3rd International Conference on Intelligent Human Systems Integration: Integrating People and Intelligent Systems

Final Program

February 19-21, 2020
University of Modena and Reggio Emilia, Modena, Italy
Plenary Session Co-Chairs:
Dr. Alberto Vergnano and Dr. Francesco Leali

Detecting road users in real-time is key to enabling safe autonomous driving applications in crowded urban environments. The talk presents a distributed sensor infrastructure being deployed in the city of Modena (Italy) at the heart of the Italian ‘Motor Valley’. Modena’s Automotive Smart Area (MASA) connects hundreds of smart cameras, supporting embedded computing platforms for edge-side real-time detection, hierarchically connected in a fog computing paradigm, with low latency V2X communication. A distributed deep learning paradigm balances precision and response time to give autonomous vehicles the required sensing support in a densely populated urban environment. MASA is an open testbench where interested partners may deploy and test next-generation Autonomous Driving and ADAS applications in a tightly connected setting.

Opening Plenary Session and Keynote Address

Wednesday, February 19, 2020 at 13:00 - 14:30
Enzo Ferrari Department of Engineering,
University of Modena and Reggio Emilia, Modena, Italy
Address: Via P. Vivarelli, 10, 41125 Modena MO, Italy (Room: Roma - First Level)

Speaker: Francesco Lilli, Head of Advanced Electrical/Electronics, FCA group
Speech title: “Automotive trends for the future of mobility”

Speaker: Prof. Marko Bertogna, Unimore
Speech title: “Distributed Smart Infrastructure for Autonomous Connected Vehicles”

Conference Reception/Banquet

Wednesday, February 19, 2020 at 15:30-22:00
(Dress is business casual, Registered Participants, Photo ID Required)

14:45 - IHSI GROUP SHUTTLE DEPARTURE FROM DEPARTMENT OF ENGINEERING “ENZO FERRARI”
15:30 - 18:00 FERRARI MUSEUM IN MARANELLO - MUSEI FERRARI
18:30 - ARRIVAL AT IL PICCOLO MUGNAIO RESTAURANT AND THE GUIDED TOUR
19:00 - 21:30 - BANQUET DINNER AND CONFERENCE RECEPTION
22:00 - RETURN TO MODENA CITY CENTRE

IHSI 2020 Conference Reception/Banquet Address:
Il Piccolo Mugnaio, Via Vandelli, 531, 41053 Torre Maina MO, Italy
Springer

Springer International Publishing AG
www.springer.com

Springer Journal of Human-Intelligent Systems Integration - Human – Intelligent Systems Integration publishes original articles on research and development efforts intended to promote the comprehensive integration of people and intelligent engineering systems.
www.springer.com/journal/42454

Driverless team of Unimore Formula - University of Modena and Reggio Emilia, Modena, Italy www.international.unimore.it

Smart Eye develops eye tracking technology that connects with human actions and intentions. From the anatomy of the eye and face to optics and intelligent software.
www.smarteye.se


CONFERENCE AT A GLANCE

REGISTRATION DESK OPEN:
Tuesday, February 18....................10:00 -14:00
Wednesday, February 19..........9:00 -13:00
Thursday, February 20..............8:00 -16:00
Friday, February 21.......................8:00 -13:00

<table>
<thead>
<tr>
<th>ACRONYM</th>
<th>TRACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSI 1</td>
<td>Automotive Design and Transportation Engineering</td>
</tr>
<tr>
<td>IHSI 2</td>
<td>Humans and Artificial Cognitive Systems</td>
</tr>
<tr>
<td>IHSI 3</td>
<td>Intelligence Technology and Analytics</td>
</tr>
<tr>
<td>IHSI 4</td>
<td>Computational Modeling and Simulation</td>
</tr>
<tr>
<td>IHSI 5</td>
<td>Humans and Artificial Systems Complexity</td>
</tr>
<tr>
<td>IHSI 6</td>
<td>Smart Materials and Inclusive Human Systems</td>
</tr>
<tr>
<td>IHSI 7</td>
<td>Human-Autonomy Teaming</td>
</tr>
<tr>
<td>IHSI 8</td>
<td>Applications and Future Trends</td>
</tr>
</tbody>
</table>

Thursday, February 20

<table>
<thead>
<tr>
<th>#</th>
<th>TITLE</th>
<th>ROOM</th>
<th>TRACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IHSI 1: Automotive Design and Transportation Engineering I</td>
<td>Roma</td>
<td>IHSI 1</td>
</tr>
<tr>
<td>2</td>
<td>IHSI 2: Humans and Artificial Cognitive Systems I</td>
<td>Milan</td>
<td>IHSI 2</td>
</tr>
<tr>
<td>3</td>
<td>IHSI 3: Intelligence, Technology and Analytics I</td>
<td>Palermo</td>
<td>IHSI 3</td>
</tr>
<tr>
<td>4</td>
<td>IHSI 4: Computational Modeling and Simulation I</td>
<td>Florence</td>
<td>IHSI 4</td>
</tr>
<tr>
<td>5</td>
<td>IHSI 5: Humans and Artificial Systems Complexity I</td>
<td>Verona</td>
<td>IHSI 5</td>
</tr>
</tbody>
</table>

10:30 - 11:00 • Coffee Break - Refreshments will be provided

<table>
<thead>
<tr>
<th>#</th>
<th>TITLE</th>
<th>ROOM</th>
<th>TRACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>IHSI 6: New Technologies, Energy and Transportation</td>
<td>Roma</td>
<td>IHSI 6</td>
</tr>
<tr>
<td>7</td>
<td>IHSI 7: Human-Autonomy Teaming I</td>
<td>Milan</td>
<td>IHSI 7</td>
</tr>
<tr>
<td>8</td>
<td>IHSI 8: Applications and Future Trends I</td>
<td>Palermo</td>
<td>IHSI 8</td>
</tr>
<tr>
<td>9</td>
<td>IHSI 1: Automotive Design and Transportation Engineering II</td>
<td>Florence</td>
<td>IHSI 1</td>
</tr>
<tr>
<td>10</td>
<td>IHSI 2: Humans and Artificial Cognitive Systems II</td>
<td>Verona</td>
<td>IHSI 2</td>
</tr>
</tbody>
</table>

13:00 - 14:00 • Lunch Break
**Thursday, February 20**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Room</th>
<th>Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>IHSI 3: Intelligence, Technology and Analytics II</td>
<td>Roma</td>
<td>IHSI 3</td>
</tr>
<tr>
<td>12</td>
<td>IHSI 4: Computational Modeling and Simulation II</td>
<td>Milan</td>
<td>IHSI 4</td>
</tr>
<tr>
<td>13</td>
<td>IHSI 5: Humans and Artificial Systems Complexity II</td>
<td>Palermo</td>
<td>IHSI 5</td>
</tr>
<tr>
<td>14</td>
<td>IHSI 6: Sustainability, Living Environment and Design Process</td>
<td>Florence</td>
<td>IHSI 6</td>
</tr>
<tr>
<td>15</td>
<td>IHSI 7: Human-Autonomy Teaming II</td>
<td>Verona</td>
<td>IHSI 7</td>
</tr>
</tbody>
</table>

