



INFORMATION CENTRIC NETWORKING ON WHEELS (IC NOW) - ARCHITECTURE AND PROTOCOLS

Dr. Fan Bai

General Motors Global R&D

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ABSTRACT: Recent developments in the automotive industry point to a new emerging domain of vehicular wireless networks, in which vehicles equipped with radios can communicate a wide range of information to each other and the wider Internet, including traffic and safety updates as well as infotainment content. In this talk, I will discuss how to develop a hybrid network architecture for such vehicular networks which combines both the existing cellular infrastructure as well as new vehicle-to vehicle (V2V) communication capabilities. The hypothesis is that such a hybrid network architecture will improve cost, capacity and robustness, compared to either a purely centralized cellular-based approach or a purely distributed V2V approach. Under a hybrid architecture, we aim to design information-centric protocols for information dissemination, aggregation, and storage that can exploit the spatio-temporally localized nature of vehicular applications.

BIOGRAPHY: Fan Bai (General Motors Global R&D) is a Staff Researcher in the Electrical & Control Systems Lab., Research & Development and Planning, General Motors Corporation, since Sep., 2005. Before joining General Motors research lab, he received the B.S. degree in automation engineering from Tsinghua University, Beijing, China, in 1999, and the M.S.E.E. and Ph.D. degrees in electrical engineering, from University of Southern California, Los Angeles, in 2005.

His current research is focused on the discovery of fundamental principles and the analysis and design of protocols/systems for next-generation vehicular networks, for safety, telematics and infotainment applications. He published 70 research papers in top-quality conferences and journals, particularly, MobiMom, MobiHoc, SenSys, INFOCOM, SECON, IEEE JSAC, IEEE TMC, IEEE/ACM TON, IEEE TVT, and IEEE TWC. In addition, he published 1 book and 6 book chapters. His publications received about 6,000 citations (according to Google Scholar). He also has more than 80 patents granted or pending. He is a Fellow and Distinguished Lecturer of IEEE.