LoRa

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Problem Domain

- LoRa(Long Range) has a low bandwidth capacity, which allows for long range, but small payloads. Cannot send large files effectively.

What I Aim to Do to Solve This

Proposed Solution

- Understand the limitations of LoRa in multiple different network settings.
- Create a highly distributed system of LoRa transmitters and Receivers

Architecture

System Overview

Key Components:

- ESP32 Micro Controller: Brains and main component running software
- LoRa Tx/Rx: Transmission and reception devices

Sprint Structure - Sprint 1

Goals

- Simple LoRa P2P network
- Understand LoRa

Tasks

1. Understand how to make a simple LoRa network with complete payload reception and transmission
2. Push it to it's limits - understand the limitations of the devices (Bandwidth, range)
3. Create evaluation matrix for combinations of Spreading factor and bandwidth.

Deliverables

Sprint Structure - Sprint 2

Goals

- LoRa Mesh network creation
- Parelleization of Transmission and reception

Tasks

1. Create a more complex network of LoRa devices
2. Understand LoRa mesh limitations.
3. Spreading Factor and Bandwidth evaluation (For Mesh)
4. Distribute transmission and reception to begin parallelization of Tx and Rx

Deliverables

Learning with AI

AI Integration

1.

2. Learning C/C++ with AI for **effective** programming of micro-controllers

Questions?

Thank you for your attention!