-Chairs**: Beata Mrugalska and Kaveh Sheikhrezaei, Poland/USA

- Relating the learning styles, dependency, and working memory capacity to performance effectiveness in collaborative problem solving  
  Kaveh Sheikhrezaei, Craig Harvey, USA
- Research on human error in operation task under the coupling of time of day and stress  
  Xing Pan, Xianheng Zhao, Wenjin Zhang, Yuhang Jiang, China
- Organizational risk dynamics archetypes for unmanned aerial system maintenance and human error shaping factors  
  Yi Lu, Huoyan Huangfu, Shuguang Zhang, Shan Fu, China
- Time-reliability correlation for the human reliability analysis of a digitalized main control room  
  Wondea Jung, Jinkyun Park, South Korea
- Human performance in the simulated multiple asset routing testbed (SMART): An individual differences approach  
  Noelle Brown, Joseph Coyne, Ciara Sibley, Cyrus Foroughi, USA
- Shared spatial situation awareness as a team performance indicator in collaborative spatial orientation task  
  Baptiste Prebot, Jean-Marc Salotti, Coralie Vennin, Bernard Claverie, France

### Human Factors for Textile Design/Engineering (HFATE)

**220**  
**Time**: 16:00-18:00 - COLUMBIA 11  
**Co-Chairs**: Cristina Carvalho and Carla Morais, Portugal

- Ancient handcraft improved by new material  
  Isabel Bieger, Cristina Carvalho, Gianni Montagna, Portugal
- Lean manufacturing model for the reduction of production times and reduction of the returns of defective items in textile industry  
  Yanira Andrade, Leslie Cardenas, Gino Viacava, Carlos Raymundo, Francisco Dominguez, Peru
- Apparels for comfort. Knitting for people  
  Gianni Montagna, Cristina Carvalho, Carla Morais, Portugal
- Cognitive behavior difference based on sensory analysis in tactile evaluation of fabrics  
  Jun Zhang, Hui Tao, Xuewei Jiang, China
- Changes in physical and technical characteristics of raw materials in the process of making a bra  
  Ana Brigida Filipe, Cristina Carvalho, Gianni Montagna, Portugal
- Human factors in apparel and fashion exhibition design  
  Catarina Carreto, Rui Carreto, Portugal

### Human Factors in Aging and Gerontology II (AGE)

**221**  
**Time**: 16:00-18:00 - COLUMBIA 12  
**Co-Chairs**: Carlos Aceves-Gonzalez and Qiu Hongjun, Mexico/China

- Design of waist wear products for warm-up training for the elderly  
  Xin Ye, Qian Ji, China
- Design and strategy of senior tourism under the background of population aging  
  Qiu Hongjun, Linong Dai, China
- The design adaptation of the virtual assistant Anne for moderate dementia patients and their formal caregivers in protected environment tests  
  Vera Stara, Michiel de Jong, Elisa Felici, Daniel Bolliger, Edith Birrer, Viviane von Dollien, Lorena Rossi, Marcel Heerink, Italy
- Design and implementation of bed-exit alarm system for preventing elderly falling  
  Ching Ta Wu, Chien-Hsu Chen, Taiwan
## Additive Manufacturing, New Materials and Industrial Processes

**Co-Chairs:** Paul Tallon and Siobhan Heiden, UK/USA

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<td>Experimental evaluation of mechanical properties and machine process in fused deposition modelling printed polymeric elements</td>
<td>Salvatore Brischetto, Roberto Torre, Carlo Ferro, Italy</td>
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<td>Investigation of bioplastics for additive manufacturing</td>
<td>Daniel Saloni, Nicole Mervine, USA</td>
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<td>Human performance differences between drawing-based and model-based reference materials</td>
<td>Eric Moyer, Siobhan Heiden, USA</td>
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<td>A holistic approach to additive manufacturing: From design for additive manufacturing to part verification in product development</td>
<td>Michael Wilson, Paul Tallon, UK</td>
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<td>Case study analysis for development strategies of construction 3D printing</td>
<td>Xiangcheng Meng, Xueqing Zhang, China</td>
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<td>Design for additive manufacturing of mechanical connections toward hybrid products</td>
<td>Álvaro M. Sampaio, Rita Gonçalves, André Lima, Paulo J. S. Cruz, Bruno Figueiredo, Sandra Carvalho, António J. Pontes, Portugal</td>
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<td>Design of a set of geometries and templates for the analysis of surface in the process of fused filament fabrication</td>
<td>Julian Aguilar-Duque, Juan Luis Hernández-Arellano, Cesar Balderrama-Armendariz, Liliana Avelar Sosa, Mexico</td>
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## Organizational Complexity and Leadership Management

