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Abstract:

Universal Medium Range Radar and IEEE 802.11p Modem Solution for Integrated Traffic Safety

Vehicles in the future are anticipated to have the ability to communicate and exchange useful information in order to avoid collisions. However, for this cooperation to be possible all vehicles will have to be equipped with compatible wireless IEEE 802.11p modules that implement intelligent transport systems operating in the 5 GHz frequency band standard (ITS-G5 or WAVE). During the implementation phase of the system there will be many older vehicles without such equipment that can cause hazard as information about them will not be available to vehicles equipped with IEEE 802.11p modules.
In this talk we present a system, to be used as a road side unit (RSU), developed explicitly for vehicle-to-infrastructure (V2I) communication that can solve the aforementioned traffic safety problems. The system consists of a universal medium range radar (UMRR) and an IEEE 802.11p modem integrated together to detect vehicles, with or without communication capabilities, and forward their position and speed vectors to vehicles, with IEEE 802.11p modules installed, for collision avoidance.
Tests have been performed by using our system in parallel with vehicles in which IEEE 802.11p modules are installed and comparing the content in the Cooperative Awareness Messages obtained from both systems. Accuracy tests have also been performed in order to verify the accuracy of the system in the time and spatial domains.

Bio:

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Dimitrios is of Greek decent and has been living, studying and working in Sweden since 2002. He is currently pursuing his PhD degree in Radio Communications at the Department Electrical and Information Technology of Lund University. During the years 2006-2013, Dimitrios attended the Master of Science in Computer Science and Engineering programme at Lund University. His professional career began in 2008 when he worked as System Tester for the verification department of Ericsson Mobile Platforms in Lund. During his studies, Dimitrios has also worked as an IT-Consultant for Lunicore Studentkonsult AB in Lund.