

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

**DOTTORATO DI RICERCA / PhD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

Seminar announcement

Wednesday 23 April 2025, Time: 15:30 - 16:30

Room C5D, Floor 0, Building 5, Via Claudio, 21 – NAPOLI



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Safety of highly automated driving systems

Abstract: The drive for safety has long been a cornerstone of the automotive industry, shaping regulatory frameworks, technological developments and consumer expectations. From the introduction of passive safety technologies (such as seat belts or airbags) to active safety functions (like electronic stability control systems), the industry has consistently focused on reducing deaths and injuries on the road. As the automotive industry moves into a new era, characterised by the development of highly automated driving systems, the definition and implementation of vehicle safety is being fundamentally redefined. Designed to minimise human error and increase overall transport efficiency, highly automated technologies have the potential to dramatically reduce accident rates and revolutionise personal and commercial mobility.

However, this transition also presents a complex array of new challenges. Ensuring the reliability and robustness of sensor suites, managing real-time data processing and decision-making under uncertainty, and creating redundancies to handle system failures are critical technical barriers. Additionally, addressing cybersecurity threats, ensuring safe human-machine interaction during mode transitions, and aligning automated systems with societal and ethical norms pose significant interdisciplinary challenges. As these systems become more prevalent, a comprehensive approach integrating engineering, legal, psychological, and policy perspectives is essential. Future research and development must not only advance the capabilities of automated vehicles but also reinforce public trust by ensuring transparency, safety assurance, and regulatory alignment.

Lecturer short bio: *Árpád Török has been with the Department of Automotive Technologies at TU Budapest since 2018 and now he is the head of Vehicle Safety and Security Research Group at TU Budapest since 2020. He received his Dipl. Ing. and Ph.D. degrees with honors from the TU Budapest. His research is based on issues in the field of automotive safety and security, with emphasis on taking into account the perceived risk levels in the communication and decision making processes. He has been involved in numerous national and international projects, as coordinator and partner. His research team focuses on automotive safety and security analysis, especially considering the aspects of integrated methods. He has been a member of the Association for Transport Sciences since 2006 and a member of the Public Board of Hungarian Scientific Academy since 2010.*

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