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RESEARCH ARTICLE

Wireless Black Box Using MEMS Accelerometer and GPS Tracking for Accidental Monitoring of Vehicles

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Abstract-- In this work, wireless black box using MEMS accelerometer and GPS tracking system is developed for accidental monitoring. The system consists of cooperative components of an accelerometer, microcontroller unit, GPS device and GSM module, Zigbee. In the event of accident, this wireless device will send mobile phone short message indicating the position of vehicle by GPS system to family member, emergency medical service (EMS) and nearest hospital. The threshold algorithm and speed of motorcycle are used to determine fall or accident in real-time. The system is compact and easy to install under rider seat. The available Existing system won't work if any accident happens in non-network coverage area using Zigbee. MEMS inertial sensors are designed to sense a change in an object's inertia, and then convert or transducer inertial force into a measurable signal. They measure changes in acceleration, vibration, orientation and inclination. This deflection of the mass is converted to an electrical signal as the sensor's output. The simplest MEMS accelerometer sensor is an inertial mass suspended by springs. The mass is deflected from its nominal position as a result of acceleration. This deflection of the mass is converted to an electrical signal as the sensor's output.

Keywords— MEMS ACCERLOMETER, GSM, GPS, ZIGBEE

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