COMP3200 Project Title: LoRa based Weather Interpreter IoT Network

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Problem:

In a city or a household, it is difficult for human to know or detect the sudden change of environment condition. We must refer to the displayed value of a thermostat or weather forecast from the website to know what happen in real time. For example, we do not react fast enough to collect clothes hanging outside the house when raining, the indoor temperature is not regulated as we do not know when to turn on a heater.

Goal:

An IoT network and interface will be developed in this project. In this project, the indoor and outdoor environment condition will be detected in real time, then send over by LoRa and upload to The Things Network and Microsoft Azure for data processing, finally will be show on mobile or an internet webpage. Figure 1 shows the network of Weather Interpreter as described.

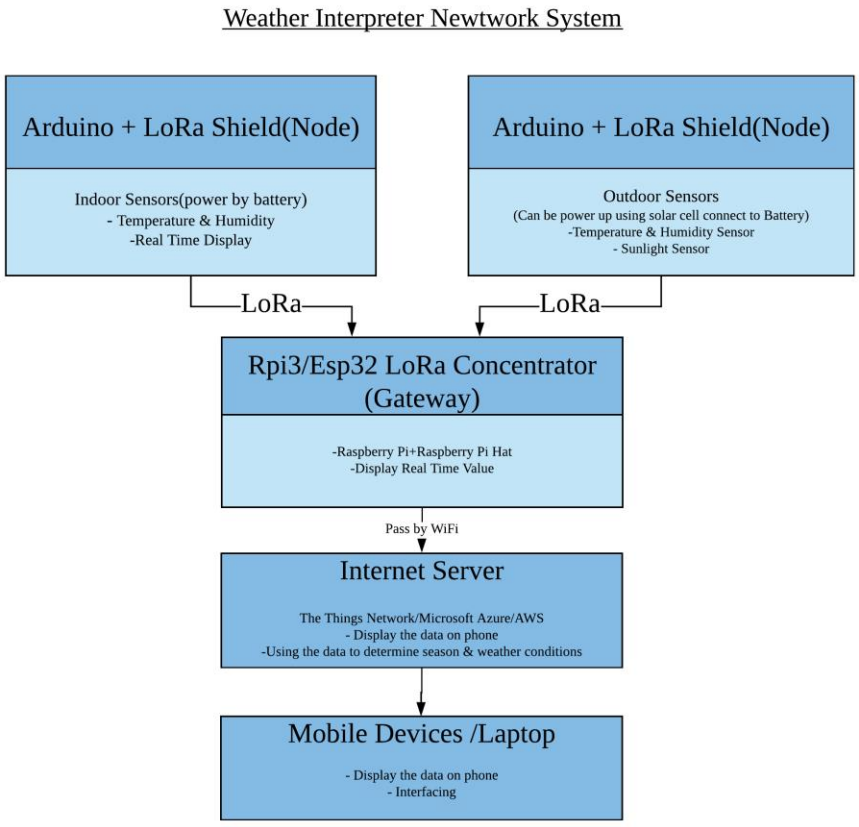

Figure 1 Weather Interpreter Network Chart

Scope:

2 indoor and outdoor Arduinos will be used to collect the signals collected from various type of sensors, these sensors are to sense the environmental conditions including temperature, humidity, and Sunlight. With indoor Arduino is powered up by battery, while outdoor Arduino can be powered up by solar cell. These signals are pass by LoRa to the concentrator for example are Raspberry Pi and Raspberry Pi LoRa Hat. The project will build with sensors made from breakout board connects to Arduino, when everything works fine, a PCB should build with the sensors chip embedded on board later. A 3D printed casing will be made to for the whole IoT weather sensor device.