***CpE 422: CpE Practice and Design 1***

**Capstone Project Title:** MobileGuard: A Machine Learning Based Context-Aware Mobile

Application for Phone Fall Detection and Proactive Alerts for Left Phones.

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**RESEARCH OBJECTIVES**

The researchers aim to develop a A Machine Learning Based Context-Aware Mobile Application for Phone Fall Detection and Proactive Alerts for Left Phones. To meet the main goal, this study sought to achieve the following objectives:

1. To utilize the accelerometer and gyroscope sensor to gather data of sudden change of orientation and acceleration indicative of a phone fall event.
2. To use the best feature extraction for processing and extracting sensor data to distinguish between normal phone movements and falls.
3. To determine the most accurate predictive machine learning model for determining sudden changes in orientation and acceleration of phones resulting in a phone fall.
4. To develop a Bluetooth distance tag device connected through an application for proximity sensing of smartphone indication of left phone, as well as for detecting falls and triggering appropriate alerts.
5. To develop an application that incorporates trained model datasets containing sensor data that will provide alert systems about fall detection and proximity status of the phone.
6. To evaluate the performance in terms of accuracy that will provide the insights into the effectiveness of the machine learning integrated application.

Approved by:

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