**Session Time: 14:00 -16:00**

**16:00 - 16:30 • Coffee Break - Refreshments will be provided**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Room</th>
<th>Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>IHSI 8: Applications and Future Trends II</td>
<td>Roma</td>
<td>IHSI 8</td>
</tr>
<tr>
<td>17</td>
<td>IHSI 1: Automotive Design and Transportation Engineering III</td>
<td>Milan</td>
<td>IHSI 1</td>
</tr>
<tr>
<td>18</td>
<td>IHSI 2: Humans and Artificial Cognitive Systems III</td>
<td>Palermo</td>
<td>IHSI 2</td>
</tr>
<tr>
<td>19</td>
<td>IHSI 3: Intelligence, Technology and Analytics III</td>
<td>Florence</td>
<td>IHSI 3</td>
</tr>
</tbody>
</table>

**Session Time: 16:30 -18:30**

**Friday, February 21**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Room</th>
<th>Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>IHSI 5: Humans and Artificial Systems Complexity III</td>
<td>Roma</td>
<td>IHSI 5</td>
</tr>
<tr>
<td>21</td>
<td>IHSI 6: New Material, Medical Assistance and Smart Devices</td>
<td>Milan</td>
<td>IHSI 6</td>
</tr>
<tr>
<td>22</td>
<td>IHSI 7: Human-Autonomy Teaming III</td>
<td>Palermo</td>
<td>IHSI 7</td>
</tr>
<tr>
<td>23</td>
<td>IHSI 8: Applications and Future Trends III</td>
<td>Florence</td>
<td>IHSI 8</td>
</tr>
</tbody>
</table>

**Session Time: 8:30 - 10:30**

**10:30 - 11:00 • Coffee Break - Refreshments will be provided**

**Session Time: 11:00 - 13:00**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Room</th>
<th>Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>IHSI 2: Humans and Artificial Cognitive Systems IV</td>
<td>Milan</td>
<td>IHSI 2</td>
</tr>
<tr>
<td>26</td>
<td>IHSI 5: Humans and Artificial Systems Complexity IV</td>
<td>Palermo</td>
<td>IHSI 5</td>
</tr>
<tr>
<td>27</td>
<td>IHSI 8: Applications and Future Trends IV</td>
<td>Florence</td>
<td>IHSI 8</td>
</tr>
<tr>
<td>32</td>
<td>IHSI 6: Accessibility, Human Centered Design and Inclusion</td>
<td>Verona</td>
<td>IHSI 6</td>
</tr>
</tbody>
</table>

**13:00 - 14:00 • Lunch Break**

**Session Time: 14:00 -16:00**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Room</th>
<th>Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>IHSI 5: Humans and Artificial Systems Complexity V</td>
<td>Milan</td>
<td>IHSI 5</td>
</tr>
<tr>
<td>Session</td>
<td>Title</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td></td>
</tr>
</tbody>
</table>
Paula Laßmann, Florian Reichelt, Dominique Stimm, Thomas Maier, Germany  
Towards Probabilistic Analysis of Human-System Integration in Automated Driving  
Ephraim Suhir, Gunther Paul, Hermann Kaindl, Australia  
Exploring new concepts to create natural and trustful dialogue between humans and intelligent autonomous vehicles  
Andrea Di Salvo, Andrea Arcoraci, Italy  
Integrating Human Acceptable Morality in Autonomous Vehicles  
Chiara Lucifora, Giorgio Mario Grasso, Alessio Plebe, Pietro Perconti, Italy  
Measuring Driver Discomfort in Autonomous Vehicles  
Dario Niermann, Andreas Lüdtke, Germany  
Software Failure Mode and Effects Analysis  
Palak Talwar, United States  
Recreational vehicle service requirements analysis based on user experience and KANO model  
Jianxin Cheng, Xinyu Yang, China |
Thomas Kirks, Jana Jost, Jan Finke, Sebastian Hoose, Germany  
System Architecture Of a Human Biosensing And Monitoring Suite With Adaptive Task Allocation  
Brandon Cuffie, Lucas Stephane, United States  
Alpha and Beta EEG desynchronizations anticipate steering actions in a driving simulation experiment  
Giovanni Vecchiato, Maria Del Vecchio, Sergey Antopol’skiy, Andrea Bellotti, Alessia Colucciello, Anna Marchenkova, Jonas Ambeck, Luca Ascarì, Pietro Avanzini, Italy  
Task Measures for Air Traffic Display Operations  
Shi Yin Tan, Chen Hsien Chen, Sun Woh Lye, Fan Li, Singapore  
Self-Adjusted Data-Driven System for Prediction of Human Performance  
Oleksandr Burov, Evgeniy Lavrov, Nadiia Pasko, Olena Hlazunova, Olga Lavrova, Vasyl Kyzenko, Yana Dolgikh, Ukraine  
Event-related potential study on military icon based on composition-semantic relationship  
Xian Li, Haiyan Wang, Junkai Shao, China  
On perception of disharmony  
Stijn Verwulgen, Thomas Peeters, Sander Van Goethem, Sofia Scataglini, Belgium |
| 3 | IHSI 3: Intelligence, Technology and Analytics I | Democratization of AI to small scale farmers, albeit food harvesting citizen data scientists, that are at the bottom of the economic pyramid  
Chandrasekar Chandra, USA and Laura Giraldi, Italy  
The future of user experience design in the interior of autonomous cars driven by AI  
Laura Giraldi, Italy  
Procedure for the implementation of the manufacturing module of an ERP system in MSME. Applied Case: Textile “Tendencias” Enterprise, ERP UDA  
Pedro Mogrovejo, Juan Maldonado, Juan Pablo Benitez Iglesias, Esteban Crespo-Martinez, Catalina Astudillo, Ecuador  
A liveness detection method for palmprint authentication  
Ayaka Sugimoto, Yuhya Shiomi, Akira Baba, Norihiro Okui, Tetsushi Ohki, Yutaka Miyake, Masakatsu Nishigaki, Japan  
Health risk assessment matrix for back pain prediction among call center workers  
Sunisa Chaiklieng, Pornnapa Suggaravetsiri, Thailand  
Cyber Security in Educational Networks  
Yuliya Krylova-Grek, Svítlana Shevchenko, Oleksandr Burov, Svítlana Lytvynova, Sergiy Petrenko, Olena Orliyk, Evgeniy Lavrov, Oleksii Tkachenko, Ukraine |
## Detailed Technical Program

