

Vehicle Cloud Services

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Abstract

New vehicle applications have recently emerged in several areas ranging from navigation safety to location aware content distribution, intelligent transport, commerce and games. This diversity of applications sets the Vehicular ad Hoc Network (VANET) apart from conventional military and civilian emergency MANETs and does introduce new challenges in the services they can provide. A representative scenario is urban sensing: vehicles monitor the environment, classify the events, e.g., license plates, chemical readings and generate metadata to support services such as forensic investigation on behalf of Authorities. This notion of service suggests that the VANET can be viewed as a Mobile Computing Cloud (MCC) where vehicles interact and collaborate to sense the environment, process the data, propagate the results and share resources to provide mobile services not available from the Internet Cloud. In this talk we will revisit VANET applications and services in light of the Mobile Cloud model. We will also address the cooperation between Vehicular Clouds and the Internet Cloud in the context of a vehicular traffic management application.

Bio

Dr. Mario Gerla is a Professor in the Computer Science Dept at UCLA. He holds an Engineering degree from Politecnico di Milano, Italy and the Ph.D. degree from UCLA. He became IEEE Fellow in 2002. At UCLA, he was part of the team that developed the early ARPANET protocols under the guidance of Prof. Leonard Kleinrock. He joined the UCLA Faculty in 1976.

At UCLA he has designed network protocols including ad hoc wireless clustering, multicast (ODMRP and CODECast) and Internet transport (TCP Westwood). He has lead the ONR MINUTEMAN project, designing the next generation scalable airborne Internet for tactical and homeland defense scenarios. He is now leading several advanced wireless network projects under Industry and Government funding. His team is developing a Vehicular Testbed for safe navigation, content distribution, urban sensing and intelligent transport. Parallel research activities are wireless medical monitoring using smart phones and cognitive radios in urban environments.

He has served as a Technical Program Committee member of many international conferences, and is active in the organization of conferences and workshops, including MedHocNet and WONS. He serves on the IEEE TON Scientific Advisory Board. He was recently recognized with the annual MILCOM Technical Contribution Award for 2011 and the IEEE Ad Hoc and Sensor Network Society Achievement Award in 2011.