BOE SIDEWALK MONITORING SYSTEM

Aquil Alam, Alejandro Chanocua, Omar Eclicerio, Ernesto Garcia, Francisco Gastelum, Henry Gonzales, Gui He, Perla Ramirez, Rishi Shah, Daniel Zeng

Advisor: Jungsoo (Soo) Lim

Liaison: Ted Allen, Alisa Blake, Irvin Nguyen, Christopher Tsangaris, Jonathan DeLeon, Miguel Grajeda, Raul Virgen

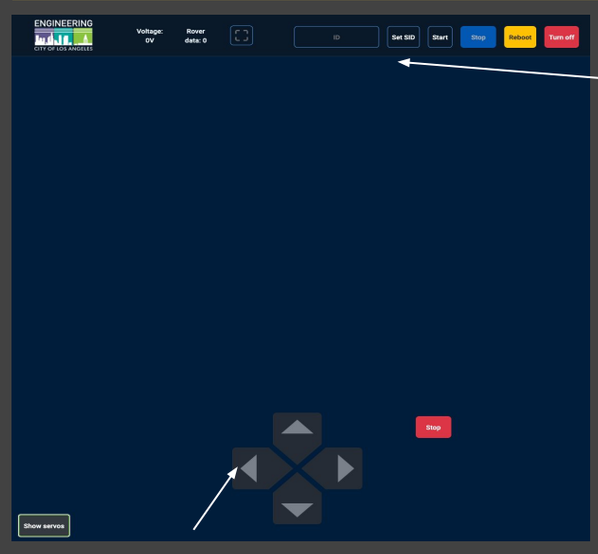
Background

The system developed by our team is designed to help BOE in their data collection by building a robot UI that will help with field analysis, image processing, a web application to display and map image data, and a database to hold the data collection and extracted by the system.

Objective

The Sidewalk Slope Monitoring System project is an effort to develop the necessary databases, user interfaces, and automation scripts to aid the City of Los Angeles, Bureau of Engineering (BOE) in maintaining over 11,000 miles of sidewalk.

