Time & Location: June 16, 2020 at 2:00 PM in Virtual Defense
https://ucf.zoom.us/j/97446170406?pwd=eUQrKytPenVIR0xDL09uZnVKT1o5QT09
Title: Smartphone Sensor-based Pedestrian Activity Recognition for P2V Communication and Warning System

The ubiquity of cellphones, especially smartphones has made a remarkable influence on everyone's day to day life. Variety of useful built-in sensors provides smartphones with a convenient floor for data collection and analysis. This paper explores the capabilities of smartphone inertial sensors for pedestrian activity recognition. Volunteers were asked to perform different pedestrian activities with smartphones in their hand or in trouser pocket. Accelerometer and gyroscope data were collected, and time windowing was applied for proper segmentation of the data. After time and frequency domain feature extraction of these segmented data streams, supervised machine learning algorithms were implemented for correct prediction of seven different pedestrian activity labels. For performance evaluation, we used the F-score metric, which can reach up to 95.3% and 96.1% for single-subject model and all-subject model, respectively. With the capability to identify distracted pedestrians, our approach lays the foundation for a smartphone application based real time P2V warning system.

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Bachelor's of Electrical and Electronic Engineering, BS, 2017, Bangladesh University of Engineering and Technology

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Approved for distribution by Mohamed Abdel-Aty, Committee Chair, on June 2, 2020.

The public is welcome to attend.