



Wednesday, 18 November 2020

Panel I

ECSEL for Automotive: Lighthouse projects

Chair: Livio Baldi - AEIT-AMES

The ECSEL JU is the largest European Research programme in Electronic Components and Systems. A special attention has been given to Automotive applications that are the topic of a dedicated Lighthouse initiative, aiming at the coordination of research projects. The panel will present the most relevant running projects in the area of ADAS, electrical drive and manufacturing.

- **Project PRYSTINE 2017**
G. Dimitrakopoulos, Infineon-Harokopio University, Greece
- **Project MADEin4 2018**
I. Englard, Applied Materials, Israel
- **Project ENABLE-S3 2016**
A. Leitner, AVL, Austria
- **Project 3Ccar 2015**
P. Perlo, I-FEVS, Italy
- **Project AutoDrive 2017**
J. Reiner, Infineon, Germany

Panel discussion

Automotive industry at a crossroads: evolution or revolution?

Topic

The recent coronavirus crisis seems to have accelerated some trends that were already present in the Automotive market, like the move towards more eco-friendly engine solutions and increased driving automation. However other trends are also appearing, like the increased efforts to push cars outside cities and alternatives to car ownership like BlaBlaCar, Uber and car sharing.

Is it enough to provide more intelligent and less polluting cars, or should the Automotive sector rethink itself as solutions for personal mobility?

George Dimitrakopoulos

Short CV:

Prof. Dr. Eng. George Dimitrakopoulos has received his bachelor degree in Electrical and Computer Engineering in 2002 and his Ph.D. in 2007, from the National Technical University of Athens, and the University of Piraeus, respectively. Since 2009 he is also with the Harokopio University of Athens (HUA), department of Informatics and Telematics, where he is now an associate professor. He has been acting also as an R&D consultant for Intrasoft International S.A., as well as for several startups in the areas of software development for communication systems. Since January 2018 he is a senior consultant (ext.) at the department of funded projects at Infineon Technologies A.G. (IFAG), where he coordinates the ECSEL project PRYSTINE. He is the author of 2 books on vehicular communications and autonomous driving, as well as more than 160 publications in international journals and conferences. In the last 18 years he has been involved in numerous internationally funded R&D projects. His research interests include the design and development of safety and emergency management algorithms for vehicular communication, as well as the design and development of strategies for the optimization of wireless networks based on cognitive networking principles.

Title/Summary:

Perception and Control Systems for Highly Automated Vehicles: The ECSEL project PRYSTINE

Ilan Englard

Short CV:

Ilan Englard (m) is a projects manager for Applied Materials (AMAT) Israel and MADEin4 project coordinator. He has 26 years of experience in the semiconductor industry as AMAT's application engineer at Micron technology in the USA and Italy and as AMAT's technologist at ASML in The Netherlands. He has authored numerous papers in the metrology and lithography fields. Ilan Englard holds an electronic engineering degree and in recent years, additionally to his work at AMAT, he provides a consultancy services regarding European funded projects in the Electronic Components and Systems (ECS) domain

Title/Summary:

MADEin4 - Metrology Advances for Digitized ECS (semiconductor and Automotive) industry 4.0

In the core of MADEin4 project are the developments of new tools and methods which combine in an intelligent way, for both ECS's Semiconductor and Automotive industries, the large amount of metrology data, with design, process and tools data to enhance productivity as well as predictability of the production processes.

Andrea Leitner

Short CV:

Andrea Leitner received her Master's degree in Software Engineering and Economics from the Graz University of Technology in 2009 and received her Ph.D. degree in Information and Communication Engineering, also from Graz University of Technology in 2012. After some years at the Virtual Vehicle Research Center, she joined AVL List GmbH as a research project manager coordinating the ENABLE-S3 project. Currently, she is responsible for the architecture of the AVL ADAS/AD testing toolchain.

Title/Summary:

The presentation will give an overview on the ENABLE-S3 project. The project aimed for developing methodology and tooling for testing automated cyber-physical systems from various domains. One main aspect is the advancement of scenario-based validation and the standardization of scenario descriptions.