### Thursday, February 20

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Chair(s)</th>
<th>Location</th>
<th>Time</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>IHSI 4: Computational Modeling and Simulation I</td>
<td>Darko Etinger, Croatia and Mahsa Pourbafrani, Germany</td>
<td>FLORENCE</td>
<td>8:30 - 10:30</td>
<td>Discovering and mapping LMS course usage patterns to learning outcomes by Darko Etinger, Croatia. Supporting Decisions in Production Line Processes by Combining Process Mining and System Dynamics by Mahsa Pourbafrani, Sebastiaan J. Van Zelst, Wil M. P. Van Der Aalst, Germany. Software for the determination of the time and the F value in the thermal processing of packaged foods using the modified Ball method by William Rolando Miranda Zamora, Manuel Jesus Sanchez Chero, Jose Antonio Sanchez Chero, Peru. Logistic regression for criteria weight elicitation in PROMETHEE-based ranking methods by Elia Balugani, Francesco Lolli, Maria Angela Butturi, Alessio Ishizaka, Miguel Afonso Sellitto, Italy. Using real sensors data to calibrate a traffic model for the city of Modena by Chiara Bachechi, Federica Rollo, Federico Desimoni, Laura Po, Italy. Moving Towards Model Based System Engineering Development (MBSD) and Human System Integration by Robert Sharples, United Kingdom. 3D CAD design of jewelry accessories, determination of geometrical features and characteristics of the used material of precious metals by Tihomir Dovromadjiev, Mariana Stoeva, Violeta Bozhikova, Rozalina Dimova, Bulgaria.</td>
</tr>
<tr>
<td>5</td>
<td>IHSI 5: Humans and Artificial Systems Complexity I</td>
<td>Neil Gomes, USA and Timothy Stock, USA</td>
<td>VERONA</td>
<td>8:30 - 10:30</td>
<td>Your voice assistant will see you now: Reducing complexity in human and artificial system collaboration using voice as an operating system by Viraj Patwardhan, Neil Gomes, Maia Ottenstein, United States. A Systematic Review of Sociotechnical System Methods between 1951 and 2019 by Amangul Imanghaliyeva, United Kingdom. Pre-emptive Culture Mapping: Exploring a System of Language to Better Understand the Abstract Traits of Human Interaction by Marie Tupot, Timothy J. Stock, United States. Designing a safety confirmation system that utilizes human behavior in disaster situations by Masayuki Ihara, Hiroshi Nakajima, Goro Inomae, Hiroshi Watanabe, Japan. Production management model to balance assembly lines focused on worker autonomy to increase the efficiency of garment manufacturing by Carlos Raymundo-Ibañez, Valeria Sosa-Perez, Jose Palomino-Moya, Claudia Leon-Chavarri, Moises Perez, Peru. Rural Ecotourism Associative Model to optimize the development of the High Andean tourism sector in Peru by Carlos Raymundo-Ibañez, Oscar Galvez-Acevedo, Jose Martinez-Castañon, Mercedes Cano-Lazarte, Moises Perez, Peru.</td>
</tr>
</tbody>
</table>

10:30 - 11:00 • Coffee Break - Refreshments will be provided
### IHSI 6: New Technologies, Energy and Transportation

**Session Chair(s):** Alessandro Bertacchini, Italy and Fabio Pini, Italy

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 13:00</td>
<td>ROMA</td>
</tr>
</tbody>
</table>
| Photogrammetry and Additive Manufacturing based methodology for decentralized spare part production in automotive industry  
Antonio Bacciaglia, Alessandro Cenuti, Alfredo Liverani, Italy |
| Improved heat sink for thermoelectric energy harvesting systems  
Alessandro Bertacchini, Silvia Barbi, Monia Montorsi, Italy |
| Providing Comprehensive Navigational Cues through the Driving Seat to Reduce Visual Distraction in Current Generation of Semi-Autonomous Vehicles  
Ahmed Farooq, Grigori Evreinov, Roope Raisamo, Finland |
| A predictive model of users’ behavior and values of smart energy meters using PLS-SEM  
Ahmed Shuhaiber, United Arab Emirates |
| Structural Testing of Laminated Prosthetic Sockets: Comparison of Philippine Pineapple Fabric and Fiberglass  
Glenn Stephen Alkuino, Marvin Paul Medina, Ervin Christian Fandalian, Philippines |
| CAD-based risk assessment approach for safe scheduling of HRC operations for parts produced by laser powder bed fusion  
Fabio Pini, Enrico Dalpadulo, Francesco Leali, Italy |

### IHSI 7: Human-Autonomy Teaming I

**Session Chair(s):** Kirsten Revell, UK and Simon Schwerd, Germany

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 13:00</td>
<td>MILAN</td>
</tr>
</tbody>
</table>
| How was it for you? Comparing how different levels of feedback are experienced by human agents in a semi-autonomous vehicle  
Kirsten Revell, James Brown, Neville Stanton, United Kingdom |
| Goal Directed Design of Rewards and Training Features for Self-Learning Agents in a Human-Autonomy-Teaming Environment  
Simon Schwerd, Sebastian Lindner, Axel Schulte, Germany |
| Facial Expressions as Indicator for Discomfort in Automated Driving  
Matthias Beggio, Nadine Rauh, Josef F. Krems, Germany |
| Can We Talk? – The Impact Of Conversational Interfaces on Human Autonomy Teaming Perception, Performance and Situation Awareness  
Adam Bogg, Andrew Parkes, Mike Bromfield, United Kingdom |
| Driver’s Situational Awareness and Impact of Phone Interface Modality in Conventional and Semi-Autonomous Vehicles  
Syeda Rizvi, Francesca Favaro, Nazanin Nader, United States |
| Concept of an Adaptive Cockpit to Maintain the Workflow of the Cockpit Crew  
Juliane Mueller, Axel Schulte, Germany |
| A Conceptual Augmentation of a Pilot Assistant System with Physiological Measures  
Dennis Mund, Evgeni Pavlidis, Matthew Masters, Axel Schulte, Germany |

