

Report on IEEE SMC Distinguished Lecture by Professor Maria Pia Fanti

On September 27-28, 2025, Professor Maria Pia Fanti from the Polytechnic University of Bari (Italy) gave an IEEE SMC Distinguished Lecture titled “**Artificial Intelligence Approaches for Cooperative, Connected, and Automated Mobility**” at the IEEE TechX Tunisia, Sousse (Tunisia). This talk was invited by Dr. Salah Gontara, Assistant Professor in Computer Science at École Polytechnique de Sousse, Counsellor of the IEEE EPS Student Branch, and IT Representative at IEEE SMC Tunisia.

Abstract of the Talk

Artificial Intelligent (AI) technologies such as Machine learning (ML) and deep reinforcement learning (DRL) and Digital Twins have the potential to bring about significant impacts in automation across various industries and domains. The number of cooperative, connected and automated vehicles (CCAVs) in urban areas will gradually increase soon. Consequently, mixed traffic made of both regular human driven and CCAVs will likely be a typical scenario over the next few years. Connected and automated vehicles can benefit the whole traffic experience by preventing collisions and optimizing traffic waves, by developing and implementing innovative services.

The talk explained how AI and Digital Twins technologies can be applied for a full integration of CCAVs in the real traffic. The goal is providing benefits to all citizens and positive impacts for society: i) safety (i.e., reducing the number of road accidents caused by human error; ii) environment (i.e., reducing transport emissions and congestion by smoothening traffic flow and avoiding unnecessary trips); iii) inclusiveness (i.e., ensuring inclusive mobility and good access for all).

Maria Pia Fanti since 1983, she has been with the Department of Electrical and Information Engineering of the Polytechnic University of Bari, Italy, where she is currently a Full Professor of system and control engineering and Chair of the Laboratory of Automation and Control. Her research interests include management and modeling of complex systems, such as transportation, logistics and manufacturing systems; discrete event systems; Petri nets; cyber physical systems. Prof. Fanti is IEEE fellow and has published more than 350 papers and two textbooks on her research topics. She is senior editor of the IEEE Trans. on Automation Science and Engineering and of IEEE Trans. of Intelligent Vehicles, and Associate Editor of the IEEE Trans. on Systems, Man, and Cybernetics: Systems, Chair of the Editorial Board of the IEEE Int. Conference on Automation Science and Engineering. She is member at large of the Board of Governors of the IEEE Systems, Man, and Cybernetics Society, she was member of the AdCom of the IEEE Robotics and Automaton Society (2018-2023). Prof. Fanti

was founder and chair of the Technical Committee on Automation in Logistics of the IEEE Robotics and Automation Society, General Chair of the 2011 IEEE Conference on Automation Science and Engineering, the 2017 IEEE International Conference on Service Operations and logistics, and Informatics and the 2019 IEEE Systems, Man, and Cybernetics Conference.

In her lecture, Professor Fanti highlighted that emerging technologies like AI and Digital Twin are greatly enhancing the integration of CCCVs in the real traffic of the smart cities. The talk also described some recent results of the AI and Dital Twin implementation in case studies in the field and by simulation environments.

During the visit Prof. Fanti also actively contributed at the IEEE TechX Tunisia by participating as Speaker at the panel “The Future of Scalable AI-Driven Applications” with her contribution focusing on AI in Automated Mobility and at the Round Tables: “Mentoring sessions with young researchers and professionals”.