**Co-Chairs:** Józef Frąś and Zhang Zhang, Poland/China

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<td>Oriental lifestyle construction and furniture design based on a means-end theory</td>
<td>Zhang Zhang, Jianxin Cheng, Tengye Li, Qianqian Wu, China</td>
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<td>Changes in the organizational culture of the university in mergers and acquisitions</td>
<td>Lukasz Sulkowski, Andrzej Wozniak, Robert Seliga, Poland</td>
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<td>Image and brand awareness in universities in consolidation processes</td>
<td>Lukasz Sulkowski, Robert Seliga, Andrzej Wozniak, Poland</td>
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<td>The impact of work environment in concurrence to productivity in higher institutions</td>
<td>Timothy Laseinde, Ifetayo Oluwafemi, Janharm Pretorius, Jesusetemi Oluwafemi, South Africa</td>
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<td>Evaluation and prediction of the financial and management indicators in SMEs with the use of artificial neural networks</td>
<td>Ives Torriente, Arlys Michel Lastre, Clemencia Carrera Naranjo, Paulina Morales, Karla Quishpe, Ecuador</td>
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<td>The role of creative curriculum planning in reducing early school leaving – applying service design in re-forming the pedagogical program of schools</td>
<td>Tibor Barath, Hungary</td>
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<td>The economics of intangible assets: From just value to value creation</td>
<td>Aicha Dif, Zahra Hamdani, Abdelbaki Benziane, Algeria</td>
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<td><strong>225</strong></td>
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<td>C. J. Hutto and Tanya Andrews, USA</td>
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<td>A system for user centered classification and ranking of points of interest using data mining in geographical data sets</td>
<td>Maximilian Barta, Dena Farooghi, Dietmar Tutsch, Germany</td>
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<td>Model-based human systems engineering for HSI: Decision support for analysis of alternatives in the manpower, personnel, and training domains</td>
<td>C. J. Hutto, USA</td>
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<td>NASA Marshall Space Flight Center human factors engineering analysis of various hatch sizes</td>
<td>Tanya Andrews, Becky Stewart, Walter Deitzler, USA</td>
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<td>Improving the Blockchain user experience - An approach to address Blockchain mass adoption issues from a human-centred perspective</td>
<td>Leonhard Giomann, Maximilian Schmid, Nika Kitajewa, Germany</td>
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<td>An alternative graphic and mathematical method of dimensional analysis: Its application on 71 constructive models of social housing in Guayaquil</td>
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<td>José León-Carrión and Ryan McKendrick, Spain/USA</td>
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<td>The neuromodulative effects of tiredness and mental fatigue on cognition, and the use of medication</td>
<td>Jose Leon-Carrión, Umberto Leon-Dominguez, Maria del Rosario Domínguez-Morales, Spain</td>
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<td>Affective state estimation for neuroergonomic applications with fNIRS and EEG: A narrative review of the literature</td>
<td>Nina Rothstein, John Kounios, Hasan Ayaz, USA</td>
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<td>Advanced and objective real-time drowsiness monitoring enables a new generation of fatigue risk management systems (FRMS)</td>
<td>Clementine Francois, Eva Hansenne, Philippe Cabon, Jerome Wertz, Belgium</td>
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<td>Time pressure: Effects of mental workload on mental effort mobilization and behavioral adaptability, a cardiovascular approach</td>
<td>Charlotte Mallat, Julien Cegarra, Christophe Calmettes, Rémi Capa, France</td>
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<td>Pilot workload during simulated remotely piloted aircraft: A multi-modal sensing approach</td>
<td>Denny Yu, Chantale Wilson, Fredrick Webber, Eric Watz, Wink Bennett, USA</td>
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<td>A cognitive analysis suite for enhancing recruitment and training of the cyber warfighter</td>
<td>Ryan McKendrick, USA</td>
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<td>Sudhakar Rajulu and André Kaiser, USA/Germany</td>
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<td>Quantification of buttock deformation on a rigid seat</td>
<td>Michael Harry, Russell Marshall, Michael Fray, UK</td>
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<td>Dynamical model of muscle fatigue and recovery considering the roles of slow-twist and fast-twist muscles</td>
<td>Hayato Miura, Isamu Nishida, Keicichi Shirase, Japan</td>
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<td>Virtual human hand: grasps and fingertip deformation</td>
<td>Esteban Peña-Pitarch, Neus Tico Falguera, Anas Al Omar, Iñaki Alcelay-Iarion, Jordi Vives Costa, Spain</td>
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<td>Prediction of human maximum forces – a comparison of four approaches to calculate muscle-torque</td>
<td>André Kaiser, Angelika C. Bullinger, Germany</td>
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<td>Assessment of upper body posture with garment-embedded flexible strain sensors</td>
<td>Linh Vu, Yaritza Hernandez, Elizabeth Benson, Eduardo Beltran, Han Kim, Sudhakar Rajulu, USA</td>
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<td>Digital human updated: Merging the thermal layer with the 3D anthropometric model</td>
<td>Consuelo Latorre Sánchez, Andrés Soler, Eduardo Parrilla, Jose Laparra, Jose Solaz, Alfredo Ballester, Spain</td>
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Posters will be displayed Friday, July 26, Saturday, July 27, and Sunday, July 28, 2019, during the designated timeslots listed below. Posters should be positioned 30 minutes prior to the designated start of the session and removed no later than 30 minutes after the end of the session.

A1. Visions, concepts and applications in additive manufacturing for yacht design
   Massimo Musio-Sale, Paolo Licinio Nazzaro, Eric Peterson, Italy/USA

A2. Trends of crash mitigation at high crash intersections in Nevada, US based on highway safety improvement program
   Wanmin Ge, Haiyuan Li, USA

A3. Antenna technology in wireless biometric human systems
   Rafał Przesmycki, Marek Bugaj, Marián Wnuk, Poland

A4. A pilot study of a hygienic mask sheet pattern to prevent air flow through gaps
   Mika Morishima, Tamaki Mitsuno, Japan

A5. Comparative assessment of the risk of manual patient handling between standard method and job analysis
   Pier Luigi Pavanelli, Silvio Falco, Giovanni La Valle, Cristiano Roscio, Giúlia Ricciardi, Italy

A6. Risk factors identification for metal washing process based on QOC matrix the workers’ voice and ergonomic mapping
   Brenda Trujillo-Sandoval, Martha Roselia Contreras Valenzuela, Mexico

A7. Linguistic approach to support human reliability analysis and validation work in advanced radiotherapy technologies
   Mariarosa Giardina, Pietro Buffa, Pablo Cirrone, Luigi Raffaele, Vincenzo Salamone, Italy

A8. Research on sampling inspection procedures for bank service time based on Bayes method
    Jingjing Wang, Haitao Wang, Fan Zhang, Chao Zhao, Gang Wu, Jing Zhao, China

A9. Effects of mobile application icon complexity and border on college students’ cognition
    Yaqin Cao, Yi Ding, Yiming Deng, Xuefeng Zhang, China

A10. Ergonomic study in the productive process in civil construction in the external plastering activity
    Ariel Michaloski, Juliano Stradioto, Antonio Xavier, Brazil

A11. Error in turnaround maintenance operations in the chemical and process industries (oil and gas sector)
    Godswill Ekpe, Esther Ventura-Medina, Leo Lue, UK

A12. Driving Segway: A musculoskeletal investigation
    Xavier Berti, Peter Rasche, Robert Chauvet, Matthias Wille, Vera Rick, Laura Barton, Tobias Hellig, Katharina Schäfer, Christina Bröhl, Sabine Theis, Christopher Brandl, Verena Nitsch, Alexander Mertens, Germany

A13. Training caregivers to reduce spine flexion using biofeedback
    Megan Kamachi, Mohammad Owlia, Tilak Dutta, Canada

A14. Injury severity analysis of cyclists in two wheeler to taxi crashes: An application of vehicle black box data
    Seonjung Kim, Younshik Chung, South Korea

A15. A study on exit strategies to enhance applications of new technology to safety management activity
    Haruna Yamazaki, Naoko Sakata, Yusaku Okada, Risako Shiraishi, Japan

A16. A musculoskeletal discomfort survey for the visually impaired masseurs
    Cheng-Lung Lee, Shu-Zon Lou, Peng-Cheng Sung, Yi-Tsong Pan, Taiwan

A17. Self-leadership development program in elite youth soccer players in Japan
    Yasuyuki Hocchi, Yasuyuki Yamada, Takumi Iwaasa, Tomoki Ebato, Takuya Ohsiro, Motoki Mizuno, Japan

A18. The effect of risk triggered commentary driving for preventing excessive speed
    Ayanori Sato, Japan
A19. Improving illumination to lower slip-trip-fall injury risk for mobile surface mining equipment
   Alan Mayton, USA

A20. The lean solution of hospice service design in the “internet+” era
   Yang Zhao, Chengcheng Liu, China

A21. Failure classification: An exploratory auto-ethnographic case study of human factors in the
     K-12 classroom for resilient human-system integration
   Nathan Sonnenfeld, USA

A22. Useful textile goods: Employing physical fit test results for hand-sewn facemasks -Proposal of
     material for teaching and manufacturing
   Mika Morishima, Asuka Shibuya, Tamaki Mitsuno, Japan

A23. Study of 3D modeling and printing molded cup bra based on the chest feature curve
   Mei Zhang, Jun Wang, China

A24. Analysis of driver’s behavior on warning signals for take-over of automated driving vehicles
   Jonghwa Kim, South Korea

