Call for Papers

Special Session on Urban Mobility – Communication Technologies and Safety for Autonomous Vehicles

Special session organizer:

Vilmos Simon, Head of Multimedia Networks and Services Laboratory, BME, Hungary

Levente Buttyan, Head of CrySyS Laboratory, BME, Hungary

Laszlo Bokor, Head of Commsignia-BME HIT Automotive Communications Research Group, BME, Hungary

Scope and background:

There is a growing importance of ICT in profiling the competitiveness of cities. The next step for the smart city is the automated city – one that is predictive and responsive without human intervention. Such a city could avoid traffic congestion before it occurs and distribute resources, such as emergency services and maintenance, without time-consuming human decision-making. Vehicular networks are on the verge of becoming an essential part of our increasingly connected life. The success of the first generation large-scale V2X testbeds and the planned followers, manufacturers/policy maker's activities aiming at applying cars with V2X communication solutions, and the maturing standards of cooperative intelligent transport systems (C-ITS) predict the inevitable and quick proliferation of vehicular networks. Urban mobility applications will also rely on collecting available information from sensor networks in and around the city and make the operation of public services (like lighting, heating, garbage collection, etc.) intelligent. This will be based partially on crowdsensing especially in densely populated areas where insuring the appropriate number of sensing users is easier. Many crowdsensing applications address tasks related to urban transportation systems, which include the tracking of public vehicles (buses, trams, subways and rentable bikes) or others like mapping bumps on the road to quickly inform authorities where to intervene. Public safety is another category of applications where the power of the crowd is used to indicate unusual/abnormal behaviour of people, extreme situations like riots, demonstrations and similar. However, the evolution of related technologies is still very far from finished: autonomous/automated vehicles, heterogeneous vehicular access environments, large scale deployment scenarios, application and service interoperability, security and privacy still pose serious challenges just to mention a few.

When cars are connected to each other and to the Internet, they become potential targets of cyber attacks. Many researchers have recently demonstrated the feasibility of such attacks: in proof-of-concept attacks, cars have been compromised remotely via wireless interfaces and locally via the OBD interface. In case of autonomous vehicles, the danger is even greater, because the physical control of the car is entirely "in the hands" of computers that, as we have seen, can potentially be compromised. So the bright vision of autonomous vehicles can become reality only if we can solve the pressing issue of cyber security; a huge challenge for the research community, as well as for the automotive industry. In this Special Session we will catch up with the latest research and product developments, measurement methods, application scenarios and concept studies.

This special session is organized within the scope of the 14th International Conference on Telecommunications – ConTEL 2016 to be held in Zagreb, Croatia. The session is open for submission of full papers to address a broad range of topics related to automotive communications, autonomous vehicles, crowdsourcing and security countermeasures against cyber attacks for autonomous vehicles in smart cities. All papers submitted to the special session will be peer-reviewed according to the general rules for the conference.

The topics of interest include:

- Novel protocols and techniques for V2X communication (radio resource
- management, mobility management, data dissemination, etc.)
- Heterogeneous Vehicular Networking approaches
- Connected vehicle technologies in 4G and beyond
- V2X applications and services for enhanced driver experience, increased
- transportation efficency, decreased emission, enhanced road safety, etc.
- Network management, deployment support and QoS provisioning for V2X
- architectures
- Sensor fusion in vehicular networks
- Cross-layer design and optimization for V2X communication infrastructures
- Mobile crowdsourcing for urban analytics
- Mobile crowdsourcing applications

- ICT in road vehicles: on-board and connected car services
- New proof-of-concept cyber attacks against modern vehicles
- Attack surfaces and risk analysis for autonomous vehicles
- Security testing methods and testbeds for autonomous vehicles
- Security countermeasures against cyber attacks for autonomous vehicles
- Software vulnerability management and security patching for autonomous
- vehicles
- Security of sensor data collection and processing in autonomous vehicles
- Digital forensic requirements and solutions for autonomous vehicles
- Privacy issues induced and solutions required by autonomous vehicles
- Cryptographic algorithms and protocols for protecting vehicle communications

Submission of full papers:

Prospective authors are invited to submit novel, previously unpublished full papers (up to 8 pages), addressing the topics of interest, for consideration for the special session. All papers submitted to the special session will go through the regular peer-review process. Accepted papers will be presented within the ConTEL program. Accepted and presented papers will be published in the conference proceedings and submitted to IEEE Xplore as well as other Abstracting and Indexing (A&I) databases.

For paper formatting, style, and submission guidelines and deadlines, please refer to the ConTEL main website (http://www.contel.hr).

Post-conference journal publication prospects:

Authors of best papers will be invited to submit a sufficiently extended version of their conference paper for potential publication in the Infocommunications Journal (www.infocommunications.hu) Special Issue on Smart Cities. The journal Special Issue on Smart Cities will be based on an open call, and the technical contribution in the journal will have to be extended (at least 30%) beyond what was presented in the conference version, and go through the journal review process. The Infocommunications Journal is technically co-sponsored by IEEE Communications Society, IEEE Hungary Section and it is indexed in Scopus, Inspec and Compendex.

Important dates:

March 30, 2017:	**Full Papers, Due**
May 27, 2017:	Notification of Acceptance/Rejection
June 10, 2017:	Final, Camera Ready Papers, Due

More information:
For up-to-date information on the Special session and ConTEL, visit the ConTEL homepage: http://www.contel.hr/.