Pipe Inspection Gauge

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Motivation

This causes delays in natural gas view. flow and large CO2 leakages.

Proposed Idea

A tethered snake-robot outfitted with store the location an IMU, an ESP32-CAM, an ultrasonic Ultrasonic Sensor: Fluctuations camera feed for human visual provide feedback to a GUI for users indicate pipe fissures to visually identify pipe cracks. This Lighting LEDs: For environment 15x15mm). is intended to work on long distance illumination tunnels so having it tethered enables GUI: AII-in-one package for 4. In the GUI generate a 2D map that long-distance communication



Technical Description

Natural gas pipelines within Camera Module: Camera feedback 1. 3D print 8-inch diameter pipes residential areas have cracks and so a user can identify pipe cracks and address any leaks (by drilling or fissures that are difficult to identify. visually, multiple for 360 degree painting the inside).

> cracks, the IMU will feed locational robot inside the 3D-printed pipe. information back to a map logger to

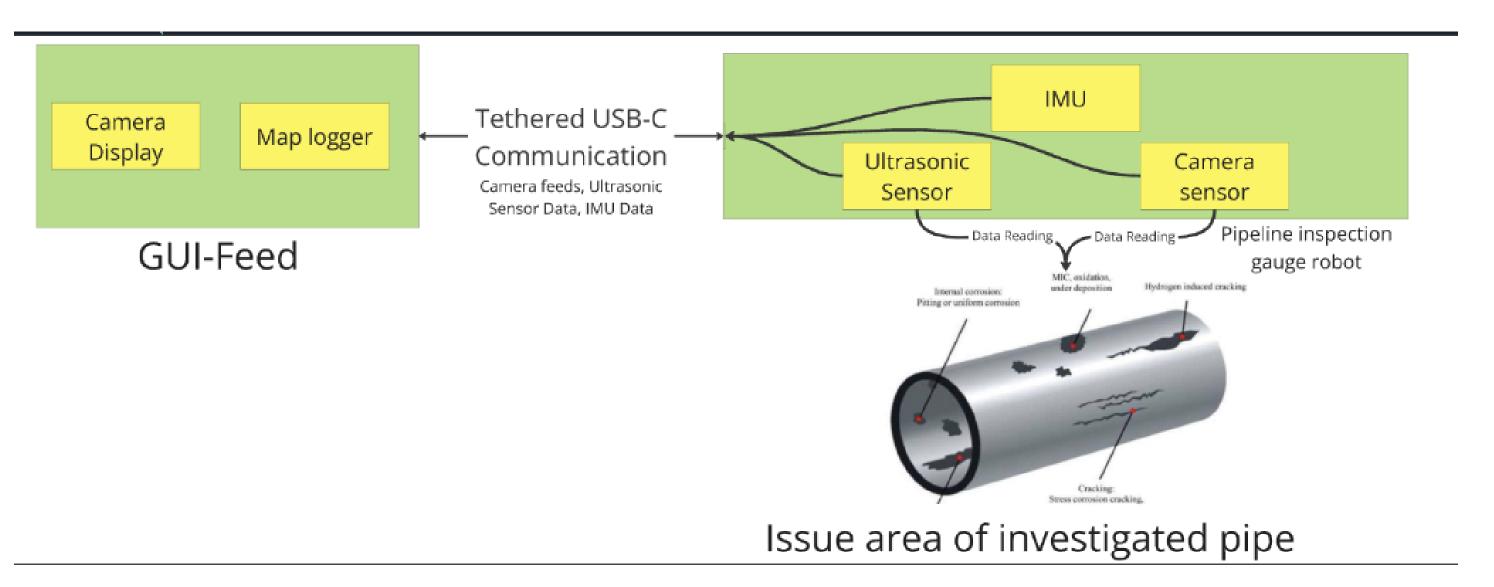
sensors and lighting LEDs that in ultrasonic sensor readings can identification of pipe cracks created

displaying the camera feed, mapping marking the locations of detected data, and ultrasonic data

Experiment design

- IMU: When the user identifies pipe 2. Use a controller to navigate a
 - 3. Have a GUI displaying a live in the previous step (minimum size
 - cracks after the investigation.

place holder for gui image



Future Expectation