A25. A study on the classification and standard body shape three-dimensional modeling of
     female adolescents in northeast China
   Chun Yuan Zhang, Jun Wang, China

A26. Human factors and safety perspectives on the evolving rules for use of dockless e-Scooters
   Raina Shah and Brian C. Grieser, USA

A27. Measurement for communication of intention by eye rotation
   Hisaya Tanaka, Tomomi Ohkawa, Japan

A28. Validity of cognitive function decline level using BCI
   Akihiro Fukushima, Hisaya Tanaka, Haruo Hanyu, Akito Tsugawa, Japan

A29. Advancement in orthopedics through an accessible wearable device
   Troy Kelly, Jr., Behzad Mottahed, Ryan Integlia, USA

A30. Research on ride comfort of wheelchairs by difference of running side
   Shoichiro Fujisawa, Katsuya Sato, Shin-ichi Ito, Jyunji Kawada, Jiro Morimoto,
   Mineo Higuchi, Masayuki Booka, Japan

A31. Prediction of ergonomic risks occurred by repetitive movements of the upper limbs through
     infrared thermography: A work in progress
   André Luiz Soares, Antonio Xavier, Ariel Orlei Michaloski, Brazil

A32. Factors affecting physical activity among surgical nurses of University Hospital in Japan:
     Case study using plural wearable sensors
   Hidenori Hayashi, Takumi Iwaasa, Yasuyuki Yamada, Yasuyuki Hocci, Motoki Mizuno,
   Japan

A33. An empirical study on special needs education coordinators at a school in Japan
   Sugiu Takanori, Takumi Iwaasa, Motoki Mizuno, Japan

A34. A study on the roles of student coach in university baseball
   Koya Kanno, Motoki Mizuno, Jun Egawa, Japan

A35. The design process of an ergonomic housing prototype
   Francesco Spagnoli, Italy
B1. The effect of anthropomorphization and gender of a robot on human-robot interactions
   Hongjun Ye, Haeyoung Jeong, Wenting Zhong, Siddharth Bhatt, Kurtulus Izzetoglu, Hasan Ayaz, Rajneesh Suri, USA

B2. Anthropometric analyses of head and face shape to design protective head gear for U. S. Army personnel
   Hyegjoo Choi, Todd Garlie, Joseph Parham, USA

B3. Proposal for empowering teams for the purpose of identification of deviations and elimination of accidents
   Ricardo Sousa, Diego Sousa, Cristiane Maia, Brazil

B4. A study of the correlation between payload and whole-body vibration of a scooter rider
   Shih-Yi Lu, Yen-Hui Lin, Taiwan

B5. The effect of visual cue on the sense of presence and simulator sickness in a flight simulator
   Jiwon Kim, Jinhyung Kim, Taezoon Park, South Korea

B6. Ejection seat posture modeling: Constructing fidelity profiles for verified JPATS manikins in the RAMSIS digital human modeling system
   Jeffrey Hudson, Jennifer Whitestone, Max Grattan, Lori Brattin, Andrew Koch, USA

B7. The investigation of developing a computer detective game for science education
   Fu-Hsing Tsai, Taiwan

B8. Empirical validation of a checklist for heuristic evaluation of automated vehicle HMIs
   Yannick Forster, Sebastian Hergeth, Frederik Naujoks, Josef Krems, Andreas Keinath, Germany

B9. Improvement of pointing operation ability of the cerebral palsies by adjustment of D/C ratio
   Hiromi Nishiguchi, Japan

B10. Adaptive Serious Gaming for the acquisition of cognitive skills
    Gabrielle Teyssier-Roberge, Sébastien Tremblay, Canada

B11. Improvements in a wearable device for sign language translation
    Francesco Pezzuoli, Dario Corona, Maria Letizia Corradini, Italy

B12. Self-monitoring of blood glucose device interaction: The elderly user experience and clinicians perspective.
     Stephanie Daphne Prado-Jimenez, Rosa Rosales-Cinco, Carlos Aceves-Gonzalez, Alexandra Lang, Mexico/UK

B13. Integrated sensor platform for human-centric performance measurement in cyber operations
     Harry Li, Sarah McGuire, Vincent Mancuso, Paul Picciano, Diane Staheli, USA

B14. Mechanical mismatch in modern human simulants
     Emily Eickhoff, Kimberly Hallett, Rod Jose, USA

B15. The influence of noise-stress factor in the environment on the human body
     Larisa Hambardzumyan, Armenia

B16. Evaluation of range of motion and muscle performance while wearing different fire fighters station uniform
     Su-Young Son, Yutaka Tochihara, South Korea

B17. The application of lifecycle design strategy in interaction design
     Chengcheng Liu, Yang Zhao, China

B18. A new evaluation method for conceptualization and abstract reasoning using near infra-red spectroscopy
     Kota Kano, Hisaya Tanaka, Japan

B19. An interaction evaluation of brain-computer interface using correlation analysis on information transfer rate and motor operating feeling
     Yuki Shimizu, Hisaya Tanaka, Japan

B20. The relationship with communication network and healthy state using voice and attribute information in the nursing organization
     Yuki Mizuno, Motoki Mizuno, Yasuyuki Yamada, Yasuyuki Hachi, Emiko Togashi, Hidenori Hayashi, Kentaro Inaba, Hideko Aida, Aya Okada, Japan
B21. Developing a prototype of training task for acquiring knowledge for extracting hazards
   Takayuki Masuda, Ayanori Sato, Japan

B22. Changes and differences in mental status of nurses: Using mind monitoring system by
   voice
   Takumi Iwaasa, Yasuyuki Yamada, Yasuyuki Hochi, Yuki Mizuno, Emiko Togashi,
   Hidenori Hayashi, Aya Okada, Motoki Mizuno, Japan

B23. An empirical study of information visualization for decision support in an emergency
   department information system
   Quaneisha Jenkins-Penha and Steven Jiang, USA

B24. Explicit forward glance duration hidden Markov model for inference of spillover detection
   Hyoshin Park, Nigel Pugh, Larkin Folsom, Justice Darko, Siby Samuel, USA

B25. Influence of location and frequency variations of binaural electrostimulation on heart rate
   variability
   Jing-Shia Tang, Nan-Ying Yu, Fang-Hsin Lee Lee, Chi-Wen Lung,
   Liang-Cheng Lee, Ben-Yi Liau, Chien-Liang Chen, Taiwan

B26. Test-retest differences in vigilance outcomes: Session effects on performance, stress,
   cerebral hemovelocity, and workload
   Samantha Smith, William Helton, Gerald Matthews, Greg Funke, USA

B27. Graphic-semantic expressions map: A new tool on design teaching
   Cátia Rijo, Portugal

B28. A measurement system for delay-time of gait event due to a dual task during walking
   Jinseung Choi, Jeongwoo Seo, Jinsoo Lee, Gunggil Kim, Taeho Kim, Gyerae Tack,
   South Korea

B29. Prefilled pen for convenient self-injection by patients with rheumatoid arthritis: Results of a
   usability study and compliance survey
   Tomohiko Yoshida, Akira Sagawa, Ikuko Masuda, Takaaki Fukuda, Toshihiko Hibino,
   Japan

