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Capstone Project

Problem Domain

- Infrastructureless environments impose severe bandwidth and power constraints that prevent existing wireless communication systems from supporting human-scale information exchange.

Solution

Semantic transmission of the **meaning** of the message and reconstruct **intelligible audio** on the receiving end for **human-understanding**

Implementation:

- **LoRa mesh network** for transmission and reception - providing a **low-power, long-range interface**
- **Sender AI** Extracts semantic meaning from speech
- **Receiever AI** Reconstructs intelligible audio from semantic payload

Sprint Overview

Sprint 1 Goals

- Write research paper-skeleton
- Testing different semantic transmission methods (TTS, Neural Reconstruction, Template based)
- Implement LoRa Mesh network
- Begin AI training

Sprint Overview(Cont.)

Sprint 2 Goals

- Refine and continue to train AI models
- Simulation testing
- Implement LoRa network with AI models and begin testing
- Have final paper and submit

Learning with AI

1. AI training and hosting
2. LoRa device and protocols

Questions?

Thank you for your attention!