35 years of excellence in computational methods for transportation science and technology

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I completed my MSc degree in Mathematics in June 1986 on the Stochastic Modeling of Delays at Unsignalized Intersections. In July 1986, one month later, the first issue of Computer-Aided Civil and Infrastructure Engineering (CACAIE) was published by Prof. Hojjat Adeli. It was inevitable but it would take 30 years before our paths would cross.

Transportation engineering studies the planning, design, operation, and management of the demand and supply of transportation systems. It is rooted in civil and infrastructure engineering, by supporting planning, geometric design, and maintenance of civil and infrastructure assets. With growing demand of transport demand and limitations in space and funding, the intelligent utilization of physical transportation infrastructure has developed as an important field of scientific research. Already in 1986, CACAIE featured important work on transportation, for instance on computational equilibrium models for demand and supply in transport (Taylor, 1986).

The advent of Information and Communication Technologies opened new research avenues in which roads and vehicles could be studied as an integral system: Intelligent Vehicle Highway Systems, which developed more generally into Intelligent Transport Systems. Research challenges were multifold, integrating sensing, state estimation, systems and control, network modeling, and in particular data-driven methods.

Automated Driving is a field of research that has long captured the imaginations of researchers since the 1930s. Its recent history of research was marked by world-wide technology showcases Prometheus in Europe (Glathe, 1994) and National Automated Highway Systems Consortium demonstrations in the United States (Ioannou, 1997). They marked the successful combination of automotive engineering, electrical engineering, and roadway engineering.

The advent of data science and artificial intelligence methods such as machine learning and the entrance of new players such as Waymo and Tesla spurred a worldwide increase into research on automated driving. Computer vision and cognition based on images from laser scanner, video, and radar systems pose extremely high demands on hardware and software. The advent of high-definition digital maps and 5G (and further) communication leaves no doubt that the vehicles of the future will be supported by a high-tech data and communication infrastructure (Townsend, 2014).

In order to accommodate high performance traffic in terms of efficiency, safety, and energy use, the roads of the future will also need to be high tech, with extensive monitoring, communication, and management systems. Especially in the case of (highly) automated driving capabilities, driving safely in dense traffic at high speed will require careful monitoring of the prevailing operational design domain traffic and roadway conditions requiring substantial investments in roadway infrastructure (Shladover, 2018).

In 2018, the paths of Prof. Hojjat Adeli and me finally crossed when I teamed up with Xiaobo Qu and Satish V. Ukkusuri to develop a special issue on novel computational modeling of connected and automated transport systems. It was not only out of interest in contributing to a high-impact journal, CACAIE, but also I was interested to learn how he runs the journal. I learned that first and foremost, running a journal is about personal commitment and passion to advance the field. This personal commitment of Prof. Hojjat Adeli is the key to also establish a motivated and active editorial board. Equally important is his focus on original, high-quality scientific contributions.

The year 2020 marks the 35th Anniversary of Computer-Aided Civil and Infrastructure Engineering under the leadership Prof. Hojjat Adeli. Having started with an initial focus on Civil and Infrastructure Engineering, CACAIE now also ranks number 1 in Transportation Science & Technology. I congratulate Prof. Hojjat Adeli with his accomplishment and thank him for his leadership and contribution to the field.
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REFERENCES