B30. A research on floor slip resistance of long-term care institution in Taiwan
   Chingchung Chen, Zhi Xuan Chen, Chih-Yong Chen, Liwen Liu, Ei-Wen Lo, Taiwan

B31. Characterization of trunk movement patterns in warehouse workers using wearable inertial
   measurement units: A case study
   Micaela Porta, Simone Arena, Pier Francesco Orrù, Massimiliano Pau, Italy

B32. The effects of university student’s physical activity experience on communication skills and
   anxiety
   Jun Egawa, Yasuyuki Hochi, Takumi Iwaasa, Emiko Togashi, Kentaro Inaba,
   Motoki Mizuno, Japan

B33. Review of followership in sports
   Kentaro Inaba, Takumi Iwaasa, Motoki Mizuno, Japan

B34. Communication skill and form of nursing organization in Japan
   Motoki Mizuno, Yuki Mizuno, Yasuyuki Yamada, Yasuyuki Hochi, Emiko Togashi,
   Takumi Iwaasa, Aya Okada, Japan
C1. Self-similarity based multi-layer DEM image upsampling algorithm
   Xin Zheng, Ziyi Chen, Qinze Han, Xiaodan Deng, Xiaoxuan Sun, Qian Yin, China

C2. Organizational resilience model in a nuclear power plant
   Liao Dai, China

C3. Affective design of a tailor made product led by insights from big data
   Yan Li, Pei Liang, Peiguo Wang, Danqing Shi, Kai Cheng, China

C4. Designing telemedicine technology to improve medication adherence for elderly cancer patients
   Karthik Adapa, Lukasz Mazur, Prithima Mosley, USA

C5. Physiological indicators of mental workload in visual display terminal work
   Yi Ding, Yaqin Cao, Yi Wang, China

C6. Simulated marksmanship performance methodology: Assessing lethality, mobility, and stability across the preparation, execution and recovery stages of a military field training exercise
   Stephanie A. T. Brown, Jose Villa, Erika Hussey, John Ramsay, K. Blake Mitchell, USA

C7. Study on interaction design of SANGFOR Institute based on mental model
   Honglei Wang, Long Ren, Chenyue Sun, Hongzhi Pan, Jiali Zhang, China

C8. Universal signaling based on the articulation between the ergonomic practices and the perception of the visually impaired
   Luís Rocha, Thaila dos Santos Lima, Brazil

   Maryam Attef, Eileen Harris, Canada

C10. Preliminary development of an integrated mobility, lethality, and survivability soldier performance testing platform
    Stephanie Brown, K. Blake Mitchell, USA

C11. Professional portfolio of the preschool teacher: What is the real content?
    Petra Trávníčková, Czech Republic

C12. Study on the perception characteristics of different populations to thermal comfort
    Wang Rui, Wei Li, Chaoyi Zhao, Qi Yun, China

C13. Social media competition for user satisfaction: A niche analysis of Facebook, Instagram, YouTube, Pinterest, and Twitter
    Sang Hee Kweon, Boyoung Kang, Se-Jin Kim, Liyao Ma Ma, South Korea

C14. Physiological evaluation of a non-invasive wearable vagus nerve stimulation (VNS) device
    Park Se Jin, Hong Seung Hee, Kim Da Mee, Seo Young, Iqram Hussain, Min Kyu Kim, South Korea

C15. Research on thermal comfort equation of comfort temperature range based on Chinese thermal sensation characteristics
    Wang Rui, Chaoyi Zhao, Wei Li, Qi Yun, China

C16. Mapping digital media content
    Stella Angova, Svetla Tsankova, Martin Ossikovski, Maria Nikolova, Ivan Valchanov, Bulgaria

C17. Smartphone map application for preventing distracted walking in towns
    Mitsuhiko Karashima, Tomoki Kamiyama, Hiromi Nishiguchi, Japan

C18. Applied cognitive ergonomics to human error reduction in the supply chain: The case of the picking operation of a food distribution company
    Martha Caro, Leonardo Quintana, Juan Castillo, Colombia

C19. Follow me - Collaboration between human workers and autonomous transport vehicles for better process integration
    Thomas Kirks, Jana Jost, Jan Finke, Preity Gupta, Germany

C20. Injury severity analysis in truck-involved crashes using ordered probit model
    Chanmo Kang, Youshik Chung, South Korea

C21. A data mining and knowledge discovery model for improving strategic decisions in education sector: Jordan case
    Suad Alramouni, Saudi Arabia

Interactive Poster Demonstrations

POSTER/DEMONSTRATION SESSIONS, SATURDAY, JULY 27
Time: 10:00 - 12:30
Room: Columbia West (Terrace Level)
POSTER/Demonstration Sessions, Saturday, July 27

C22. Experience of the development of computer break reminders for prolonged-sitting computer users.
    Sy-Chyi Wang, Jin-Yuan Chern, Taiwan
C23. Impact of origami/kirigami light-filtering blinds on user cognition and affect
    Denise A. Baker, Samuel Cacy, Emily Jeanise, USA
C24. An eye tracking study on gender aspects in the ergonomics of human-computer interaction
    Jenny Stein, Lilia Lajmi, Germany
C25. Microstructure and mechanical properties of additively manufactured hierarchical Fe-Cr-Mn alloys
    Byoungchul Hwang, South Korea
C26. Identification of the relationships between a vocal attribute and a personality
    Kimberly Brotherton, Jangwoon Park, Dugan Um, Mehrube Mehrubeoglu, USA
C27. Development of a sleep monitoring system by using a depth sensor: A pilot study
    Jangwoon Park, Jungyoon Kim, Jaehyun Park, Alaa Sheta, Christina Murphey, Dugan Um, USA
C28. Future research methods of landscape design based on big data
    Jingcen Li, China
C29. Promoting the international competitiveness of Beijing cultural brands: The place-of-origin perspective
    Maggie Wenjing Liu, China
C30. Assessment of wellbeing parameters in the factories of the future – Comparison between levels of automation and activity level
    Maria Kreusslein, Sebastian Mach, Franziska Schmalfuß, Michael Bojko, Ralph Riedel, Matthias Beggiato, Josef Krems, Germany
C31. Facial recognition on cloud for android based wearable devices
    Zeeshan Shaukat, Chuangbai Xiao, M. Saqlain Aslam, Qurat ul Ain Farooq, Sara Aiman, China
C32. A study on exposure of workers to the risks arising from physical agents in the olive sector in Andalusia (South Spain)
    Raquel Nieto-Álvarez, María Dolores Martínez-Aires, Diego P. Ruiz, María Luisa de la Hoz-Torres, Antonio J. Aguilar-Aguilera, Spain
C33. Perceptions of multilevel safety and health outcomes in two rail company divisions differentiated by novel objective safety indicators
    Michael Steer, James Morgan, Matteo Curcuruto, UK
C34. Accident analysis of human causal factors in the oil and gas industry from 2013 to 2017 using the HFACS-OGI framework
    Chizaram Nwankwo, UK
D1. Fuzzy modeling for decision-making of behaviors corresponding to industrial accidents involving hazardous materials
   Jianfeng Zhou, China

