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To: ematson@purdue.edu, ahsmith@purdue.edu, lee3450@purdue.edu
From: Team Coyote(Sensors & Network)

- Hyemin Lim (freemini2@cau.ac.kr)
- Nayoun Kim (202010766@live.wsu.ac.kr)
- Jaehui Boo (32192075@dankook.ac.kr)
- Hyeongjun Kim (aa980305@cu.ac.kr)

Summary

This week gateway connect was succeeded.[6] The next step was to add an end node(esp32) on gateway.[3][9] Although it had a problem because of the disconnection of the network, it was also succeeded with Arduino LMIC library. The team conducted an experiment on sending temporary data through LoRa packets, It took too long just to send some test data, so it is the primary task to reduce time.

Having a conference with the Machine Learning team, it concluded that the wav file was not necessary.[1][2] Librosa library that the machine learning team use does not need the wav file. Rather, it need amplitude array and sample rate.[8][11] There are two ways to send the amplitude array. The first is to send the amplitude array via LoRaWan directly to the gateway and the Raspberry pi. The other is to send the amplitude values on LoRaWan and make an array on the Raspberry pi. However, there was the problem that no matter how much size the packet has, it took 1 minute and 6 seconds. and all of packet downlink and uplink can see in MQTT packet broker[10]

What Coyote Team completed this week:

- Investigated about which audio sensor values will be send
- Investigated what format would be needed to create a machine learning model
- Reconnected Rak Gateway
- Added end nodes in server
- Tested send and receive packets from end node to gateway
- Researched about librosa library that Machine Learning team use
- Worked on the paper
- Connected MQTT
- Monitored receive data with MQTT

Things to do by next week

- Sending audio data with packet
- Extracting data with MQTT
- Research about MQTT
- Combine code about extracting amplitude, frequency(using FFT) data and send to gateway
- Prepare for the presentation
- Work on the paper

Problems or challenges:

- How to send and receive amplitude, frequency data in real-time with LoRa
- Building the wav file header
- How to extract data in a gateway with MQTT
- The delay time problem of LoRaWan

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