CPE 4750: Introduction to IoT System, Spring 2025

**Mid-Term Project Proposal**

**Title: IoT in Transportation Safety**

Bryce Owensby, Julia Johnson, Salini Ambadapudi

Date: March 25, 2025

Electrical and Computer Engineering

Kennesaw State University

Faculty: Dr. Jeffrey L Yiin

**Problem Statement**

We are solving the problem of increased risk in the transportation industry. The dangers of trucking put more than 3.5 million workers in danger every year. These hazards also affect non-working drivers with almost 150,000 accidents per year. Our goal is to reduce risk on the road to save the lives of truckers, prevent emergencies before they occur, and quicken emergency response time.

**IoT components**

**Hardware:**

* Raspberry Pi 4
* OBD-II Bluetooth Adapter (Veepeak Mini Bluetooth OBD II Scanner Auto Check Engine Light Code Reader Car OBD Diagnostic Scan Tool for Android)
* USB Bluetooth Adapter (Kinivo USB Bluetooth Adapter for PC BTD400)
* Raspberry Pi Sense HAT
* USB GPS (VK-162 G-Mouse USB GPS Dongle Navigation Module External GPS Antenna Remote Mount USB GPS Receiver for Raspberry Pi Support Google Earth Window Linux Geekstory)

**Software:**

* LE Bluetooth
* Amazon AWS
* Python-OBD
* U-Center

**Expected Deliverable**

Our prototype will demonstrate sensors on the Raspberry Pi reading and interpreting data on a test car. When various unusual activities are simulated, such as excessively high speeds, falling over, or collisions, the Raspberri Pi will send an alert via our AWS system. Our AWS platform will also display data points from the vehicle, such as current speed and location. An additional feature for a silent alarm will be implemented using some manual input that will also result in an alert being sent.

**Project Plan**

|  |  |
| --- | --- |
| **Due Date** | **Deliverable** |
| 3/20 | Research Paper |
| 3/25 | Project Proposal |
| 3/30 | AWS system created and able to receive data |
| 4/6 | AWS dashboard formatted with proper display |
| 4/6 | Have all hardware components acquired |
| 4/13 | Prototype is able to gather data |
| 4/17 | Project Demo |
| 4/27 | Resolve any remaining software/ hardware issues in prototype |
| 4/30 | Alarm system configured and functioning properly |
| 4/31 | Final presentation rehearsal and demo creation |
| 5/1 | Final Project Demo and Presentation |