D2. Ontological description of the basic skills of surgery
   Kazuhiko Shinohara, Japan

   Tzu-Ying Chuang, Shih-Yi Lu, Yen-Hui Lin, Taiwan

D4. Robotic monocular SLAM in wastewater treatment plants with a sampling device
   Edmundo Guerra, Yolanda Bolea, Rodrigo Munguia, Antoni Grau, Spain/Mexico

D5. The influence of mixed reality applied to industrial design education for students' different learning styles
   Po Ying Chu, Li-chieh Chen, Kuan-Ming Wang, Taiwan

D6. A study on tea drinking experience factors of Kong Fu tea in Southern Fujian Province of China
   Biyun Hong, Taiwan

D7. Automated design of competence-oriented student models using the tutoring integrated expert systems
   Galina Rybina, Elena Fontalina, Russia

D8. A study of user experience of angle recognition designed to correct people's poor posture when using smart phones
   Shuyuan Zhang, Zhanxun Dong, China

D9. The ergonomic design of wearable robot based on the shoulder kinematic analysis by walking speed
   Seung-Min Mo, Jaejin Hwang, Jae Ho Kim, Myung-Chul Jung, South Korea

D10. Usability evaluation of different interaction modes based on washing machine controlled area
    Yuan Cao, Renke He, China

D11. Countries development status and driver behavior
     Manon Limousis-Gayda, Rami Hashish, Felix Lee, USA

D12. Influence of work boot style on stair climbing
     Lydia Kocher, Jonisha Pollard, USA

D13. Effects of working posture on force perception during manual pushing tasks
     Atsushi Sugama, Akiko Takahashi, Akhiko Seo, Japan

D14. Application of economic and legal instruments at the stage of transition to bioeconomy
     Nazariy Popadynets, Valentyyna Yakubiv, Olena Panukhnyk, Yana Fedotova, Iryna Hryhoruk, Yulia Maksymiv, Svitlana Shults, Iryna Bilyk, Rostyslav Bilyk, Ukraine

D15. Use of active test objects in security systems
     Marina Boronenko, Yuri Boronenko, Vladimir Zelenskiy, Elizabeth Kiseleva, Russia

D16. Satisfying product features of a dementia care support smartphone app and potential users’ willingness to pay: Web-based survey among older adults
     Robert Chauvet, Peter Rasche, Xaver Bertl, Matthias Wille, Laura Barton, Katharina Schäfer, Christina Bröhl, Sabine Theis, Christopher Brandl, Verena Nitsch, Alexander Mertens, Germany

D17. Application of SHERPA in boarding procedure of blind passengers in airports
     Natalha Carvalho, Rapinder Sawhney, Claudia Lysis Araujo, Bernardo da Fonseca, Nelson Matias, Brazil

D18. Exploring the relationship between shape of smartphone and identity
     Koki Chiba, Namgyu Kang, Japan

D19. Identification of cognitive feature functions according to changes of vibration stimuli
POSTER/Demonstration Sessions, Saturday, July 27

Mi-hyun Choi, South Korea
D20. The power of game in inclusive education
Francesca Bozza, Italy
D21. NAVAIR human systems 4.6 digital human modeling project update
Lori Brattin Basham, Andrew Koch, Barry S. Shender, Jeffrey Hudson,
Jennifer Whitestone, Max Grattan, USA
D22. Effect of working posture and mental workload on computer workers physiological
responses
Hsieh-Ching Chen, Taiwan
D23. Proposal of information analysis system on latent human error
Tatsuya Shimada, Riku Tsunori, Kasumi Koike, Yusaku Okada, Japan
D24. The teacher’s role before the new era of technology in education
Selene Margarita Vázquez Soto, Miguel Ángel Cruz Domínguez Hernández,
Abelardo Rivera Corsi, Mexico
D25. Evaluating human factors for drone operations using simulations and standardized tests
Daniela Doroftei, Hans De Smet, Belgium
D26. Social and economic principles of single mothers’ support in Ukraine
Oxana Kravchenko, Natalia Koliada, Alla Voitovska, Ukraine
D27. Invasive medical device for cardiovascular surgery
Ene Alexandra, Carmen Mihai, Romania
D28. A method for the inclusion of human factors in system design via use case definition
Christina Dent, Shahram Sarkani, Thomas Mazzuchi, USA
science departments: Initial findings
D’arcy Picton-Barnes, David Lyall, Manikam Pillay, Australia
D30. Study on the changes of physical status under the condition of lacking food and water on
oxygen-deficient plateau
Xingwei Wang, Lue Deng, Haiyang Zhou, Qin Yao, Heqing Liu, Weiping Bu,
Yongchang Luo, China
D31. A featured based approach to assess visual discriminate capability for industrial applications
Enas Aref, Tycho Fredericks, Lee Wells, USA
D32. Effects of non-driving-related tasks on driver fatigue in automated driving
Sang Min Ko, Jong Kyu Choi, Yong Gu Ji, South Korea
D33. Assessment of the hospital disaster staffing plan: Vectors affecting purposeful/involuntary
absence and late arrival
Taro Kanno, Kazumi Kajiyama, Ryoko Ikari, Sachika Shaikuru, Japan
D34. Automatic assessment of upper limb work-related musculoskeletal risk based on wearable
sensors data
Marcela Aguirre, Alejandro Lavado, Mauricio Cerda, Chile
E1. The development of the theory of quality assessment of the information, taking into account its structural component
   Olga Popova, Boris Popo, Yury Shevtsov, Vladimir Karandey, Vladimir Klyuchko, Russia

E2. Blindsided by music: A driving simulator study employing eye tracking with music background
   Dana Olivieri, Eugene Chekaluk, Warren Brodsky, Israel

E3. Design and research of outdoor rescue products based on vital signs and cognitive orientation
   Wenjing Wang, China

E4. Design research on storage space product service system for automobile passenger transport
   Wanqiang Li, Jie Zhou, China

E5. Robots and human interaction in a furniture manufacturing industry - risk assessment
   Ana Colim, Susana Costa, André Cardoso, Pedro Arezes, Cláudia Silva, Portugal

E6. Quality of labor life in workers of the informal economy in Guadalajara, Mexico
   Raquel Gonzalez-Baltazar, Monica I. Contreras-Estrada, Silvia G. Leon-Cortes, Brenda J. Hidalgo-Gonzalez, Gustavo Hidalgo-Santacruz, Mexico

E7. Identifying influencing factors affecting pedestrians' willingness to interact with driverless vehicles
   Mattie Milner, Scott Winter, Stephen Rice, Connor Rice, Nadine Ragbir, Bradley S. Baugh, USA

E8. “Should we allow him to pass?” Increasing cooperation between truck drivers using anthropomorphism
   Jana Fank, Leon Santen, Christian Knies, Frank Diermeyer, Germany

E9. The diffusion of news applying sentiment analysis and impact on human behavior through social media
   Myriam Peñafiel, Rosa Navarrete, Maritzol Tenemaza, Stefanie Vasquez, Diego Vásquez, Sergio Luján-Mora, Ecuador

