Research Issues and Approaches for Connected and Automated Vehicles

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ABSTRACT

Driverless and/or environment-friendly cars have recently received a great deal of attention from media and almost all industry and government sectors due mainly to their great potential impacts on safety, economy, and environments. In particular, enabling vehicles to communicate with one another via wireless devices holds the potential to automate vehicles while dramatically improving safety, reducing congestion, and conserving energy.

To move toward realization of this potential, we have been conducting research into various issues, including:

- Automation of vehicle sensing and control;
- Vehicle safety and passenger comfort;
- Securing information communication and computation;
- Developing environment-friendly solutions.

In this talk, I will discuss various issues and approaches related to security of connected and automated vehicles.

CCS Concepts
•General and reference → *Surveys and overview;*
•Embedded and cyber-physical systems;
•Security and privacy → *Network security; System security*

Author Keywords
Connected and/or automated cars; security of in-vehicle networks; intrusion detection

BIOGRAPHY

Kang G. Shin is the Kevin & Nancy O'Connor Professor of Computer Science, University of Michigan. His current research focuses on timeliness, reliability, security and privacy of mobile or real-time and cyber-physical systems.

He has supervised the completion of 78 PhDs, and authored/coauthored more than 850 technical articles, one a textbook and more than 30 patents or invention disclosures, and received numerous best paper awards, including the Best Paper Awards from the 2011 ACM MobiCom, the 2003 IEEE Communications Society William R. Bennett Prize Paper Award and the 1987 Outstanding IEEE Transactions of Automatic Control Paper Award. He has also received several institutional awards, including the Research Excellence Award in 1989, Distinguished Faculty Achievement Award in 2001, and Stephen Attwood Award in 2004 from The University of Michigan (the highest honor bestowed to Michigan Engineering faculty); 2003 IEEE RTC Technical Achievement Award; and 2006 Ho-Am Prize in Engineering (the highest honor bestowed to Korean-origin engineers).