Special Session on Advanced Vehicle Dynamics Control

Organizers

- **Prof. Adriana Tapus**
  Computer Science and System Engineering Department – ENSTA ParisTech
  828 Boulevard des Maréchaux,
  91120 Palaiseau - France
  Email: adriana.tapus@ensta-paristech.fr

- **Prof. Bruno Monsuez**
  Computer Science and System Engineering Department – ENSTA ParisTech
  828 Boulevard des Maréchaux,
  91120 Palaiseau - France
  Email: bruno.monsuez@ensta-paristech.fr

- **Dr. Vicente Milanes**
  Research Department – Renault
  1 Avenue du Golf,
  78280 Guyancourt - France
  Email: vicente.milanes@renault.com

- **Mr. Moad Kissai**
  Computer Science and System Engineering Department – ENSTA ParisTech
  828 Boulevard des Maréchaux,
  91120 Palaiseau - France
  Email: moad.kissai@ensta-paristech.fr

Manuscript Submission

- **Special session papers deadline:** March 31st, 2019
- **Submission site:** https://its.papercept.net/conferences/scripts/start.pl
- **Instructions:** https://www.itsc2019.org/manuscript-submissions

Description

Thanks to the tremendous advances in electronics and computer science, the automotive industry started steering its focus towards active safety systems. In the late 1970's, the Anti-lock Braking System (ABS) proved its efficacy and effectiveness regarding accidents avoidance. Since then, various integrated systems have been proposed by car manufacturers and equipment suppliers. Some of them have even become a necessity as the Electronic Stability Program (ESP). A natural evolution would be therefore a fully autonomous vehicle, that are expected to enhance considerably road safety.

This idea managed to seduce the entire automotive industry especially with the explosion of Artificial Intelligence (AI) real-world applications. AI should be able to make decisions as a human would do in the near future. In order for the vehicle to follow the generated commands, ensure its safety, and expand its decision-making spectrum, car manufacturers are equipping their vehicles by advanced embedded systems. Every aspect of vehicle dynamics and their internal couplings should be controlled to ensure the execution of any decision taken, either by the AI or the driver itself.

Within this context, the ITSC 2019 Advanced Vehicle Dynamics Control Special Session welcomes intelligent control, estimation and modeling contributions aimed at the safe, comfortable, and effective development of integrated vehicle dynamics control systems. The aim of this special session is to serve as a forum for the exchange of ideas and discussions on recent and new trends in advanced control and estimation applied to chassis systems and advanced driver assistance systems (ADAS).

List of specific topics

- Chassis Systems and ADAS Control,
- Over-Actuation, Systems Interactions and Management,
- Fault-Tolerance Control,
- Autonomous Vehicles Model Predictive Control,
- Supervisory Control and Autonomous Vehicles Collision-Free Control,
- Friction Estimation and Adaptive Control,
- Robust Control Theory,
- Vehicle Dynamics and Tire Modeling,
- Comfort Design and Suspension Control,
- Human-Vehicle Interaction and Driver Behavior.

Short biography of the organizers

- **Adriana Tapus** obtained the French Habilitation (HDR) for her thesis entitled "Towards Personalized Human-Robot Interaction" from Pierre and Marie Curie University (UPMC), France in 2011. She received her PhD in computer science from Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland in 2005, and her degree of Engineer in computer science and engineering from Politehnica University of Bucharest, Romania in 2001. She worked as an Associate Researcher at the University of Southern California (USC), where she was among the pioneers on the development of socially assistive robotics, also participating to activity in machine learning, human sensing, and human-robot interaction. Her main interests are on long-term learning (i.e. in particular in interaction with humans), human modeling, and on-line robot behavior adaptation to external environmental factors. She is currently a Full Professor in the Autonomous Systems and Robotics Lab in the Computer Science and System Engineering Department (U2IS), at ENSTA ParisTech, France. Prof. Tapus is an Associate Editor for International Journal of Social Robotics (IJSR), ACM Transactions on Human-Robot Interaction (THRI), and IEEE Transactions on Cognitive and Developmental Systems (TCDS) and in the steering committee of several major robotics conferences (General Chair 2019 of HRI, Program Chair 2018 of HRI, General Chair 2017 of ECMR). She has more than 150 research publications and she received the Romanian Academy Award for her contributions in assistive robotics in 2010. She was elected in 2016 as one of the 25 women in robotics you need to know about. She's also the PI of various EU and French National research grants. Further details about her research and her activities can be found at http://perso.ensta-paristech.fr/~tapus/eng/.

- **Bruno Monsuez** received his PhD in computer science in 1994, and his degree of Engineer in 1989 from École Polytechnique, France. He started his academic career at École Normale Supérieure, Paris, France working on automated verification of Software and Hardware Systems. He was on leave about 10 years working for pioneering the formal system design methodology and formal verification methods in the industry. His current research interests are on the design and validation of highly automated systems as well as autonomous systems for safety critical systems. He is currently Full Professor in the Autonomous Systems and Robotics Lab in the Computer Science and System Engineering Department (U2IS), at ENSTA ParisTech, France. Prof. Bruno Monsuez served on PCs and as PC chair for numerous international workshops and conferences. He is the steering committee chair of Int. Conference on Verification and Evaluation of Computer and Communication Systems (VECoS).

- **Vicente Milanes** received his Ph.D. degree in electronic engineering from University of Alcala, Madrid, Spain, in 2010. He was with the AUTOPIA program at the Center for Automation and Robotics (UPM-CSIC, Spain) from 2006 to 2011. Then, he was awarded with a two-years Fulbright fellowship at California PATH, UC Berkeley. In 2014, he joined the RITS team at INRIA, France. Since 2016, he is with the Research Department at Renault, France. Dr. Milanes has 120+ reserach publications and he has been awarded with the Best Paper Award in three conferences and his PhD has received three major awards. His research interests include autonomous vehicles, vehicle dynamic control, intelligent traffic and transport infrastructures, and vehicle-infrastructure cooperation.

- **Moad Kissai** received his M.Sc. in mobility and electric vehicles from Arts et Métiers ParisTech, France in 2015, and his degree of Engineer in Electromechanics from National Graduate Engineering School – Mines Rabat, Morocco in 2014. He is currently pursuing the PhD degree on automotive and control engineering with the Computer Science and System Engineering Department (U2IS), at ENSTA ParisTech, France. His current research interests include vehicle motion control, chassis systems coordination, control allocation, and robust control. Mr. Kissai is an active Student Member of IEEE Control Systems, Robotics and Automation Societies. He has more than 10 research publications. He was finalist in the best student paper award at The 2018 IEEE Intelligent Vehicles Symposium (IV'18), the premier annual technical forum sponsored by the IEEE Intelligent Transportation Systems Society (ITSS), and received best oral presentation award at 2018 7th International Conference on Mechatronics and Control Engineering (ICMCE 2018).