**IT Project**

* **Assignment 2 notes added in green.**

OVERVIEW

The Smart Mailbox Notifier leverages your existing mailbox and home wifi internet in order to send you notifications whenever someone interacts with it and chucks in letters and mails. An App installed on your smartphone will let you get notifications about any event happening on your mailbox. You will also be able to get mailbox trends (eg. Which day of the week has the highest triggers) and a custom speaker fitted next to the sensor will also let you play a custom audio file on mailbox trigger. This project core systems are a micro-controller with a Wifi module and a speaker, as well as a smartphone app.

MOTIVATION

The demand for Home Automation has drastically increased in the past decade. According to Forbes, smart home device market is set to grow from $55 billion in 2016 to $174 billion by 2025. With the increasingly popular IoT (Internet of Things) devices becoming more and more mainstream and cheaper to buy, turning a lot of objects in your home such as your lights or your curtains smart has become the trend. The physical mailbox however doesn't seem to have a lot of automation broadly available in the current market, and I think there is a big potential to market an easy-to-install kit in order to monitor it wherever you are.

* Additional security, identify theft is on the rise, mailboxes can be a target for thieves. Having a pin code to open mailbox instead of generic key could add security.

TOOLS AND TECHNOLOGIES

This project would use multiple components, such as:

- A micro-controller such as an ESP32, that has integrated Wifi and Bluetooth

- A light sensor combined with a motion sensor , a moisture sensor and a temperature sensor.

- Optional: A 3D Printer to create the case.

- Arduino IDE in order to program the micro controller

- A Smartphone app (Both deployed to Android/iOS) that will receive data about the sensor such as notifications and battery life. C# language and Xamarin.Forms would be my preferred choice of development tools as it can do cross-platform deployment.

-A database server to store the data from the sensor, and in return will let the smartphone app access it.

SKILLS REQUIRED

The required skills for this project are:

- A software developer proficient in C# and the Xamarin platform in order to produce the Android/iOS app.

This developer will also need to know how to set up and communicate to an external database on a server.

- A UX/Graphic designer to help with the interface/graphics of the app.

- A Digital marketing person to help promote the project.

- A micro-controller hobbyist or enthusiast that can set up the ESP32 with the sensors and program it.

(Optionally can draw a model for a case and print it out using a 3D Printer)

OUTCOME

By putting on the market a smart mailbox notifier kit, this would help a lot of people at the office receive live data regarding their mailbox without being at home, which would also help with mail theft. This smart mailbox market doesn't have a lot of offerings, and by bringing an affordable and easy to install solution for existing mailboxes, this could potentially become as popular as smart LED lights or even spark ideas for future iterations of this product.

DESCRIPTION

The Smart Mailbox Notifier's journey starts inside the mailbox, where it is mounted on the inner top part near the letter box.

Equipped with Light/Motion/Moisture/Temperature sensors, this mailbox notifier system will start capturing data as soon as you turn it on.

Even before the mailman is about to push in letters, you will know exactly at any time of the day how warm or humid your mailbox is, sending you incremental data every 15 minutes.

The Mailbox Notifier case will be rugged, weatherproof and waterproof, to ensure optimal functionality.

A decent rechargeable battery will provide the sensor for up to 3 weeks of operation, and charging will only take around 2 hours, which lets you enjoy minimal downtime and a piece of mind.

* Maybe the use of a solar could used instead of batteries.
* Implementing a micro-GPS onto the device, this will help find out who did it in the case where it does get stolen. Only problem with that is it would take up more power.

An easy to use app will be downloaded on your smartphone of choice (Android or iOS), and the pairing process is very simple.

All you need to do is to initialize a Bluetooth connection to the device, which in return will let you enter your Home Wifi password to let it connect to the internet.

Once set up, push notifications will be automatically delivered to you anytime the mailbox is being triggered, or when a threshold of humidity and temperature is reached inside your mailbox.

A data warehouse in the cloud will keep all of your data for the week, and it will be able to tell you which time and day of the week was the most humid and warm, via accessible reports from the smartphone app.

The mailbox notifier system never rest, and will be monitoring your mailbox throughout the night, in case of thieves or little animals are trying to get in.