Development and Testing of Adaptive Vehicle Speed Monitoring System integrated with Alcoholic Detector for Public Buses: A case of Tanzania

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Abstract

Road accidents are the serious humanity and public health issue in Tanzania. The problem is increasing day by day. Apart from the loss of many lives, the effect of the road crashes on the country’s economy is massive. In Tanzania Human factors is the main contribution of major road crashes while over-speeding and drinking driving is one of the accelerating factors to the increase of road casualties. Existing measures to limit these problems have been unsuccessful to diminish the road accidents thus only use of handheld devices such as the speed radar gun and breath analyzer is applicable during inspection on the road or check points. Since these devices are not automatic in the sense that they would need to be operated manually by the Traffic Police, they lack the continuous monitoring of speed and therefore their efficiency in speed detection is low. To address these challenges, an adaptive vehicle speed monitoring system integrated with alcohol detector is utmost important. This chapter attempts to develop an effective solution for vehicle speed monitoring and alcohol detection on a real time basis. The main objective of this paper is to develop an adaptive vehicle speed monitoring integrated with an alcoholic detection system able to monitor the vehicle speed into defined speed limits and
driver’s alcoholic content (Blood Alcoholic Content) during the journey on the road. The system consists of GPS module that measures the distance and calculates the accurate speed of moving objects and also provides a location in term of latitude and Longitude, sensor nodes to measure the level of alcoholic content through breath, Arduino controller also used to drive the operation of the system. The system is integrated with LCD display for the driver and GSM network to send the message to the database to be stored for future uses and constantly updating the law enforcers (traffic policies) on what is going on in the roads and take prompt action in case of misbehaving. The system will help most of traffic police in finding out driver’s behavior on the road and also public buses that are daily victims of road accidents results due to the Human factors.

References


Index Terms
Keywords

LCD, GSM, GPS, MQ-3, NMEA, Arduino UNO rev3, BAC, SMS