### IHSI 8: Applications and Future Trends I

**Session Chair(s):** Wayne Patterson, USA and Jari Laarni, Finland

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 13:00</td>
<td>PALERMO</td>
</tr>
</tbody>
</table>
| Distinguishing a Human or Machine Cyberattacker  
Wayne Patterson, Acklyn Murray, Lorraine Fleming, United States |
| Development of a Human System Integration Program in Military Context  
Jari Laarni, Marja Ylönén, Finland |
| Beyond Confluence, Integration and Symbiosis: Creating More Aware Relationships in Smart Cities  
H. Patricia McKenna, Canada |
| Identifying and Analysing Risk Factors from a Sociotechnical System Perspective: a Case Study  
Amandal Imanghaliyeva, United Kingdom |
| Experimental Learning for a Basic Technology Acquisition of Moving Images Production  
Akihiko Kondo, Satoshi Togawa, Japan |
| Designing Ethical AI In The Shadow of Hume’s Guillotine  
Perth Saarijärv, Jaana Leikas, Finland |
| Vulnerability Discovery in Network Systems Based on Human-machine Collective Intelligence  
Ye Han, Jianfeng Chen, ZhiHong Rao, YiFan Wang, Jie Liu, China |
<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Presenters</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSI 1: Automotive Design and Transportation Engineering II</td>
<td>Human-Centered Design for Automotive Styling: conceptualizing a vehicle from QFD to ViP</td>
<td>Gian Andrea Giacobone, Giuseppe Mincolelli, Italy</td>
<td>Florence</td>
</tr>
<tr>
<td></td>
<td>Enriching the User Experience of a Connected Car with Quantified Self</td>
<td>Maurizio Caon, Marc Demierre, Elena Mugellini, Omar Abou Khaled, Pierre Delaigue, Switzerland</td>
<td>Florence</td>
</tr>
<tr>
<td></td>
<td>Trust provisioning in the transport infrastructure</td>
<td>Scott Cadzow, United Kingdom</td>
<td>Florence</td>
</tr>
<tr>
<td></td>
<td>Unmanned Small Shared Electric Vehicle</td>
<td>Binhong Zhai, Guodong Yin, Zhen Wu, China</td>
<td>Florence</td>
</tr>
<tr>
<td></td>
<td>A Forward Train Detection Method Based on Convolutional Neural Network</td>
<td>Zhangyu Wang, Tony Lee, Michael Yu Hing Leung, Simon Tang, Qiang Zhang, Zining Yang, Virginia Cheung, China</td>
<td>Florence</td>
</tr>
<tr>
<td></td>
<td>Styling Research of DFAC-6851H4E City Bus Based on Fuzzy Evaluation</td>
<td>Huajie Wang, Jianxin Cheng, China</td>
<td>Florence</td>
</tr>
<tr>
<td></td>
<td>Are Autonomous Vehicles the Solution to Drowsy Driving?</td>
<td>Daniel Grunstein, Ron Grunstein, United Kingdom</td>
<td>Florence</td>
</tr>
<tr>
<td>IHSI 2: Humans and Artificial Cognitive Systems II</td>
<td>The Role of Artificial Intelligence in Contemporary Medicine</td>
<td>Viktoria Ter-Sargisova, Larisa Hambardzumyan, Aleksandr Baghramyan, Armenia</td>
<td>Verona</td>
</tr>
<tr>
<td></td>
<td>Mobile Real-Time Eye-Tracking for Gaze-Aware Security Surveillance Support Systems</td>
<td>Alexandre Marois, Daniel Lafond, Francois Vachon, Eric Harvey, Bruno Martin, Sebastien Tremblay, Canada</td>
<td>Verona</td>
</tr>
<tr>
<td></td>
<td>Detecting Impulsive Behavior Through Agent-based Games</td>
<td>Alia El Bolock, Ahmed Ghoneim, Cornelia Herbert, Slim Abdennadher, Egypt</td>
<td>Verona</td>
</tr>
<tr>
<td></td>
<td>A Fixation-Click Count Signature as a Visual Monitoring Enhancement Feature for Air Traffic Controllers</td>
<td>Hong Jie Wee, Sun Woh Lye, Jean-Philippe Pinheiro, Singapore</td>
<td>Verona</td>
</tr>
<tr>
<td></td>
<td>Digital transformation in Product service system for kids. Design tools for emerging needs.</td>
<td>Benedetta Terenzi, Arianna Vignati, Italy</td>
<td>Verona</td>
</tr>
<tr>
<td></td>
<td>Identifying People Based on Machine Learning Classification of Foods Consumed in Order to Offer Tailored Healthier Food Options</td>
<td>Jenna Kim, Giannina Ferrara, Shuhao Lin, Jenna Hua, Edmund Seto, United States</td>
<td>Verona</td>
</tr>
<tr>
<td></td>
<td>Visual and motor capabilities of future car drivers</td>
<td>Ferdinando Tripi, Rita Toni, Angela Lucia Calogero, Pasqualino Maietta Latessa, Antonio Tempesta, Stefania Toselli, Alessia Grigoletto, Davide Varotti, Francesco Campa, Luigi Manzoni, Alberto Vergnano, Italy</td>
<td>Verona</td>
</tr>
<tr>
<td>IHSI 3: Intelligence, Technology and Analytics II</td>
<td>Using Eye Tracking to Assess User Behavior in Virtual Training</td>
<td>Mina Fahimi Pirehgalin, Frieder Loch, Birgit Vogel-Heuser, Germany</td>
<td>Rome</td>
</tr>
<tr>
<td></td>
<td>Analysis and monitoring of a data network for the detection of user behavior patterns</td>
<td>Jairo Vladimir Hidalgo Guijarro, Marco Antonio Yandun Velastegui, Ecuador</td>
<td>Rome</td>
</tr>
<tr>
<td></td>
<td>The problem of tracking the center of attention in Eye tracking systems</td>
<td>Marina Boronenko, Vladimir Zelenksy, Oksana Isaeva, Elizaveta Kiseleva, Russia</td>
<td>Rome</td>
</tr>
<tr>
<td></td>
<td>Model of emotionally stained pupillogram plot</td>
<td>Marina Boronenko, Oksana Isaeva, Yura Boronenko, Elizaveta Kiseleva, Russia</td>
<td>Rome</td>
</tr>
<tr>
<td></td>
<td>Cost-informed water decision-making technology for smarter farming</td>
<td>Joanne Tingey-Holyoak, John Pisaniello, Peter Buss, Ben Wiersma, Australia</td>
<td>Rome</td>
</tr>
<tr>
<td></td>
<td>A review on the role of Embodiment in Improving Human-Vehicle Interaction, a proposal for further development of Embodied Intelligence</td>
<td>Hamid Naghdbi, Alireza Ajdari, Iran</td>
<td>Rome</td>
</tr>
</tbody>
</table>
Thursday, February 20

12  IHSI 4: Computational Modeling and Simulation II
Session Chair(s): Swashi Kalyana, India and María González, Ecuador

14:00 - 16:00 - MILAN
Communication Protocol between Humans and Bank Server Secure against Man-in-the-Browser Attacks
Koki Mukaihira, Yasuyoshi Jinno, Takashi Tsuchiya, Tetsushi Ohki, Kenta Takahashi, Wakaha Ogata, Masakatsu Nishigaki, Japan
Development of a solution model for timetabling problems through a binary integer linear programming approach
Juan Maldonado, María José González, Rosana Celi, Ecuador
Machine, Discourse and Power: From Machine Learning in Construction of 3D Face to Art and Creativity
Lai Man Tin, Hong Kong Sar China
Modelling Alzheimer’s people Brain using Augmented Reality for Medical Diagnosis Analysis
Rama Ramalakshmi, Muthammal Swashi, Dhamodharan Tamilselvi, Rajendran Gopi Krishnan, India
Software Vulnerability Mining Based on the Human-Computer Coordination
Jie Liu, Da He, Yifan Wang, Jianfeng Chen, Zhihong Rao, China

13  IHSI 5: Humans and Artificial Systems Complexity II
Session Chair(s): Santosh Basapur, USA and Subin Lee, South Korea

14:00 - 16:00 - PALERMO
Semiotics based Human Centered Design of Systems
Santosh Basapur, Keiichi Sato, United States
A counterattack of misinformation: How the information influences human beings.
Subin Lee, Ken Nah, South Korea
Design Collaboration Mode of Man-computer Symbiosis in the Age of Intelligence
Jinjing Liu, Ken Nah, South Korea
Picking management model with a focus on change management to reduce the deterioration of finished products in mass consumption distribution centers
Carlos Raymundo-Ibañez, Stephania Canales, Arelis Velásquez, Moises Perez, Pedro Chavez, Peru
Human-Automation Interaction through shared and traded control applications
Mauricio Marcano, Sergio Diaz, Andrea Castellano, Elisa Landini, Fabio Tango, Paolo Burgio, Italy
Risk Factors Associated with Work-related Low Back Pain among Home-based Garment Workers
Sunisa Chaiklieng, Pornnapa Suggaravetsiri, Sari Andajani, Thailand
Alignment of management by processes and quality tools and Lean to reduce unfulfilled orders of fabrics for export A case study
Carlos Raymundo-Ibañez, Zonia Bardales, Paolo Tito, Luis Rivera, Peru

14  IHSI 6: Sustainability, Living Environment and Design Process
Session Chair(s): Giuseppe Mincolelli, Italy and Paolo Burgio, Italy

14:00 - 16:00 - FLORENCE
Ensuring the Sustainability of Inclusive Projects through Strategic Addressing Supported by Process Management: Case Applied to Aquamarinna Handmade Soap
Diego S. Suárez, Esteban Crespo-Martinez, Pedro Mogrovejo, Ecuador
New Collaborative Version of The Quality Function Deployment: Practical Application To The Habitat Project
Giuseppe Mincolelli, Gian Andrea Giacobone, Michele Marchi, Silvia Imbesi, Italy
Human centered methodologies for the development of multidisciplinary design research in the field of IOT systems: project Habitat and Pleinair
Giuseppe Mincolelli, Silvia Imbesi, Gian Andrea Giacobone, Michele Marchi, Italy
Design of an Innovative Furniture System: Improving Acoustic Comfort in Coworking Workplaces
Viola Geniola, Stefania Camplone, Antonio Marano, Emilio Rossi, Italy
Spatial Cognition of Older People as an Architectural Design Tool for Accessible Long-term Care Homes
Taghreed Alzubaidi, Canada
### IHSI 7: Human-Autonomy Teaming II
#### Thursday, February 20

