IEIIT

Istituto di Elettronica e di Ingegneria dell'Informazione e delle Telecomunicazioni

Consiglio Nazionale delle Ricerche

Thursday seminars

Taking a Look at the Future: a cocktail hour event!

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Prof. Alberto L. Sangiovanni-Vincentelli (UC Berkeley)

Safety in Autonomous Driving: Can Tools Offer Guarantees?

It is my opinion that safety of autonomous vehicles should be guaranteed against reasonably complete scenarios. To do so, we need to develop tools that can formally analyze the behavior of ML-based decision making in the context of autonomous vehicles and design for safety. Formal analysis cannot be performed without a mathematically-sound set of specifications and system characterization including the environment in which the system operates.

In this presentation, I advocate the use of formal methods and software tools to address the safety challenges described above. I will discuss four important areas: I - formalisms for modeling the environments of Autonomous Vehicles (AVs) and capturing the specifications and contracts they must satisfy; ii - novel and scalable approaches to the verification and testing of AVs and Assisted Driving Systems (ADS) and in particular, SCENIC, a scenario-generation tool; iii - tools and techniques for synthesis of AV components, control strategies, etc., including synthesis of models, data, controllers, and implementations; iv - techniques for runtime assurance, including runtime monitors, minimal risk maneuvers, and techniques for control in semi-autonomous systems.

Registration form
Teams Webinar
10 June 2021 – 17:30