

Cyclist fall detection system via the internet of things (IoT)

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ABSTRACT

Cycling has recently become one of the most popular activities among people worldwide. It is a practical and pollution-free way of transportation. However, it has several risks and potential impairments for users. One of the causes of an individual's death or major injuries in an accident is a lack of first aid provision due to the emergency services that is not promptly receiving information about the event. The emergency response speed is critical for any accident. Therefore, this study developed a prototype of a cyclist fall detection system to produce immediate alerts regarding any fall incident and an accurate real-time location to the emergency contacts via smartphones. The proposed system used an ESP8266 as a microcontroller to collect and process the data from the sensors. An accelerometer sensor is also used to obtain the acceleration value to calculate the roll angle in determining the cyclist's and bicycle's orientation. A Global Positioning System (GPS) is installed in the proposed system to obtain the cyclist's real-time location. The fall detection system is connected with software named BLYNK to send an emergency alert to the selected contact. As a result, the developed prototype successfully detected a fall and sent an emergency alert to specific users. Along with that, the GPS also managed to produce an accurate reading of fall's real-time location.

KEYWORDS

Cyclist; Fall detection system; Internet of things; Sensors

ACKNOWLEDGEMENT

Highly appreciation to the research team members from UCSI University, Universiti Malaysia Pahang, Universti Teknologi Mara, Cawangan Dungun and Universiti Teknologi MARA, Cawangan Selangor, Kampus Dengkil for their dedication and contribution throughout this study.