

A Smart Car Seat Belt Accident Detection and Emergency Services in A Smart City Environment

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Abstract: Delay in the arrival of emergency services after road accidents significantly contributes to the increasing number of fatalities globally, including in Saudi Arabia. To address this problem, a cost-effective IoT-based system has been developed to detect accidents and send timely alerts. The system employs an MPU6050 sensor to monitor variations in a vehicle's angle, aiding in the identification of incidents such as rollovers or collisions. These readings are continuously analysed by an ESP32 microcontroller to assess whether an accident has occurred.

Upon detecting an accident, the system automatically generates a notification to alert nearby emergency contacts or authorities, facilitating a quicker response. The Blynk platform is used to send these notifications through communication technologies such as Wi-Fi or Bluetooth. All hardware components are assembled using the Arduino platform, with programming carried out through the Arduino IDE. This solution is designed to minimize the critical time gap between an accident and the arrival of emergency help, ultimately aiming to save lives..

Keywords: ESP 32, MPU6050, Solenoid Lock, Servos