**Session Chair(s):** Marius Dudek, Germany and Tim Lauer, Germany

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 14:00 - 16:00 | Implementation of teaming behavior in unmanned aerial vehicles  
Marius Dudek, Sebastian Lindner, Axel Schulte, Germany |
|            | Behavioral Analysis of Information Exchange Digitalization in the Context of  
Demand Planning  
Tim Lauer, Katharina Franke, Germany |
|            | Signs, Symbols & Displays in Automated Vehicles - A Focus Group Study  
Joy Richardson, Kirsten Revell, Jisun Kim, Neville Stanton, United Kingdom |
|            | Beauty Attracts the Eye but Character Captures the Heart: Why Personality  
Matters in Chat Bot Design  
Helen Muncie, United Kingdom |
|            | Integration of humans in the fallback process by a machine in fully automated  
railway operation  
Bilal Üyümez, Germany |
|            | Analysis of Facial Expressions Explain Affective State and Trust-based Decisions  
during Interaction with Autonomy  
Catherine Neubauer, Gregory Gremillion, Brandon Perelman, Claire La Fleur,  
Jason Metcalfe, Kristin Schaefer-Lay, United States |

**16:00 - 16:30** • Coffee Break - Refreshments will be provided

### IHSI 8: Applications and Future Trends II
#### Thursday, February 20

**Session Chair(s):** Luca Fontanili, Italy and Kristine Mackare, Latvia

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 16:30 - 18:30 | Mechanical Fatigue Evaluation by Image Recognition  
Massimo Milani, Luca Montorsi, Luca Fontanili, Gabriele Storchi,  
Gabriele Muzzioli, Italy |
|            | Universal access and inclusive dwelling design for a family in Monte Sinahi,  
Guayaquil, Ecuador  
Jesus Hechavarría, Boris Forero, Robinson Vega, Ecuador |
|            | Cognitive Rehabilitation for Autism Children Mental Status Observation using  
Virtual Reality based Interactive Environment  
Tamilselvi Dhamodharan, Manju Thomas, Sathiyaprakash Ramdoss,  
Karthikeyan JothiKumar, SaiNaveenaSri SaravanaSundharam,  
BhavaniDevi Muthuramalingam, NilofarNisa Hussainalikhan,  
Sugirtha Ravichandran, VaibhavaShivani Vadivel, Pavika Suresh,  
Sasikumar Buddha, Ajith Madhusudanan, India |
|            | A group travel recommender system based on collaborative filtering and group  
approximate constraint satisfaction  
Jinlu He, IYoung Choi, JaeKyeong Kim, South Korea |
|            | Comparison Between ARIMA and LSTM-RNN for VN-Index Prediction  
Nguyen Trong Co, Hoang Huu Son, Ngo Thanh Hoang, Tran Thi Phuong Lien,  
Trinh Minh Ngoc, Vietnam |
|            | E-material formatting application prototype 2.0 development through usability  
testing of prototype 1.0  
Kristine Mackare, Anita Jansone, Raivo Mackars, Latvia |
|            | Eye control system development and research of effects of color of icons on  
visual search performance based on the system  
Jiaqi Cui, Yafeng Niu, ChengQi Xue, Xijiang Cai, Yi Xie, Bingzheng Shi,  
Lincun Qiu, China |
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Presenters/Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSI 1</td>
<td>Mercury: a vision-based framework for Driver Monitoring</td>
<td>Guido Borghi, Stefano Pini, Roberto Vezzani, Rita Cucchiara, Italy</td>
</tr>
<tr>
<td></td>
<td>A Validated Failure Behavior Model for Driver Behavior Models for Generating Skid-Scenarios on Motorways</td>
<td>Bernd Huber, Paul Schmidl, Christoph Sippl, Anatoli Djanatliev, Germany</td>
</tr>
<tr>
<td></td>
<td>Effect Of Phone Interface Modality On Drivers’ Task Load Index In Conventional And Semi- Automated Vehicles</td>
<td>Kristina Davtyan, Francesca Favaro, United States</td>
</tr>
<tr>
<td></td>
<td>Drivers’ interaction with, and perception toward semi-autonomous vehicles in naturalistic settings</td>
<td>Jisun Kim, Kirsten Revell, Pat Langdon, Mike Bradley, Ioannis Politis, Simon Thompson, Lee Skrypchuk, Jim O-Donoghue, Joy Richardson, Jed Clark, Aaron Roberts, Alex Mouzakitis, Neville Stanton, United Kingdom</td>
</tr>
<tr>
<td></td>
<td>Vision-Based Ship Detection, localization and an Improvement on Localization of A Stereo Vision System</td>
<td>Sanaz Ahmadishooli, Mehrzad Biguesh, Iran</td>
</tr>
<tr>
<td></td>
<td>Applying Persuasion Heuristics Criteria to assess Automotive Mobile Applications: A Case Study</td>
<td>Perrine Ruer, Sandrine Prom Tep, Canada</td>
</tr>
<tr>
<td>IHSI 2</td>
<td>Category Learning as a Use Case for Anticipating Individual Human Decision Making by Intelligent Systems.</td>
<td>Marcel Lommerzheim, Sabine Prezenski, Nele Russwinkel, André Brechmann, Germany</td>
</tr>
<tr>
<td></td>
<td>Improving Policy-Capturing with Active Learning for Real-Time Decision Support</td>
<td>Bénédicte Chatelais, Daniel Lafond, Christian Gagné, Alexandre Hains, Canada</td>
</tr>
<tr>
<td></td>
<td>Novel Heuristic Mechanism to Formalize Online Behavior through Search Engine Credibility</td>
<td>Debora Di Caprio, Francisco Javier Santos Arteaga, Italy</td>
</tr>
<tr>
<td></td>
<td>Caterina, Alexa and the others</td>
<td>Jurji Filieri, Elisabetta Benelli, Italy</td>
</tr>
<tr>
<td></td>
<td>Ekybot: framework proposal for chatbot in financial enterprises</td>
<td>Maritzol Tenemaza, Sergio Luján-Mora, Angélica De Antonio, Jaime Ramirez, Omar Zarabia, Ecuador</td>
</tr>
<tr>
<td></td>
<td>A unified framework for symbol grounding in human-machine interaction</td>
<td>Dingzhou Fei, China</td>
</tr>
<tr>
<td>IHSI 3</td>
<td>Impact of technological innovation on the productivity of manufacturing companies in Peru</td>
<td>Cristhian Nicolas Aldana Yarleque, Julio Cesar Ortiz Berru, Lucio Leo Verastegui Huanca, Peru</td>
</tr>
<tr>
<td></td>
<td>Parametric Urban Design</td>
<td>Rongrong Gu, Zhou Wuzhong, China</td>
</tr>
<tr>
<td></td>
<td>Analysis of Topological Relationships of Human</td>
<td>Jia Zhou, Xue-bo Chen, Zhigang Li, China</td>
</tr>
<tr>
<td></td>
<td>Narrative Review of the Role of Wearable Devices in Promoting Health Behavior: Based on Health Belief Model</td>
<td>Dingzhou Fei, Xia Wang, China</td>
</tr>
</tbody>
</table>
### Detailed Technical Program

