Foreword and Editorial

International Journal of Science and Engineering for Smart Vehicles

We are very happy to publish this issue of an International Journal of Science and Engineering for Smart Vehicles by Global Vision School Publication.

This issue contains 3 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

The paper entitled "Driving Simulator-based HVI System Test Environment Development", we recently found that driver negligence is the major cause of an overwhelming proportion of car accidents. To reduce distracted driving, diverse human-vehicle interface (HVI) systems, including driver drowsiness prevention and mobile phone reception blockage, have been developed. However, research on an effective test environment that can quantitatively measure the performance of HVI systems has been insufficient. Consequently, the present study proposed a test environment capable of evaluating HVI systems by using a driving simulator.

In the paper "A Scheme for Real-time Data Control in Automotive Systems", the classical in-car networks can only provide limited bandwidth for control signals. However, in-car multimedia systems fast changing due to the increasing number of advanced driver assistance systems (ADAS) and the bandwidth demand of future applications. Ethernet is nowadays considered as a promising candidate for in-car communications, thanks to the high bandwidth provided. There is remarkable interest in the IEEE 802.1 AVB protocol suite, which provides low latency, time sensitive streaming applications among Ethernet networks. This paper an extended AVB for handling intermittent control data considering the characteristics of the data generated in the vehicle. By using the proposed scheme, it is possible to transmit the control data in real time which had to be solved to use IEEE 802.1 AVB as in-car network.

In the paper "Extended IEEE 802.11p based on Distance in Automotive Systems", Vehicular Environments impose a set of new requirements on nowadays wireless communication systems. In Vehicular network, IEEE 802.11p and 1609, which are attracting attention as next generation vehicle protocols, are Wireless Access Vehicle Environments (WAVE) communications. WAVE communication is divided into V2I, which is communication between Infrastructure and vehicle, and V2V, which is communication between vehicle and vehicle. The infrastructure installed on the roadside is called RSU (Road Side Unit), and a device installed in a vehicle is called an OBU(On Board Unit). When Multiple vehicles transmit data to one RSU on a dense road, the probability of successful data transmission decreases and collision probability is increases. In this paper, We propose a DBG-Algorithm (Distance Based Grouping Algorithm) that improves the data transmission probability in communication between RSU and multiple vehicles by generating groups based on distance between vehicles. IEEE 802.11p vehicle communication using the proposed DBG algorithm shows lower data collision probability and improved throughput than the existing IEEE 802.11p standard.

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