6th Special Session on

Human Factors in Intelligent Transportation Systems (HFITS)

To be held within the

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A proposal presented by

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Scope and Goals:

The 6th edition of the "Human Factors in Intelligent Transportation Systems" (HFITS) Special Session follows up previous editions of Workshops on Human Factors in Intelligent Vehicles (HFIV) held at IEEE IV Conferences, which have been supported and promoted by the IEEE ITS Society's HFITS Technical Activities Committee (TC).

The aim of the HFITS series is to foster the discussion on issues related to the analysis and understanding of human factors in the design and evaluation of Intelligent Transportation System (ITS) technologies, in a wide spectrum of applications and in different dimensions. It is expected to build up a proper environment to disseminate knowledge related to the theories, principles, data and methods for designing transportation systems in order to (1) optimize human well-being and overall system performance, (2) motivate interactions among the technical and scientific communities, practitioners and students, and (3) facilitate the state-of-the-art concepts and advances to be further developed and enhanced.

ITS technologies have experienced a great improvement in the last couple of decades, turning vehicles into more interactive counterparts in transportation and mobility systems. However, the impact of such technologies on traffic awareness of the drivers, driver behavior towards improving driving performance and reducing road accidents, as well as driver psycho and physical exhaustion, still demands proper tools and approaches to be better investigated. Whereas the feasibility of incorporating new technology-driven functionalities to vehicles has played a central role in the automotive design, not always safety issues related to interaction with the new in-vehicle systems have been taken into consideration. Additionally, some other aspects are also important and need to be analyzed, such as the impacts of the technologies supporting specific driving functions on the primary task of driving, and the overall performance of transportation systems. Besides current industrial achievements of a number of important driving assistance systems, the perspective of autonomous driving vehicles populating urban areas pose even more challenging issues. Also, the information and functionalities that rely on new ways of communication have to be presented in a non-intrusive way while complying with specific design requirements.

Whereas workshops aim primarily at discussing in an informal environment about the trends, the work in progress and new ideas related to Human Factors in Intelligent Transportation Systems, special sessions are intended to be focused on specific achievements, topics and problems within the field. In this second edition of the HFITS Special Session, we encourage and welcome contributions reporting new developments of Human Factors and Human System Interaction to support the better design of transportation systems with improved efficiency, comfort, and user satisfaction, and to build a safer driving environment.

Topics of Interest:

The scientific community, as well as active practitioners in the field of HFITS are being contacted and invited to submit contributions to this special session. In addition, we would like to suggest the Conference's Program Chair to include in this Special Session papers accepted to the main conference that address issues such as:

Proposal 15 submitted to 2021 IEEE International Intelligent Transportation Systems Conference (ITSC). Received February 11, 2021.

- Intelligent user interfaces
- Interaction with autonomous vehicles
- Human-machine interaction
- Human-in-the-loop simulation
- Cognitive aspects of driving
- Human behavior and capability, affecting system design and operation
- Modelling and simulation of driving performance
- Behavioral modelling and validation methodologies
- Tools and approaches to human factors analyses
- Ergonomics of traveler information systems
- Anthropometric layout of vehicular technical systems
- Cross-cultural design
- Multimodal human-vehicle interaction
- Vehicle inside and outside state monitoring
- Augmented Cognition
- User Experience and Usability
- Computer Aided Ergonomics Analysis
- Effects of in-vehicle systems on driver performance
- Tools and methodologies for usability assessment
- Input/output modalities in system ergonomic design
- Leaning, Anticipation, and Adaptation balance
- Driving Education and Training Methodologies
- Driver and pedestrian behavior
- Accident or driving scenario modeling in naturalistic driving environment
- Driver support systems in limited ability autonomous driving

Dissemination Plan and Expected Number of Submissions

Based on the number of submissions from previous events we expect that the manuscripts submitted for consideration to the special session will be around 10-15.
Upon approval, the organizers will disseminate the CFP for the especial session to motivate both the scientific community and practitioners from different institutions to adhere to this initiative and submit their contributions.

About the Proposers:

Univ-Prof. Dr. Cristina Olaverri-Monreal graduated with a master's degree in Computational Linguistics, Computer Science and Phonetics from the Ludwig- Maximilians University (LMU) in Munich and received her PhD 2006 in cooperation with BMW. After working several years in different European countries and in the US, both within the industry and academia, she is holding the BMVIT endowed professorship and chair for sustainable transport logistics 4.0 at the Johannes Kepler University, Linz, Austria. Her research aims to minimize the barrier between users and systems in complex, dynamic scenarios that are critical to decision making processes, such as driving a vehicle and innovative forms of mobile and ubiquitous interaction approaches to human mobility. Prof. Olaverri is president elect of the IEEE Intelligent Transportation Systems (ITS) Society. In addition, she serves as chair of the Technical Activities Committee on Human Factors in ITS and associate editor of the IEEE ITS Magazine and IEEE Transactions on ITS. Prof. Olaverri can be contacted by e-mail at cristina.olaverri-monreal@ieee.org

Dr. Fernando Garcia Fernandez received the Eng. degree in Telecommunications in 2007, M.S. in Robotics and Automatics in 2007 and PhD in Electric, Electronic and Automation Engineering in 2012 from Universidad Carlos III de Madrid. He is Associate Professor at the Intelligent System Lab, Systems and Automation Department, Universidad Carlos III de Madrid. His research interests include data fusion, computer vision, intelligent vehicles and human factors in intelligent vehicles. Dr. Garcia was recipient of the VIII Barreiros Foundation award to the best research in the automotive field in the year 2014 and the award to the best PhD. Thesis (3rd prize) on Intelligent Transport Systems by the Spanish chapter of ITSS. Dr. Garcia can be contacted by email at (fegarcia@ing.uc3m.es).

Elmar Matthes received his engineer degree, in Electrical engineering from the technical university of Braunschweig 1995 (Germany). From 1996-2018, he was responsible by IAV GmbH (Germany) for Advanced Driver Assistance Systems and Park assistance systems. Currently, he is responsible by IAV GmbH for systems integration, camera based systems for the area of highly connected autonomous driving systems and ADAS. Since 2018, He is leading the department of perception and camera functions at IAV GmbH. He has a record of accomplishment of fundamental research on these topics documented by several publications. He is also a member of IEEE ITSS. elmar.matthes@iav.at