An Initiative on Connected Vehicles Series

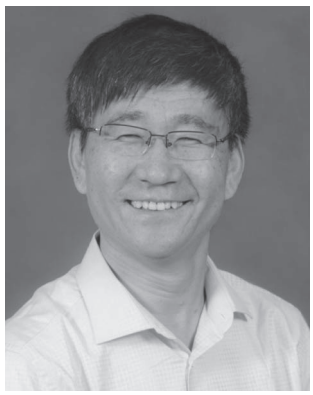
As I stated in my January editorial, we have started a publication initiative on connected vehicles (CVs) in this journal. Although there have been intensive research efforts on this topic in the last decade under the umbrella of vehicle ad hoc networks, addressing the communications and networking aspects of CVs, CV technology did not really catch on until the U.S. Department of Transportation issued a mandate for car makers to enable CV technology for a safe driving experience. This mandate is crucial because it will compel vehicle manufacturers to provide the needed connectivity and intelligent components, that is, the communications and intelligence capability, for the realization of vehicular networking and computing. Thus, future lightweight vehicles will automatically be equipped with communications devices to collect information, process this information either locally or globally, and extract important information for intelligent decision making to improve transportation efficiency, driver safety, and the driving experience.

Unfortunately, there are tremendous challenges for this new emerging cyber–physical system. With equipped communications and sensing devices in vehicles, a tremendous volume of data (the newly emerging big data) can be conveniently collected, processed, and/or transported for timely intelligent decision making. To achieve this goal, a sound and technically feasible information networking and computing platform with effective data, resource, and mobility management plan has to be carefully constructed. Sensors and actuators in vehicles have to be integrated with varieties of drivers' carried communications (possibly sensing) devices, together with various existing and emerging telecommunications infrastructure. A holistic investigation on various specific communications, networking, computing, and data management issues of this newly emerging cyber–physical system has to be carefully conducted for its viability, usability, and sustainability in response to vehicular-specific design objectives.

With this kind of emerging system in place, we will also face other newly emerging social and legal issues. A recent report by U.S. Senator Edward J. Markey (D-Mass.), called *Tracking & Hacking: Security & Privacy Gaps Put American Drivers at Risk*, reveals that the privacy of vehicular users may be seriously compromised, demonstrating the law of nature: No convenience comes without compromise. The convenience of the Internet has already made each one of us an emperor without clothes, while this newly emerging connected vehicular technology may place us on the big screen. Besides, with the various technologies being intertwined into the integrated system, the domains of responsibility and obligation of various actors become fuzzier. This is particularly important for connected vehicular systems where any fatal accident may have to be handled by many agencies to identify the responsible parties. Even more serious, as alluded to in the report, when command and control is operated remotely for intelligent driving, vehicles may be hacked into and controlled by adversaries, which would put drivers in danger! Thus, researchers and engineers from various expert domains have to work together to take a holistic view and investigate various emerging issues from data collections and management, data processing and data transportation, intelligence extraction and computing, to decision making and actuation. Only through this grand effort can we come up with a viable system to provide us with this convenience while protecting us from any adversarial invasion.

As I mentioned in my January editorial, upon the suggestion of our society Vice-President Dr. James M. Irvine, we originally planned to add a fixed Special Section/Special Issue (SS/SI) on CVs. With input from the Vehicular Technology Society leadership and the blessing of the Board of Governors, I am happy to report that we will change the SI/SS into the CV Series, which will be published twice a year, in June and December, with the first installment coming this December. This CV series provides a comprehensive forum for researchers and engineers to exchange ideas on CV technology. The initial editorial team consists of researchers from both academia and industries in various expertise: Onur Altintas (Toyota InfoTechnology Center, Japan); Fan Bai (General Motors, USA); Richard F. Yu (Carleton University, Canada, Lead Guest Editor); and Tao Zhang (Cisco Systems, USA). I thank them again for their willingness to help, and we all look forward to seeing the first issue this year.

As of this writing, I realize that today is the Chinese New Year. I wish everyone a healthy and prosperous Year of Yang in 2015! I like the Chinese pronunciation of Yang better: young. Use your brainpower on CV technology, which will always keep you Yang (young) in your heart!



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