#### IHSI 5: Humans and Artificial Systems Complexity III

**Session Chair(s):** Angela Garay, Peru and Seng Yuen Marcus Goh, Singapore

**8:30 - 10:30 - ROMA**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of Increased Cognitive Load on Field of View in Multi-Task Operations Involving Surveillance</td>
<td>Seng Yuen Marcus Goh, Ka Lon Sou, Sun Woh Lye, Hong Xu, Singapore</td>
</tr>
<tr>
<td>A framework of quality control matrix in paprika chain value: An empirical investigation in Peru</td>
<td>Edgar Ramos, Diana Garcia, Luz Roman, Juan Sotelo-Raffo, Peru</td>
</tr>
<tr>
<td>Development of Tutoring Assistance Framework using Machine Learning Technology for Teachers</td>
<td>Satoshi Togawa, Akiko Kondo, Kazuhide Kanenishi, Japan</td>
</tr>
<tr>
<td>Applying SLP in a Lean Manufacturing Model to Improve Productivity of a Furniture SME</td>
<td>Carlos Raymundo-Ibañez, Zheleñn Farfan, Manuel Caira, Moises Perez, Juan Sotelo-Raffo, Peru</td>
</tr>
<tr>
<td>Collaborative Model based on ARIMA Forecasting for Reducing Inventory Costs at Footwear SMEs</td>
<td>Carlos Raymundo-Ibañez, Alejandra Angulo, Michael Bernal, Moises Perez, Juan Sotelo-Raffo, Peru</td>
</tr>
<tr>
<td>Replenishment system using inventory models with continuous review and quantitative forecasting to reduce stock-outs in a commercial company</td>
<td>Jose Alvarez, Carlos Malca, Luis Nuñez, Ernesto Altamirano, Peru</td>
</tr>
<tr>
<td>Inventory optimization model applying the Holt-Winters method to improve stock levels in SMEs in the sports retail sector</td>
<td>Carlos Raymundo-Ibañez, Diego Amasifen-Pacheco, Angela Garay-Osorio, Maribel Perez-Paredes, Luis Rivera, Peru</td>
</tr>
</tbody>
</table>

#### IHSI 6: New Material, Medical Assistance and Smart Devices

**Session Chair(s):** Mona Mohamed, United States and Jing Liu, South Korea

**8:30 - 10:30 - MILAN**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Modeling of Subcutaneous Implantable Microchip Intention of Use</td>
<td>Mona Mohamed, United States</td>
</tr>
<tr>
<td>A New Model to Bionic Hand Prosthesis With Individual Fingers Actuators</td>
<td>Marcelo Stoppa, Guilherme Ferreira Neto, Danillo Augusto De Souza Dunck, Brazil</td>
</tr>
<tr>
<td>A brief analysis of the status quo and trend of wearable smart jewellery devices design</td>
<td>Jing Liu, Ken Nah, South Korea</td>
</tr>
<tr>
<td>UltraSurfaces: A New Material Design Vision</td>
<td>Marinella Ferrara, Chiara Pasetti, Italy</td>
</tr>
<tr>
<td>The hybrid dimension of Material Design: two case studies of a Do-It-Yourself approach for the development of Interactive, Connected, and Smart materials.</td>
<td>Stefano Parisi, Markus Holzbach, Valentina Rognoli, Italy</td>
</tr>
<tr>
<td>Session</td>
<td>Title</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IHSI 7: Human-Autonomy Teaming III</td>
<td>Let’s Get in Touch Again: Tangible AI and Tangible XR for a More Tangible, Balanced Human Systems Integration</td>
</tr>
<tr>
<td></td>
<td>Time Line based Tasking Concept for MUM-T Mission Planning with Multiple Delegation Levels</td>
</tr>
<tr>
<td></td>
<td>Capture of Intruders by Cooperative Multiple Robots Using Mobile Agents</td>
</tr>
<tr>
<td></td>
<td>Automation as driver companion: findings of AutoMate Project</td>
</tr>
<tr>
<td></td>
<td>Towards Cognitive Assistance and Teaming in Aviation by Inferring Pilot's Mental State</td>
</tr>
<tr>
<td></td>
<td>Evaluating The Impact Of Phone Interface Modality On Response Times To Stimuli In Conventional And Semi-Automated Vehicles</td>
</tr>
<tr>
<td></td>
<td>Design and evaluation of human-friendly hand-held gaming interface for robot-assisted intuitive telerehabilitation</td>
</tr>
<tr>
<td>IHSI 8: Applications and Future Trends III</td>
<td>How to Improve Manufacturing Process Implementing 5S Practices: A Case Study</td>
</tr>
<tr>
<td></td>
<td>A Potential Analysis of Cognitive Assistance Systems in Production Areas</td>
</tr>
<tr>
<td></td>
<td>Use of CAD-CAM technologies in the production of furniture for natural disaster areas in Ecuador</td>
</tr>
<tr>
<td></td>
<td>A Five-Factor KMS Success Model</td>
</tr>
<tr>
<td></td>
<td>The initial stage of development of a new computer program for the processing of psychophysiological tests</td>
</tr>
<tr>
<td></td>
<td>Modeling user preferences and priorities without the pain: a mixed-methods approach</td>
</tr>
<tr>
<td></td>
<td>Integrated Safety Risk Assessment between Enterprises, Industries and Areas</td>
</tr>
</tbody>
</table>

10:30 - 11:00 • Coffee Break - Refreshments will be provided
### IHSI 2: Humans and Artificial Cognitive Systems IV

**Session Chair(s):** Christina Valavani, Greece and Lauro Pesántez, Ecuador

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 13:00</td>
<td>MILAN</td>
<td>Improving Machine Translation Output of German Compound and Multiword Financial Terms</td>
<td>Christina Valavani, Christina Alexandris, George Mikros, Greece</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human factor and cognitive methods in the design of products and production systems of mechanical engineering in the framework of NBIC convergence</td>
<td>Evgeny Kolbachev, Elena Sidorova, Polina Vaneeva, Russia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Automatic Assessment System of Operators’ Risk in Order Picking Process for Task Analysis</td>
<td>Yangxu Li, Bach Q. Ho, Tatsunori Hara, Jun Ota, Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A variety of visual-speech matching ERP studies in quiet-noise scenarios</td>
<td>Lingling Hu, Chengqi Xue, Junkai Shao, China</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research on color stratification in dynamic environment: Frequency domain analysis of delta, SMR and theta EEG rhythms</td>
<td>Cheng Guan, Lei Zhou, Tongtong Zhang, Xiang Zeng, China</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disability and work: an intelligent ecosystem for supporting the training of persons with disabilities and improving staff selection</td>
<td>Monica Rodas-Tobar, César Bernal-Bravo, Vladimir Robles-Bykbaev, Angélica Pinos-Figueroa, Ana Parra-Astudillo, Fernando Pesántez-Avilés, Ecuador</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TARS Mobile App with Deep Fingertip Detector for the Visually Impaired</td>
<td>Tetsushi Miwa, Youichi Hosokawa, Yoshihiro Hashimoto, Giuseppe Lisi, Japan</td>
</tr>
</tbody>
</table>

