# IoT Final Project
# 伐木偵測系統

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# Outline

- Introduction & Motivation
- System Architecture
- Demo
- Future Development

# Introduction & Motivation

The vast mountainous landscapes of Taiwan boast abundant forest resources. However, due to the challenges of patrolling and the complex terrain, illicit logging activities often occur, making it difficult to receive immediate alerts when trees are being felled. Typically, by the time such activities are discovered, the damage has already been done.

To address the aforementioned issue, one solution is to increase the number of patrol personnel. However, this not only leads to higher costs in terms of manpower for mountain surveillance but also raises concerns about the safety of the patrol staff.

# Solutions

The motivation behind this project is to leverage the characteristics of the Internet of Things (IoT) to enable trees to send real-time notifications in the event of abnormal vibrations, promptly informing authorities of the location where logging is taking place. This serves as an alert system to combat illegal logging activities.

Illegal logging incident

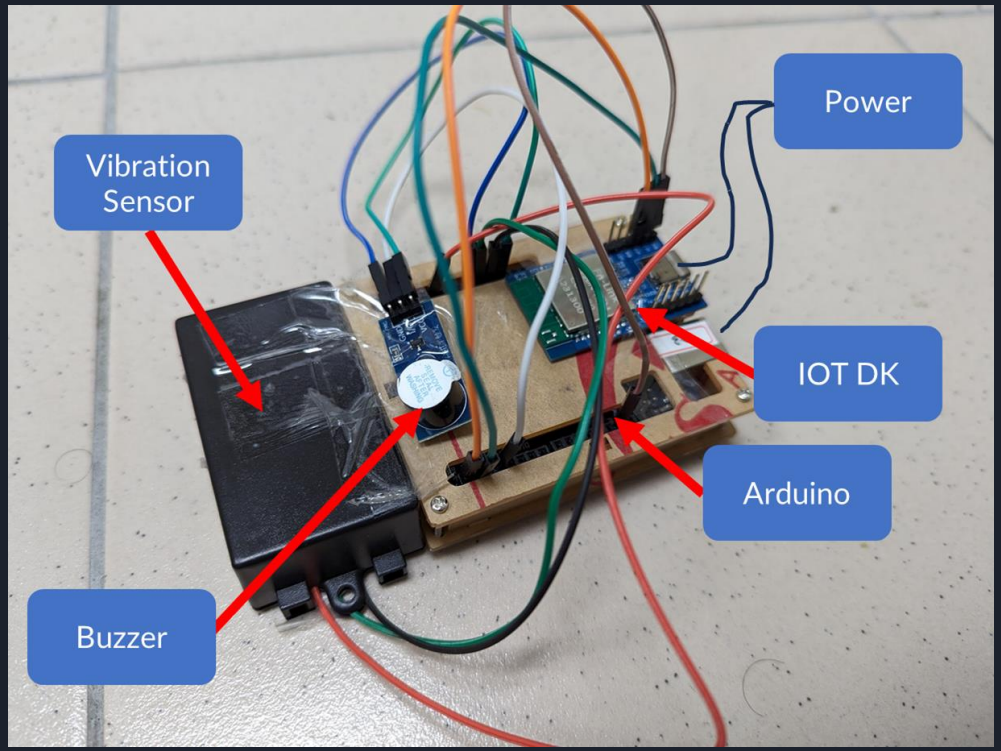

Remote notification


Immediate arrest

Immediate alarm

Effective Deterrence

# System Architecture



# System Architecture

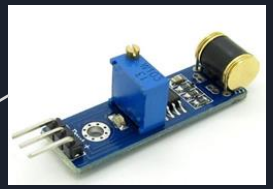
Cloud

SDK get date

html


Wireless

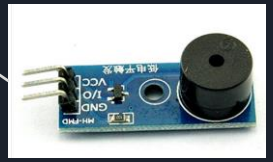
801S Vibration Sensor



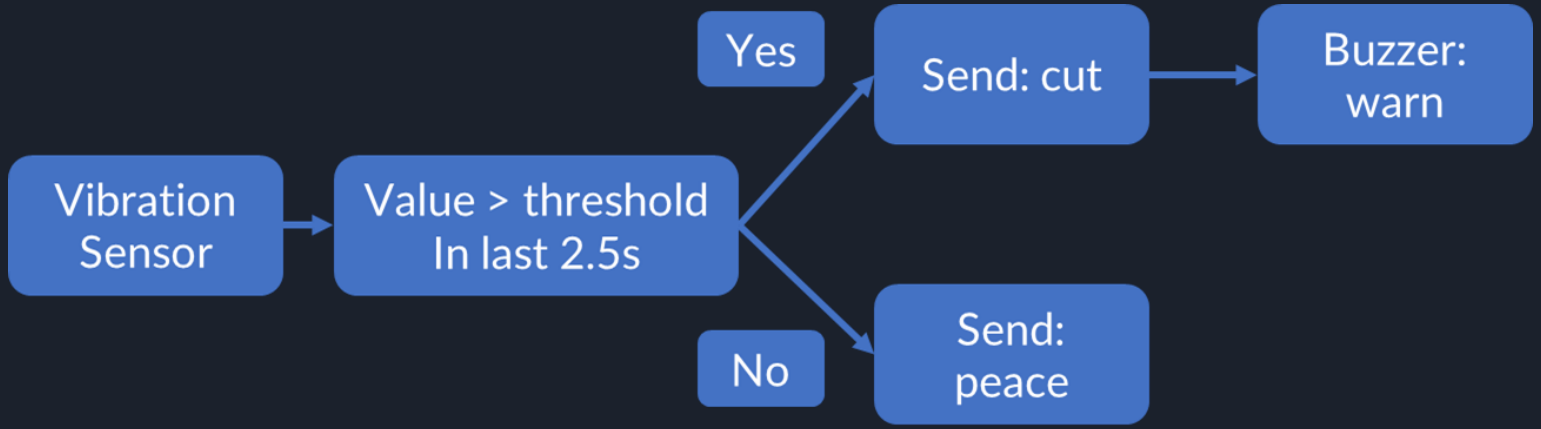
Arduino Uno

IoT Enable DK

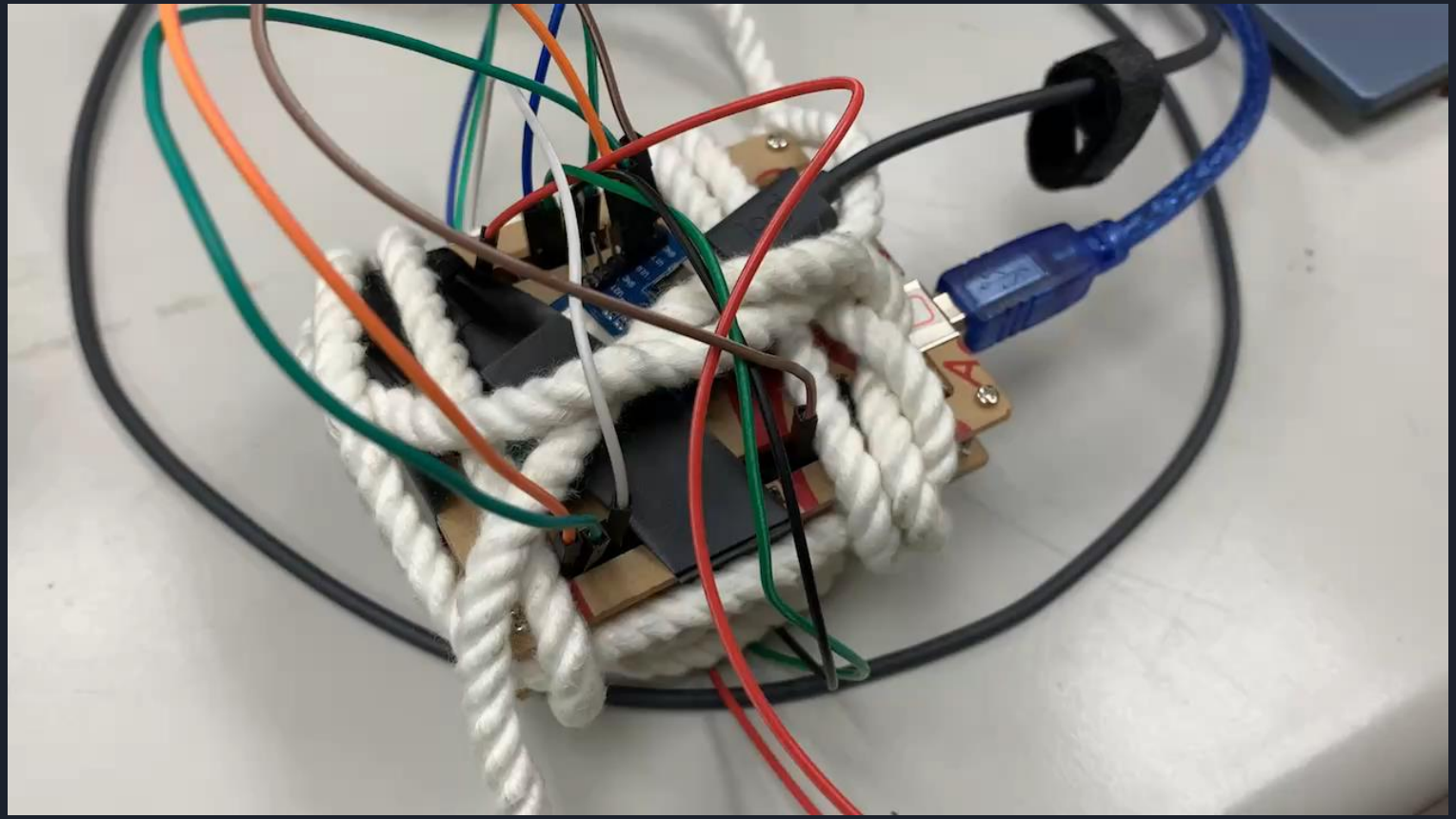
Buzzer



# Detection method



# Demo indoor



# Demo outdoor

伐木偵測系統

首頁　林地監測

Log in

林分示意圖

此林地共有四片林分，移動滑鼠游標至各林地可查詢各林分之資訊。

A　B

C　D

震動感測器數值

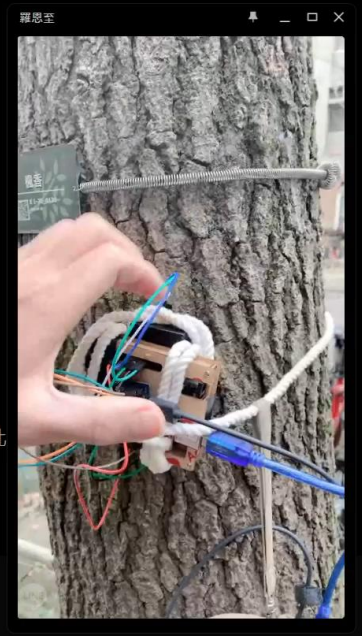
0

是否有樹被砍

目前無砍樹情形

林地簡介

將滑鼠游標移至各林地上方已在此



# Future development

With adequate funding, we plan to enhance our system with advanced features such as:

- Vibration sensor only detects the presence or absence of vibrations. With an advanced sensor like an IMU, there is potential to employ domain adaptation for detailed information. This enhances the system's ability to differentiate scenarios, reducing false positives in detecting events like wildlife collisions, and wind disturbances, etc.
- The transmission speed of the IOT DK is relatively slow, hindering the real-time transmission of data.
- Currently, the power source used is a mobile power supply, but it is advisable to transition to a solar panel-based power source, addressing energy storage and voltage stabilization issues.
- Expanding the system's scale by equipping all trees in the forest with a device to ensure comprehensive coverage, minimizing the risk of ignoring any trees.


Q&A