E10. Gait monitoring system for stroke prediction of aging adults
    Hongkyu Park, Seunghee Hong, Iqram Hussain, Damee Kim, Young Seo, Sejin Park, South Korea

E11. Mental health, trust, and robots: Towards understanding how mental health mediates human-automated system trust and reliance
    Jordan Reece Crawford, Ella-Mae Hubbard, Yee Mey Goh, UK

E12. Driving simulator validation of surface electromyography controlled driving assistance for bilateral transhumeral amputees
    Edric John Nacpil, Tsutomu Kaizuka, Kimihiko Nakano, Japan

E13. Text entry performance on an expandable socket attached smartphone in stationary and mobile settings
    Satvik Kulshreshtha, Ahmed Arif, USA

E14. The role of individual differences in cognitive focus and control on medication procedural performance following clinical task interruptions
    Craig Williams, Phillip Morgan, UK

E15. Clarifying the concept of OHS culture: Literature review and concept map
    Geneviève Jourdain, Canada

E16. Digital-age consumers’ retail brand loyalty: Do physical stores matter?
    Benjamin Larson, Wi-Suk Kwon, USA

E17. Aircraft systems and passenger willingness to fly in autonomous air taxis
    Kenneth Ward, Scott Winter, Stephen Rice, USA

E18. The effect of various handling tasks for musculoskeletal system of care workers
    Shu-Zon Lou, Cheng-Lung Lee, JiaYuan You, YuChi Chen, Taiwan

POSTER/DEMONSTRATION SESSIONS, SUNDAY, JULY 28
Time: 10:00-12:30
Room: Columbia West (Terrace Level)
E19. The evolution of pre-school and elementary school teachers’ career trajectories – career beginnings and ambitions
Beata Deutscherova, Adriana Wiegerova, Czech Republic

E20. A study on the accuracy improvement of traffic flow estimation using ADAS cameras with VISSIM
Hoe Kyoung Kim, Minjeong Kim, Dae Han Jeong, Kim Ah Reum, South Korea

E21. The importance of didactic toys in kindergarten educational process
Barbora Petřů Puhrová, Hana Navratilova, Czech Republic

E22. Fictional space in movies and video-games: Similarities and approaches in their fictional world’s conception
Carlos Figueiredo, Inês Coimbra, Portugal

E23. Development of ergonomic swimming goggles based on benchmarking and 3D facial scan
Jangwoon Park, Waranya Khamnasak, Jared Crawford, Justin Bonds, Ely Hernandez, Mehrube Mehrubeoglu, USA

E24. Crisis management and human resource development: Towards research agenda
Nor Amira Syairah Zulkarnaini, Roziana Shaari, Azlineer Sarip, Malaysia

E25. NeuroSquare: A flow-based visual programming tool for neurofeedback application development
Ajay Mehul, Bryan Hernandez, Chris Crawford, USA

E26. Validation of employee engagement framework
Abdulmohsan Almotawa, Roziana Shaari, Malaysia

E27. Spatial degradation of color discrimination in augmented reality
Brian Flowers, Arthur Wollooko, Caroline Kingsley, Elizabeth Thiry, Michael Jenkins, USA

E28. A framework to improve evaluations of novel decision support tools
Jesslyn Alekseyev, USA

E29. Visionaria. An open design approach for the regeneration of historical urban heritage
Daniele Rossi, Michele Calvano, Davide Paciotti, Italy

E30. Towards an accessible UX for people with disabilities in open educational resources websites
Rosa Navarrete, Myriam Peñafiel, Maritzol Tenemaza, Sergio Luján-Mora, Ecuador

E31. “Possible but improbable spaces:” From interior design experience to jewelry creation
Mónica Romãozinho, Portugal

E32. In-class competition-based assessment for effective learning
Mei King Yang, Ki Lam, China

E33. Serrated and finned glazed facades’ impact on the user’s visual comfort
Marcin Brzezicki, Poland

E34. How ergonomics is contributing to overall equipment effectiveness: A case study
Isabel Loureiro, Celina Leão, Nelson Costa, Mariana Rodrigues, Portugal

E35. Cybersickness among gamers: An online survey
Stanislava Rangelova, Daniel Motus, Elisabeth André, Germany
This set of 25 volumes gathers the proceedings of the 10th International Conference on Applied Human Factors and Ergonomics (AHFE 2019) and the Affiliated Conferences, held July 24-28, 2019, at Washington Hilton, Washington D.C. USA. By highlighting the latest theories and models, as well as cutting-edge technologies and applications, and by combining findings from a range of disciplines including engineering, design, robotics, healthcare, transportation, simulation, management and computer science, the set provides researchers and practitioners alike with a comprehensive, timely guide on human factors research and applications. It also offers an excellent source of innovative ideas to stimulate future discussions, collaborations and developments.

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U. Asgher, Pakistan
H. Ayaz, USA
M. Soares, Brazil
F. Rebolo, Portugal

E. Abdi, USA
J. Arzola-Ruiz, Cuba
Y. Ayaz, Pakistan
V. Babenko, Ukraine
V. V. Estrela, Brazil
F. B. Guo, UK
I. Juđić, Bosnia and Herzegovina
M. J. Khan, Pakistan
T. Kim, Norway
R. Moraru, Romania
N. Naseer, Pakistan
H.-D. Nguyen, Vietnam
N. Oka, Japan
A. Przezalginska, USA
R. B. Rusli, Malaysia
H. Santos, USA
S. Serino, Italy
S. Shirayama, Japan
S. B. Sial, Pakistan
S. Stankovic, France
R. Tair, France
J. Wang, China
D. Zhang, P. R. China

NEUROERGONOMICS
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ENGINEERING

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C. Baldwin, USA
W. Bennett, USA
A. Burov, Ukraine
P. Choe, Qatar
M. Cummings, USA
F. Dehais, France
C. Forsythe, USA
X. Fang, USA
Q. Gao, China
K. Gramann, Germany
Y. Guo, USA
P. Hancock, USA
D. Kader, USA
K. Kotani, Japan
B. Lawson, USA
S. Lee, Korea
H. Liao, USA
Y. Liu, USA
R. McKendrick, USA
J. Murray, USA
A. Ozok, USA
O. Parlangeli, Italy
S. Perrey, France
R. Proctor, USA
A. Savoy, USA
K. Vu, USA
T. Waldmann, Ireland
T. Ward, Ireland
B. Winslow, USA
G. Zacharias, USA
L. Zeng, USA
M. Ziegler, USA

ERGONOMICS IN DESIGN

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E. Brangier, France
R. Bruder, Germany
M. Cairrão, Brazil
J. Canás, Spain
M. Carvalho, Portugal
F. da Silva, Portugal
J. da Silva, Brazil
E. Duarte, Portugal
J. Duarte, Portugal
E. Figuieras, Portugal
M. Goebel, South Africa
S. Karmakar, India
L. Macedo, Brazil
B. Murgalska, Poland
M. Nagamachi, Japan
A. Neves, Brazil
P. Noriega, Portugal
M. Okimoto, Brazil
L. Paschoarelli, Brazil
L. Prado, Mexico
D. Raposo, Portugal
P. Ray, India
S. Singh, India
P. Soni, Thailand
S. Summerskill, UK
M. Sun, USA
P. Thaneswer, India
B. Thomas, The Netherlands
S. Ward, Australia
T. Yamaoka, Japan

