Human Factors in Intelligent Transportation Systems (HFITS)

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Abstract—The fourth edition of the Special Session on "Human Factors in Intelligent Transportation Systems" (HFITS) will be held at IEEE ITSC2019 Conference in Auckland, New Zealand and will be supported and promoted by the IEEE ITS Society’s Technical Activities Committee on Human Factors.

I. INTRODUCTION

The fourth 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 IEEE ITS Society’s Technical Activities Committee on Human Factors.

II. SCOPE AND GOALS

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.

III. TOPICS OF INTERESTS

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:

- 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
- 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
- Learning, Anticipation, and Adaptation balance
- Driving Education and Training Methodologies
- Driver and pedestrian behavior, affecting driving safety
- Accident or driving scenario modeling in naturalistic driving environment
- Multimodal human-vehicle interaction
- Vehicle inside and outside state monitoring
- Driver support systems in limited ability autonomous driving

IV. 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 special session to motivate both the scientific community and practitioners from different institutions to adhere to this initiative and submit their contributions.

ABOUT THE PROPOSERS

**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 2002 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. Dr. Olaverri is a member of the IEEE Intelligent Transportation Systems (ITS) Council Executive Committee and Vice-president of Educational Activities. In addition, she serves as chair of the Technical Activities Committee on Human Factors in ITS and editor of the ITS Research Lab Spotlight column of the IEEE ITS Magazine. Dr Olaverri can be contacted by e-mail at cristina.olaverri-monreal@ieee.org

**Dr. Fernando Garcia** Fernando Garcia is Professor at Universidad Carlos III de Madrid. Where he focuses his researches in Intelligent Vehicles and Intelligent Transportation Systems, involving the use of Computer Vision, Sensor Fusion, Human Factors, and Vehicle Communication. He has been recipient of the Master in Robotics and Automation Scholarship at Universidad Carlos III de Madrid in 2008, the Barreiros Foundation Award in the domain of Automotive and Vehicle Applications in 2014, finalist to the best PhD Thesis Dissertation Award in the period 2013-2015 given by ITSS Spanish Chapter, and the award to the innovation in the automotive sector, diagnosis at “Galería de innovación Motortec 2015”. He is member of the BoG of the IEEE-ITSS since January 2017, Chair of the Spanish Chapter of this society since 2019, and has organization experience in the most important conferences of this society (ITSC, IV and ICVES).