BOE Sidewalk Assessment System

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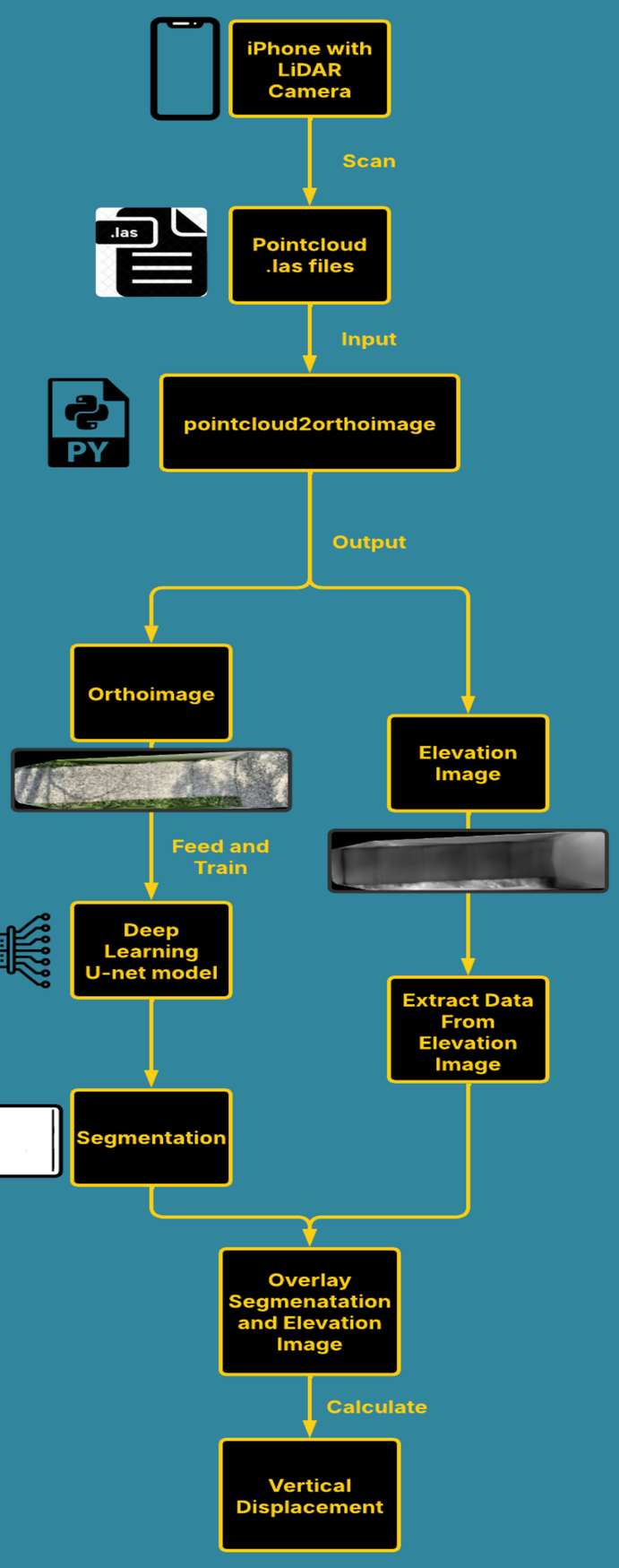
Background

Sidewalks are essential for providing access to pedestrians, especially those with disabilities. The deficiencies of sidewalks lead to potential hazards and reduces wheelchair accessibility. A Rover that can measure sidewalk conditions to identify hazardous areas is being developed to solve this problem.

Objectives

To improve the Rover by implementing a collision avoidance mechanism for the safety of pedestrians.
To train and implement a machine learning algorithm that can work with the data collected by the Rover to calculate vertical displacement of sidewalks that may need repair.

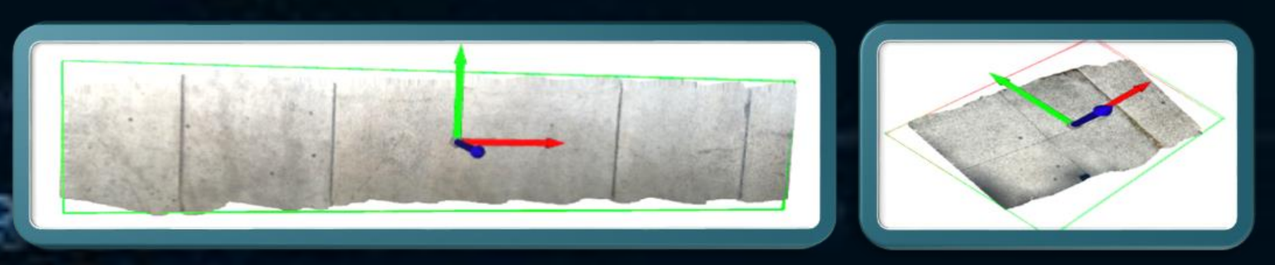
Workflow Architecture



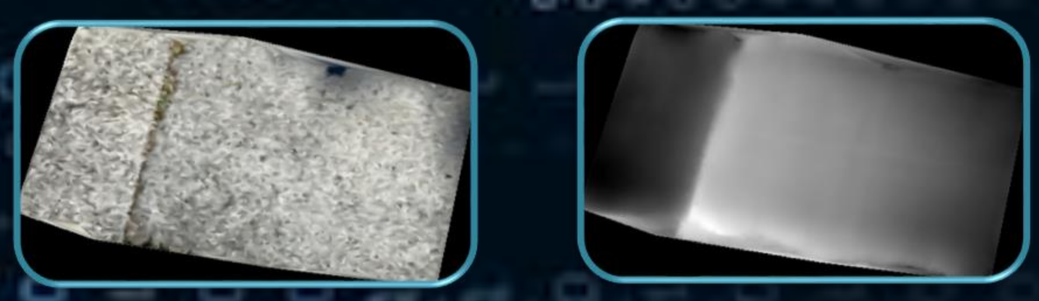
Ubiquity Magni Silver (Rover)



Point Cloud



Orthoimage and elevation



Results



CONCLUSIONS & FUTURE WORK

Implemented a collision avoidance algorithm that detects objects within a safe distance and forces Rover to slow down and eventually stop. In the future, we seek to improve this functionality through the use of EZ Map. We implemented and trained a machine learning algorithm that can process Rover data to calculate vertical displacement. In the future, we can improve the model's accuracy with further training and also implement horizontal displacement.