HUMAN FACTORS
IN AGING AND
GERONTOLOGY

J. Kalra, Canada

J. Arora, USA
G. Montagna, Portugal
Y. Zhang, China

HUMAN FACTORS IN
ENERGY: OIL, GAS,
NUCLEAR AND
POWER INDUSTRIES

P. Fechtelkotter, USA
R. Goossens, The Netherlands
G. Montagna, Portugal
C. Carvalho, Portugal

S. Al Rawahi, Oman
R. Boring, USA
P. Carvalho, Brazil
S. Cetnir, USA
D. Desaulniers, USA
G. Lim, USA
P. Liu, China
E. Perez, USA
L. Reinerman-Jones, USA
K. Söderholm, Finland
C. Dallat, Australia
C. Lung, Taiwan
R. Maciej Kalina, Poland
D. Morgan, Australia
T. Neville, Australia
E. Salas, USA
D. Simmons, UK
N. Stanton, UK
S. Talpey, Australia
G. Walker, UK
P. Waterson, UK

HUMAN FACTORS IN
SPORTS, INJURY
PREVENTION AND
OUTDOOR RECREATION

R. Goossens, The Netherlands

C. Dallat, Australia
C. Lung, Taiwan
R. Maciej Kalina, Poland
D. Morgan, Australia
T. Neville, Australia
E. Salas, USA
D. Simmons, UK
N. Stanton, UK
S. Talpey, Australia
G. Walker, UK
P. Waterson, UK

HUMAN FACTORS FOR
APPEARAL AND TEXTILE
ENGINEERING

G. Montagna, Portugal
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L. Almeida, Portugal
A. P. Broega, Portugal
C. Figueiredo, Portugal
S. Heffernan, New Zealand
A. C. Marr, UK
C. Morais, Portugal
F. Moreira da Silva, Portugal
D. G. G. Ramos, Portugal
M. A. Sbordone, Italy
### Affective and Pleasurable Design

**S. Fukuda, Japan**  
A. Aoussat, France  
S. Bahn, Korea  
L. Chen, Taiwan  
K. Cho, Korea  
S. Choi, USA  
D. Coelho, Portugal  
O. Demirbilek, Australia  
M. Feil, USA  
A. Freivalds, USA  
Q. Gao, China  
R. Goonetilleke, Hong Kong  
B. Henson, UK  
A. Ho, Hong Kong  
W. Hwang, Korea  
Y. Ji, Korea  
A. Jung, Korea  
J. Kim, Korea  
K. Kim, Korea  
K. Kotani, Japan  
S. Minel, France  
K. Morimoto, Japan  
M. Ohkura, Japan  
T. Park, Korea  
P. Rau, China  
S. Schutte, Sweden  
D. Shin, USA  
A. Warell, Sweden  
M. Yun, Korea

### Digital Human Modeling and Applied Optimization

**T. Alexander, Germany**  
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K. Bengler, Germany  
C. Blais, USA  
D. Bonin, Germany  
B. Bradtmiller, USA  
E. Brolin, Sweden  
L. Fritzche, Germany  
S. Frohriep, Germany  
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L. Hanson, Sweden  
A. Haslbeck, Germany  
D. Högberg, Sweden  
W. Huiskamp, The Netherlands  
T. Huysmans, The Netherlands  
M. Jones, USA  
S. Pickl, Germany  
M. Reed, USA  
D. Regazzoni, Italy  
S. Scataglini, Belgium  
R. Sottilare, USA  
M. Spitzhim, Germany  
A. Upmann, Germany  
X. Wang, France  
H.-J. Wirsching, Germany  
S. Wischniewski, Germany

### Human Factors, Software, and Systems Engineering

**T. Ahram, USA**  
A. Al-Rawas, Oman  
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S. Below, Russia  
O. Bouhalji, Qatar  
H. Broodny, Israel  
A. Cauvin, France  
S. Cetiner, USA  
P. Fechtelkotter, USA  
F. Fischer, Brazil  
S. Fukuzumi, Japan  
C. Grecco, Brazil  
N. Jochems, Germany  
G. J. Lim, USA  
D. Long, USA  
M. Mochimaru, Japan  
C. O’Connor, USA  
C. Orłowski, Poland  
H. Parsaei, Qatar  
S. Pickl, Germany  
S. Ramakrishnan, USA  
J. San Martin Lopez, Spain  
K. Santarek, Poland  
M. Shahir Liew, Malaysia  
D. Speight, UK  
M. Stenkilde, Sweden  
T. Winkler, Poland  
H. Woodcock, UK

### Design for Inclusion

**G. Di Bucchianico, Italy**  
A. Accolla, China  
C. Aceves-Gonzalez, Mexico  
D. Al Thani, Qatar  
M. Carvalho, Portugal  
R. De Coster, Portugal  
R. Gheerawo, UK  
J. Gilbert, USA  
J. Herssens, Belgium  
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P. Kercher, Italy  
T. Liu, USA  
G. Mincolelli, Italy  
F. Nickpour, UK  
M. Zallio, Ireland

### Human Factors in Communication of Design

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S. H. Cha, Korea  
E. Hung, Hong Kong  
K. Kim, Korea  
S. Lam, Hong Kong  
K. H. Shin, USA  
J. B. Shin, USA  
M. Siu, Hong Kong  
X. Y. Xin, Macau  
J. Yeo, Singapore  
C. J. Yun, USA

### Interdisciplinary Practice in Industrial Design

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Y. Choi, USA  
K. Kim, Korea  
M. Kim, USA  
Y. Kim, USA  
J. Park, USA  
S. Shim, USA
Human Factors in Robots and Unmanned Systems

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M. Barnes, USA  
P. Bonato, USA  
G. Calhoun, USA  
R. Clothier, Australia  
N. Cooke, USA  
D. Ferris, USA  
J. Fraczek, Poland  
J. Geeseman, USA  
J. Gratch, USA  
S. Hill, USA  
E. Holder, USA  
M. Hou, Canada  
J. Lyons, USA  
J. Neville, USA  
J. Norris, USA  
J. Pons, Spain  
A. Trujillo, USA  
A. Tvaryanas, USA  
H. Van der Kooij, The Netherlands  
H. Zhou, UK

Human Error, Reliability, Resilience, and Performance

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H. Blackman, USA  
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D. Gertman, USA  
K. Groth, USA  
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S. Hendrickson, USA  
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K. Laumann, Norway  
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P. Liu, China  
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M. Merad, France  
N. Meshkats, USA  
A. Obenius-Mowitz, Sweden  
J. Park, Korea  
M. Pillay, Australia  
A. Salway, Canada  
C. Smidts, USA  
O. Straeter, Germany  
C. Taylor, Norway  
P. Trbovich, Canada  
M. Weinger, USA  
A. Whaley, USA