### IHSI 5: Humans and Artificial Systems Complexity IV

**Session Chair(s):** Ahto Kuuseok, Estonia and Merve Demirci, Turkey

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 13:00</td>
<td>PALERMO</td>
<td>Procedure of mining relevant examples of armed conflicts to define plausibility, based on numerical assessment of similarity of situations and development</td>
<td>Ahto Kuuseok, Estonia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>User Experience over Time with Personal Assistants of Mobile Banking Applications in Turkey</td>
<td>Hatice Merve Demirci, Mehmet Berberoglu, Turkey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recruitment and training model for retaining and improving the reputation of medical specialists to increase revenue of a private healthcare SME</td>
<td>Carlos Raymundo-Ibañez, Audy Castro-Blancas, Carlos Rivas-Zavaleta, Luis Rivera, Carlos Cespedes-Blanco, Peru</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shopping Website Accessibility Study Based on Users’ Mental Models</td>
<td>Zhen Wu, Chengqi Xue, Yanfei Zhu, Binhong Zhai, Chi Zhang, China</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HIRAC-based risk management model with POKA–YOKE and TPM continuity to control and mitigate emergency scenarios in hydrocarbon sector operations</td>
<td>Carlos Raymundo-Ibañez, Jose Echevarria-Cahuas, Maria Quispe-Huapaya, Luis Rivera, Cesar Ramirez-Valdivia, Peru</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demand Management Model Based on Quantitative Forecasting Methods and Continuous Improvement to Increase Production Planning Efficiencies of SMEs Bakeries</td>
<td>Carlos Raymundo-Ibañez, Denilson Contreras-Chococata, Juan Sotelo-Raffo, Luis Rivera, Peru</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Investigating the impact of time-lagged end-to-end control in autonomous driving</td>
<td>Haruna Asai, Yoshihiro Hashimoto, Giuseppe Lisi, Japan</td>
</tr>
</tbody>
</table>
### IHSI 8: Applications and Future Trends IV

**Session Chair(s):** Taeha Yi, South Korea and Mi Chang, South Korea  
**Time:** 11:00 - 13:00  
**Location:** FLORENCE  

- **A Study on Understanding of Visitor Needs in Art Museum: Based on Analysis of Visual Perception through Eye-tracking**  
  Taeha Yi, Mi Chang, Sukypo Hong, Meereh Kim, Ji-Hyun Lee, South Korea
- **Analysis of Art Museums’ Visitor Behaviors and Eye Movements for Mobile Guide App Design**  
  Mi Chang, Taeha Yi, Po Yan Lai, Jun Hee Lee, Ji-Hyun Lee, South Korea
- **Al-Maqta Canal of Abu Dhabi, UAE: A Study of Water-front Landscapes and Flow in Manmade Canals**  
  Mohamed El Amrousi, Mohamed Elhakeem, United Arab Emirates
- **A Discussion of User Experience on a Panoramic Scooter Riding Video Service**  
  Fei-Hui Huang, Taiwan
- **Experimental Study on Dynamic Map Information Layout Based on Eye Tracking**  
  Jiapei Ren, Haiyan Wang, Junkai Shao, China
- **Research on Readability of Adaptive Foreground in Dynamic Background**  
  Tianmai Zhang, Wencheng Tang, China
- **Research on Interaction Design of Children’s Companion Robot Based on Cognitive Psychology Theory**  
  Tianmai Zhang, Wencheng Tang, China

### IHSI 6: Accessibility, Human Centered Design and Inclusion

**Session Chair(s):** Silvia Imbesi, Italy and Francesco Gerhardini, Italy  
**Time:** 11:00 - 13:00  
**Location:** VERONA  

- **A methodological approach for the design of inclusive assistive devices by integrating co-design and Additive Manufacturing technologies**  
  Francesco Gerhardini, Andrea Petruccioli, Enrico Dalpadulo, Valentina Bettelli, Maria Teresa Mascia, Francesco Leali, Italy
- **Challenges and Improvements in Website Accessibility for Health Services**  
  Patricia Acosta-Vargas, Paula Hidalgo, Gloria Acosta-Vargas, Mario Gonzalez, Javier Cuauh-Moya, Belén Salvador-ACosta, Ecuador
- **Accessibility evaluation of video games for users with cognitive disabilities**  
  Luis Salvador-Ullauri, Patricia Acosta-Vargas, Sergio Luján-Mora, Ecuador
- **A Framework Designing for Story Sharing of the Elderly: From Design Opportunities to Concept Selection**  
  Cun Li, Hu Jun, Bart Hengeveld, Caroline Hummels, Netherlands
- **Design of Smart Devices For Older People: A User Centered Approach For The Collection Of Users' Needs**  
  Silvia Imbesi, Giuseppe Mincolelli, Italy

**Lunch Break**

### IHSI 5: Humans and Artificial Systems Complexity V

**Session Chair(s):** Wael Hafez, USA and Chi Zhang, China  
**Time:** 14:00 - 16:00  
**Location:** MILAN  

- **VR Experience Reflection from the Perspective of Game Beginner: Based on an Embodied Formative Evaluation**  
  Jing Cao, Ke Ma, China
- **Human-machine interface research of autonomous vehicles based on Cognitive Work Analysis framework**  
  Chi Zhang, Guodong Yin, Zhen Wu, China
- **Research on Disabled People’s Museum Visit Experience from the Perspective of Actor-Network Theory**  
  Shifeng Zhao, Jie Shen, China
- **Human Digital Twins — Two-Layer Machine Learning Architecture for Intelligent Human–Machine Collaboration**  
  Wael Hafez, Thailand
- **Study on Key Elements of Shopping App Design for The Elderly**  
  Wenfeng Liu, Fenghong Wang, Yiyuan Chen, China
- **Usability of typefaces in Road Signage**  
  Jun Bum Shin, United States
- **Object Detection to Evaluate Image-to-image Translation on Different Road Conditions**  
  Fumiya Sudo, Yoshihiro Hashimoto, Giuseppe Lisi, Japan

**Coffee Break - Refreshments will be provided**
Posters will be displayed Thursday, February 20 and Friday, February 21. Posters must be removed by the end of each day/session they are scheduled to be demonstrated. Posters can be positioned starting on 8:00 a.m. and removed by the last poster session after 16:30. Poster demonstration sessions will be at the times shown below.

POSTER/DEMONSTRATION SESSIONS THURSDAY, FEBRUARY 20
Session Time: 9:00 - 13:00
Room: Foyer

A1. Competitiveness of higher education system as a sector of economy: conceptual model of analysis with application to Ukraine
   Olha Hrynkevych, Oleg Sorochak, Olena Panukhnyk, Nazariy Popadynets, Rostyslav Bilyk, Iryna Khymych, Viktoriia Yazina, Ukraine

A2. Application Trend of Interactive Multimedia in Art Museums
   Wang Yongbin, Yu Jian, China

A3. Design and verification method for flammable fluid drainage of civil aircraft based on DMU
   Yu Chen, China

A4. Constructing a Mental Model of Automation Levels in the Area of Vehicle Guidance
   Larissa Zacherl, Jonas Radlmayr, Klaus Bengler, Germany

A5. Drug recommendation system for geriatric patients based on bayesian networks and evolutionary computation
   Lourdes Giannina Montalvo, Edwin Villanueva, Peru

A6. The Car as a Transformer
   Jeremy Aston, Rui Pedro Freire, Portugal

A7. Strategies for accessibility to the Teodoro Maldonado hospital in Guayaquil. A design proposal focused on the human being
   Josefin Avila, Maria Fois, Jesus Hechavarria, Ecuador

