Project Semester 5 Project Proposal Daniel Lawton

IoT Wildlife Conservation Artefact

The idea behind this is to create a device that could be set up in an Ecosystem and monitor the local wildlife.

To monitor the local wildlife an Animal Classification system would be implemented using a computer vision model, YOLO. The dataset needed to train this classification model can be found using the online platform RoboFlow. This platform I have used before in my last project in the last semester to train a model to know when a human is either standing or in a fallen position, RoboFlow allows users to upload their own data(images) to train and create their own custom datasets.

Using my Raspberry Pi I would set up a Motion sensor that when something is detected take a picture using a Camera attached to the pi to take a picture. The picture will then be sent by MQTT to code on my laptop that contains the custom trained model to make the decision of what creature it is. Ex Lion, tiger, Elephant etc.

I also intend to have an audio based system using a microphone attached to the pi, audio of animals will be picked up and then like the image be sent over by MQTT. Then this audio will be used to determine the species of the animal. This task will be more complex as there is much less in the way of libraries, datasets and overall information to source.

I would like to finally have a basic app, set up with MQTT communication to receive notifications. And to then display the data and images. And a few user interaction options, such as viewing historical data. This will be done using the IDE Android Studio, I have some experience with the software from the previous semester.