Human Factors in Artificial Intelligence and Social Computing

T. Ahram, USA  
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T. Alexander, Germany  
S. Belov, Russia  
O. Bouhali, Qatar  
H. Broodney, Israel  
A. Cauvin, France  
S. Cetiner, USA  
P. Fechtelkotter, USA  
F. Fischer, Brazil  
S. Fukuzumi, Japan  
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C. O’Connor, USA  
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D. Speight, UK  
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T. Winkler, Poland  
H. Woodcock, UK

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R. H. M. Goossens, The Netherlands

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D. Horn, USA  
S. Hwang, Taiwan  
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B. Kleiner, USA  
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M. Robertson, USA  
S. Saito, Japan  
M. Smith, USA  
H. Vanharanta, Finland  
Z. Węsławski, Poland  
R. Yu, China

Human Factors and Wearable Technologies

T. Ahram, USA  
C. Falcão, Brazil

A. Alomainy, UK  
W. Asghar, USA  
W. Friesdorf, Germany  
S. Fukuzumi, Japan  
S. Hignett, UK  
W. Hwang, S. Korea  
M. Ismail, Qatar  
Y. Ji, Korea  
B. Jiang, Taiwan  
G. Joyce, UK  
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Z. Li, PR China  
N. Matias, Brazil  
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E. Rossi, Italy  
M. ur Rehman, UK  
A. Yeo, Malaysia  
W. Zhang, PR China

Human Factors, Business Management and Society

J. Kantola, Finland  
V. Salminen, Finland

T. Barath, Hungary  
A. Bifikfalvi, Spain  
J. Bilbao, Spain  
Y. Chang, Korea  
T. Eklund, Finland  
P. Heilo, Finland  
H. Kalkis, Latvia  
C. Makatsorios, UK  
E. Markopoulos, Greece  
M. Naaranjoo, Finland  
P. Odrakiewicz, Poland  
T. Reunanen, Finland  
A. Segev, South Korea  
A. Sivula, Finland
Human Factors in Transportation

N. Stanton, UK

Road and Rail

C. Allison, UK
G. Balbinotti, Brazil
K. Bengler, Germany
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G. Burnett, UK
P. Chapman, UK
F. Chen, Sweden
D. Coelho, Portugal
B. Colucci Rios, Puerto Rico
G. Craveur, France
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I. Grabarek, Poland
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J. Krems, Germany
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E. Macioszek, Poland
F. Mars, France
D. McCay, USA
A. Mills, UK
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K. Revel, UK
R. Risser, Austria
P. Salmon, Australia
G. Sierpiński, Poland
S. ur Rehman, Sweden
D. Valdes Diaz, Puerto Rico
G. Walker, Scotland
K. Young, Australia

Aviation

V. Banks, UK
M. Biella, Germany
C. Borst, The Netherlands
T. Edwards, USA
M. Feary, USA
A. Haslbeck, Germany
B. Hooey, USA
J. Huddleston, UK
D. Kabet, USA
A. Majumdar, UK
L. Martin, USA
J. Mercer, USA
M. Mulder, The Netherlands
K. Plant, UK
J. Syversen, Norway
S. Verma, USA
K. Vu, USA
D. Yacht, USA

Maritime

A. Alkan, Turkey
D. Andrews, UK
G. Di Bucchianico, Italy
D. Gray, USA
M. Grootjen, The Netherlands
T. Koester, Denmark
S. MacKinnon, Canada
M. Musio Sale, Italy
S. Parisi, Greece
G. Praetorius, Sweden
A. Ratti, Italy
A. Roberts, UK
A. Vallicelli, Italy

Advanced Production Management and Process Control

B. Mrugalska, Poland
S. Ávila Filho, Brazil
M. Dragomir, Romania
M. Gibson, USA
A. . Goto, Japan
A. Hamrol, Poland
A. A. M. Macias, Mexico
J. Niemann, Germany
T. Ota, Japan
S. Simani, Italy
Y. Tansel, IC, Turkey
M. Wynicka, Poland

Additive Manufacturing, Modeling Systems and 3D Prototyping

M. Di Nicolantonio, Italy
E. Rossi, Italy

P. Barcarolo, Italy
M. Calvano, Italy
J. Keist, USA
J. Lagatta, Italy
F. O. Medola, Brazil
R. Narayan, USA
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P. Rao, USA
F. E. Sandnes, Norway
M. Wilson, UK

Kansei Engineering

M. Nagamachi, Japan
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A. M. Lokman, Malaysia
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<th>Conference Track</th>
<th>Chair/Co-Chairs</th>
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<td>Psychology</td>
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<td>1st International Conference on Human Factors for Apparel and Textile Engineering</td>
<td>G. Montagna C. Carvalho</td>
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<td>2nd International Conference on Human Factors in Artificial Intelligence and</td>
<td>T. Ahram</td>
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<td>Social Computing</td>
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<td>2nd International Conference on Kansei Engineering</td>
<td>M. Nagamachi S. Ishihara</td>
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<td>2nd International Conference on Interdisciplinary Practice in Industrial Design</td>
<td>C. Shin S. Shim</td>
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<td>2nd International Conference on Human Factors in Aging and Gerontology</td>
<td>J. Kalra</td>
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<tr>
<td>2nd International Conference on Additive Manufacturing, Modeling Systems and</td>
<td>M. Di Nicolantonio E. Rossi</td>
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<td>3D Prototyping</td>
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<td>2nd International Conference on Advanced Production Management and Process</td>
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<td>Control</td>
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<td>2nd International Conference on Human Factors and Assistive Technology</td>
<td>M. Okimoto</td>
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<td>3rd International Conference on Human Factors and Wearable Technologies</td>
<td>T. Ahram C. Falcao</td>
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<td>3rd International Conference on Human Error, Reliability, Resilience, and</td>
<td>R. L. Boring</td>
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<td>Performance</td>
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<td>3rd International Conference on Human Factors in Communication of Design</td>
<td>A. G. Ho</td>
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<td>3rd International Conference on Human Factors in Virtual Environments and Game</td>
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<td>Design</td>
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<td>4th International Conference on Human Factors and Simulation</td>
<td>D. Cassenti</td>
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<td>4th International Conference on Cognitive Computing and Internet of Things</td>
<td>H. Ayaz</td>
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### Exhibits

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### Exhibition Schedule

**Exhibition Setup:**
- Thursday, 25 July, 12:00 to 16:00
- Friday, 26 July, 8:00 - 10:00

**Exhibition Hours:**
- Thursday, 25 July, 19:00 to 21:00 (Optional)
- Friday, 26 July, 10:00 to 17:00
- Saturday, 27 July, 10:00 to 17:00
- Sunday, 28 July, 10:00 to 14:00

**Exhibition Closing/Dismantle:**
- Sunday, 28 July, 14:00 to 16:00

All conference exhibits, posters/demonstrations, and conference refreshment breaks will be held in the **Columbia West** (Terrace Level) at Washington Hilton.
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Massive petrochemical complex and automotive manufacturing companies are located along Seto Inland Sea at Chugoku-Shikoku area. Chugoku-Shikoku branch is actively engaged in ergonomics and human factor research in cooperation with industry.

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