A8. Design criteria in vernacular architecture as a proposal for low-income dwelling for urban parishes of the Babahoyo canton, Ecuador
   Julio Franco, Bryan Colorado, Jesus Hechavarria, Maikel Leyva, Ecuador

A9. Low-income dwelling bioclimatic design with CAD technologies. A case study in Monte Sinahí, Ecuador
   Jesus Hechavarria, Boris Forero, Robinson Vega, Katherine Naranjo, Anais Sanchez, Billy Soto, Felix Jaramillo, Ecuador

A10. Travel Time Expenditure Based on Big Data from Mobile Phone Signaling in South Korea
    Younshik Chung, Snagki Nam, Woo-Young Ahn, South Korea

A11. Brain-computer interface using motor and visual imagination
     Fabio Llorella Costa, Spain

A12. The Application of Wearable Intelligent Devices in Tennis
     Yonghui Li, China

POSTER/DEMONSTRATION SESSIONS THURSDAY, FEBRUARY 20
Session Time: 13:00 - 17:00
Room: Foyer

B1. Towards conceptual new product development framework for Latvian ICT sector companies and startups
   Didzis Rutitis, Tatjana Volkova, Latvia

B2. Fatigue measurement of task: based on multiple eye-tracking parameters and task performance
   Hanyang Xu, China
POSTER/DEMONSTRATION SESSIONS THURSDAY, FEBRUARY 20
Session Time: 13:00 - 17:00
Room: Foyer

B3. Human AI Symbiosis: The Role of Artificial Intelligence in stratifying high-risk Outpatient Senior Citizen Fall Events in a non-connected environments
   Chandrasekar Vuppalapati, Anitha Ilapakurti, Sharat Kedari, Santosh Kedari, Jaya Shankar Vuppalapati, Rajasekar Vuppalapati, United States

   Thierry Nsabimana, Christian Bimenyimana, Victor Odumuyiwa, Joël T. Hounsou, Benin

B5. Virtual Reduction and Interaction of Chinese Traditional Furniture and Its Usage Scenarios
   Yu Dehua, China

B6. Investigating human factors in the hand-held gaming interface of a telerhabilitation robotic system
   S M Mizanoor Rahman, United States

B7. Computer use related Injuries and its Prevention in a Scientific way
   Arun Kumar, India

B8. Research on a Design Method Based on Kansei Engineering: Taking girl dresses as an example
   Yun Mu, Mei Xu, Chenqi Yu, China

   Olga Popova, Boris Popov, Vladimir Karandey, Viktor Afanasyev, Russia

B10. Autonomous vehicle assistant system to improve trust in autonomous vehicles
    Taehyun Ha, Sangyeon Kim, Sangwon Lee, South Korea

B11. Explanation of effects on users' trust in autonomous vehicles: Focusing on explanation type, users’ driving style, and situations’ risk severity
    Donghak Seo, Sangyeon Kim, Sangwon Lee, South Korea

B12. Training public speaking with virtual social interactions: Effectiveness of real-time feedback and delayed feedback
    Mathieu Chollet, France

POSTER/DEMONSTRATION SESSIONS FRIDAY, FEBRUARY 21
Session Time: 9:00 - 13:00
Room: Foyer

C1. The Quantitative Evaluation of Permanent Disability In Forensic Medicine Through Photogrammetric Stereo Technology
   Claudia Trignano, Andrea Castelli, Vittorio Dell’Orfano, Elena Mazzeo, Italy

C2. Emotional Data Visualization for Well-being, Based on HRV Analysis
   Akane Matsumae, Ruiyao Luo, Yun Wang, Eigo Nishimura, Yuki Motomura, Japan

C3. Development of 21st Century Skills through Adaptive Serious Gaming
   Gabrielle Teysier-Roberge, Sebastien Tremblay, Canada

C4. Consumer Experience of a Disruptive Technology: An O2O Food Delivery App Case
   Jaehye Suk, Yeon Ji Yang, Yun Jik Jeong, Muzi Xiang, Kee Ok Kim, South Korea

C5. A Consumer-Centric Approach to Understand Users’ Digital Experiences
   Yeon Ji Yang, Jaehye Suk, Kee Ok Kim, Hyesun Hwang, Hyewon Lim, Muzi Xiang, South Korea

C6. PEST analysis based on fuzzy decision maps for the ordering of risk factors in territorial planning of the Vinces canton, Ecuador
   Carlos Valero, Jesus Hechavarria, Ecuador
C7. Load to Failure Test of Various 3D-Printed Plastics for utilization as Lower Extremity Prosthesis Components  
    Paul Matthew Jiao, Philippines

C8. Patient-centered Evaluation of 3D Printed Transtibial Prosthesis Using the Prosthesis Evaluation Questionnaire  
    Paul Matthew Jiao, Philippines

C9. Realtime Adaptive Virtual Reality for Pain Reduction  
    Luca Bondin, Alexiei Dingli, Malta

C10. Warning System for Pedestrian Safety based on Eye Tracking and Object Detection  
    Momoka Takeno, Yoshihiro Hashimoto, Giuseppe Lisi, Japan

C11. Benchmarking Visual Localization in Simulation  
    Shosuke Terazawa, Yoshihiro Hashimoto, Giuseppe Lisi, Japan

C12. Fuzzy Logic-Based Multi-Agent Simulation Approach to Analyzing the Effects of Team Diversity and Task Difficulty on Team Creativity  
    Kun Chang Lee, South Korea

D1. Examining Feedback of Apple Watch Users in Korea Using Textmining Analysis  
    Yu Lim Lee, Minji Jung, In-Hyoung Park, Ahyoung Kim, Jae Eun Chung, South Korea

D2. Semantic Network Analysis of Korean Virtual Assistants’ Review Data  
    Hyewon Lim, XU LI, Harim Yeo, Hyesun Hwang, South Korea

D3. Consumers’ Information Privacy and Security Concerns and Use of Intelligent Technology  
    Seonglim Lee, Jaehye Suk, Hee Ra Ha, Xiao Xi Song, Yuanzhou Deng, South Korea

D4. Model for urban consolidation of informal human settlements based on cooperation systems and human participation in Guayaquil, Ecuador  
    Maria Fois, Karen Sellan, Karla Moscoso, Maria Ruiz, Ecuador

D5. Systemic approach to the territorial planning of the urban parish La Aurora, Daule, Ecuador  
    Cyntia Alava, Jesus Hechavarria, Maria Fois, Ecuador

D6. Systemic approach to strategic tourism planning in the cantonal capital of Bahía de Caráquez, Sucre, Ecuador  
    Milton Zambrano, Jesus Hechavarria, Ecuador

D7. Research on design skills for personnel evaluation systems and educational programs  
    Toshiya Sasaki, Japan

D8. Understanding the South Korean Millennials in Terms of the Value of Mobility for an Intelligent Human System Focusing on Connected  
    Jiyoun Lee, Sora Sung, Ken Nah, South Korea

D9. Exploring the vital factors that impede material waste management on building construction sites  
    Bernard Martin Arthur-Aidoo, South Africa

D10. Appraisal of incentive schemes for employees: A case of construction SMEs  
    Bernard Martin Arthur-Aidoo, South Africa

D11. Exploring The Impact Of The Fourth Industrial Revolution On Small And Medium-Size Construction Firms  
    Bernard Martin Arthur-Aidoo, South Africa
4th International Conference on Intelligent Human Systems Integration: Integrating People and Intelligent Systems

February 22-24, 2021
University of Palermo, Palermo, Italy

WWW.IHSINT.ORG