Rover UI



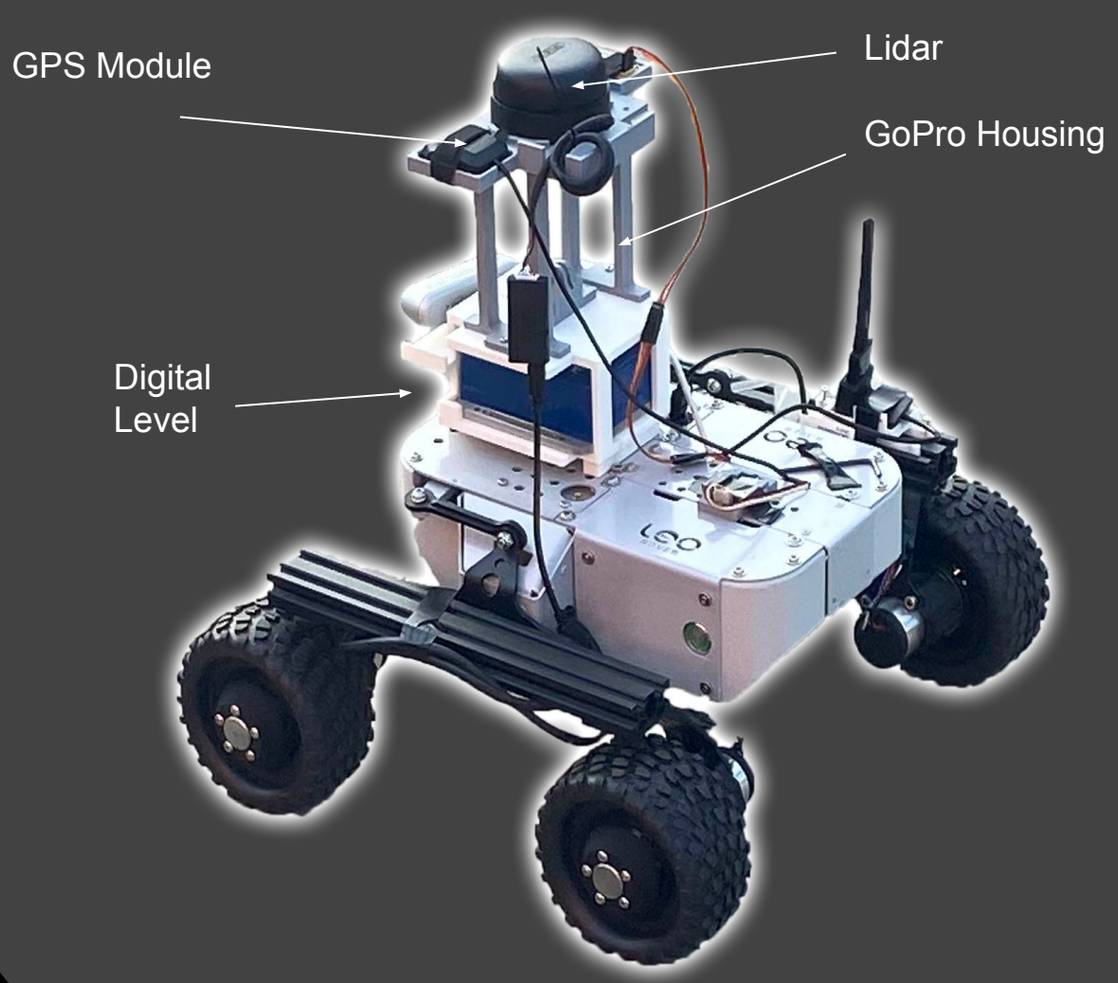
Intuitive NavBar

Directional Controls

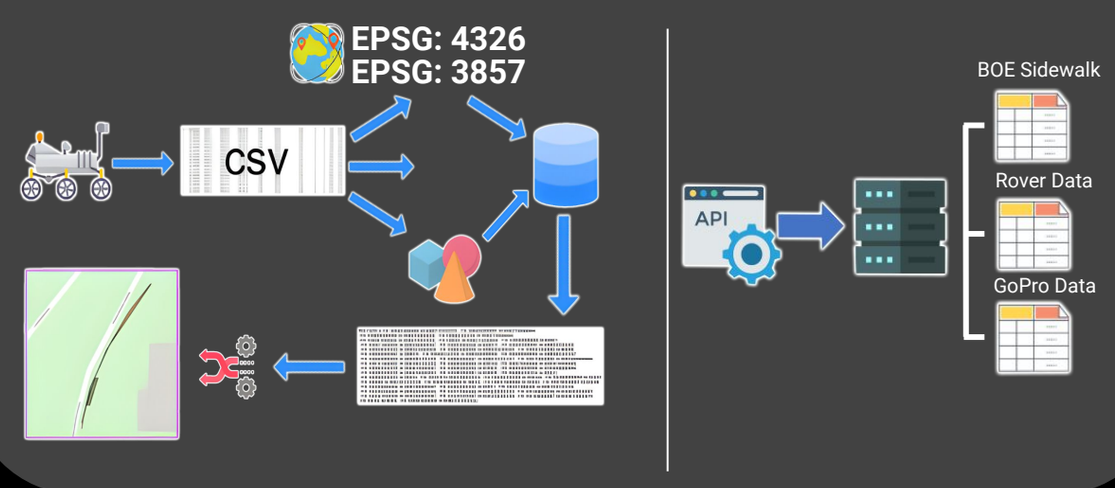
The Rover UI serves as:

- Initial step of data collection.
- User control of the rover.
- Data collection of segments.

Rover

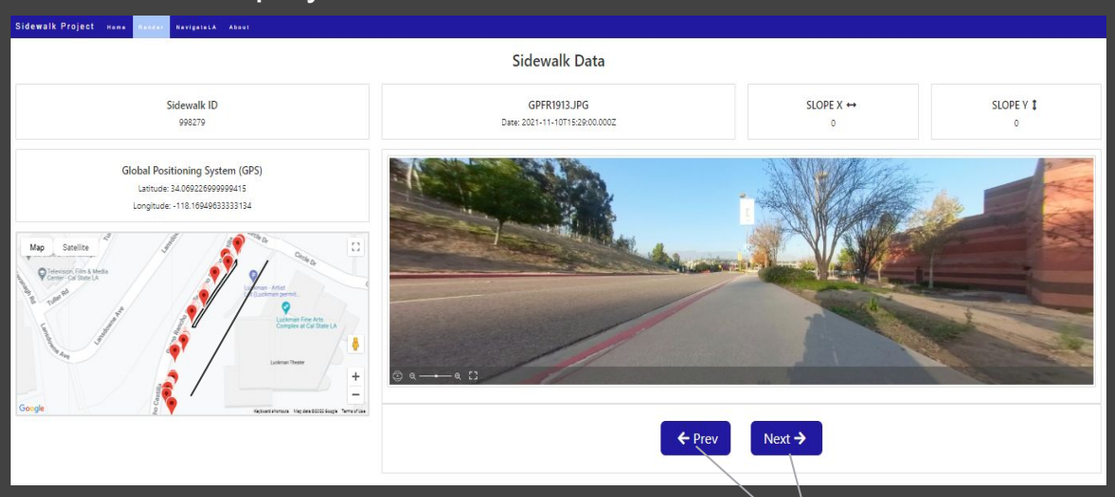


Data Flow



Web UI

Displays Metadata from the Rover and GoPro



Displays Google Map to show GPS points from the rover.

Users can switch back and forth between images

Accomplishments

BOE Sidewalk Monitoring System has the following capabilities:

- Semi-Autonomous movement
- Collecting GPS and sidewalk slope data
- Take photos from GoPro Fusion camera
- Operated by field crew
- Denoise GPS data for database upload and mapping to NavigateLA GPS data
- Package collected data for viewing in NavigateLA

RTK

Reach RS2 offers high precision GPS data.

Technologies Used

ROS, SQL, React, JS, NGINX, HTML, Node.js, Python