Pietro Perlo

Short CV:

Pietro took his Laurea degree in General Physics at the University of Torino in 1980. In 1981 he was employed at Centro Ricerche Fiat continuing the collaboration with the University as contract professor for 15 years. As director at Centro Ricerche Fiat he originated the first world-wide commercial introduction of diffractive and microoptics into the automotive, motorcycles, general lighting and IR systems for intrusion alarm. He has coordinated large programmes on high power lasers robotics and photonics contributing to the success of several Italian SMEs. He has originated quite a number of EU projects on advanced systems development and integration for efficient electrical mobility. He authored over 180 technical and scientific publications and holder of patents that led to large scale productions in automotive, general-emergency lighting and infrared intrusion sensors. Pietro was a member of the founding group of the European Technology Platform on Smart System Integration EPoSS. In 2011 he founded his company "Interactive Fully Electrical Vehicles" I-FEVS which is currently owning a portfolio of 138 world-wide granted patents. Pietro has been for 5 years a member of the EU H2020 advisory board on "Smart, Green and Integrated Transports". He owns the MIT certificate on Blockchain Technologies and the MIT certificate on Artificial Intelligence: Implications for Business Strategy.

Title/Summary:

The 3CCAR project has been a great opportunity for I-FEVS to consolidate his activities on the manufacturing of Urban Fully Electric Vehicles aiming at being the best per their class per safety, efficiency, applied level of security and affordability. Thanks to contributes of the Italian partners Solbian and STMicroelectronics within the project IFEVS has integrated 700W of high efficiency solar panels into one of his prototype vehicles. The results have been reported into an Euronews documentary forecasted in 130 countries. The results will be exploited in novel vehicles which are going to be commercialized starting from mid 2021.

The presentation will also be an opportunity to introduce the development underway at IFEVS.

John Reiner

Short CV:

Reiner JOHN received his diploma degree in Electrical Engineering from the Fach-hochschule des Saarlandes (Germany) in collaboration with the University of Metz / Perpignan (France). In 1984 he started his career with the Siemens Semiconductor Group in Munich where he worked in the field of automatic test system development. In 1989 he was responsible for the consultation and application of embedded control development tools in the Siemens Automation Group. After joining the Siemens Corporate Research and Development in 1991 Reiner was involved in the research on knowledge-based embedded systems within the fuzzy group. Moving to Regensburg to work for the Siemens Automotive Division three years later, he took on the development of concepts and implementations for a real-time operating system to manage and control the engine and transmission system. In 1996 he joined the Siemens Semiconductors the later IPO of Infineon technologies where he served in several management positions in the Quality and Production Department of the company. In year 2000, he further pursued his career in Taiwan where he set up and managed the Infineon Silicon Foundry Taiwan Office as the head of department for seven years. At the present, Reiner is in charge of the coordination of public funded R&D projects in the area of trustable AI for industrial and mobility applications inspiration and management of R&D projects mainly for of electro mobility based on highly efficient propulsion, perception and advanced control systems.

Title/Summary

Future mobility: What comes up now? What can we see in the crystal ball?

One of the key challenge for future automated driving systems is the need to imitate the intelligence and ability of human drivers, both in terms of driving agility, as well as in their intuitive understanding of the surroundings and dynamics of the vehicle when driving in a complex urban environment. These challenges to enable machines to exercise human-like cognitive capabilities across the traditional sense-plan-act chain, for perception, decision-making and control need new way of implementation and architectures. Focal points of the presentation are:

1. Human-like cognitive capabilities - non-causal reasoning, predictive decision-making, learning - integrated into processes for perception, decision-making and control in safety-critical autonomous use cases.
2. Are Silicon architectures specialized for federated cognition?, with short response time?, low power consumption, and reduced system complexity/ size? What happens by our global competition?

3. Frameworks and methodologies for verification and safety certification of cognitive (AI-based) functions.
4. Applications of AI-empowered perception, decision, control and monitoring systems in the automotive and manufacturing industry.