

# BOE Sidewalk Assessment System



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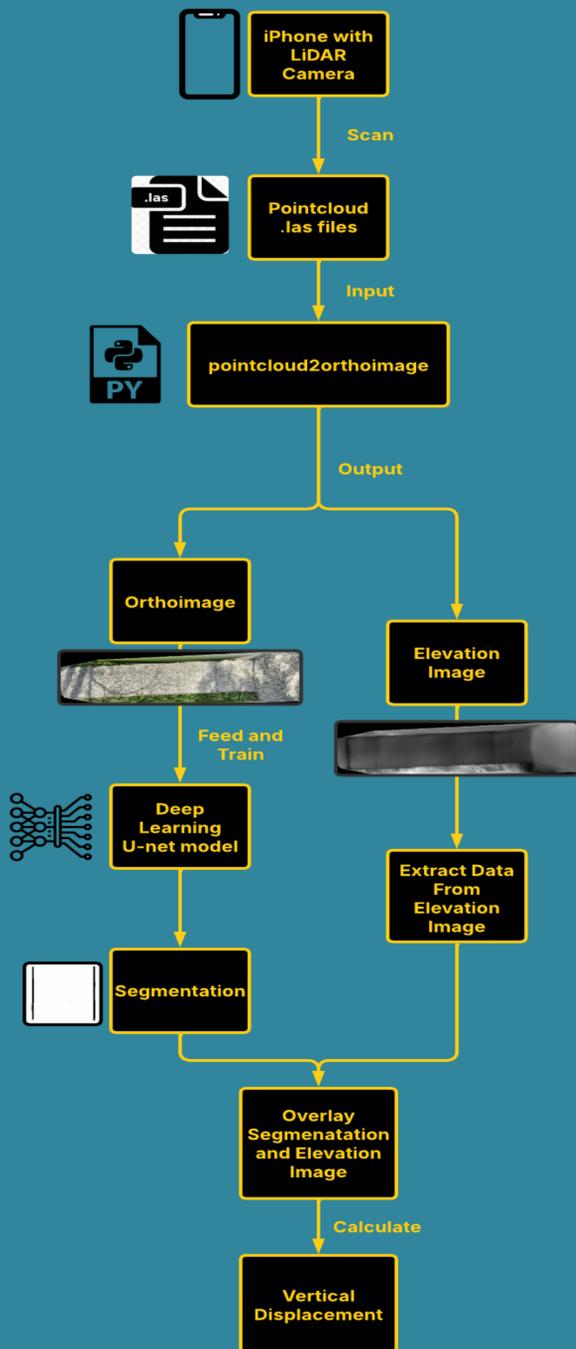
## Background

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.

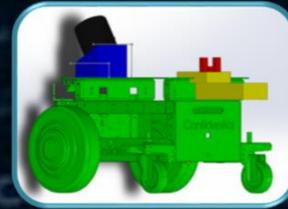
## Objectives

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.

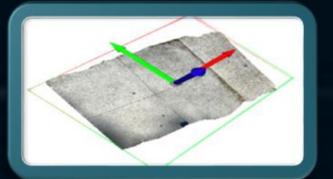
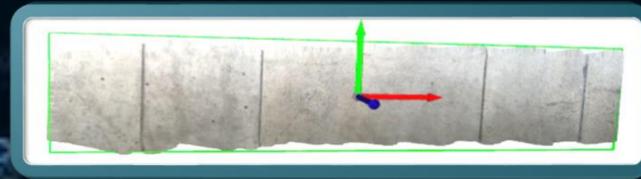
## Workflow Architecture



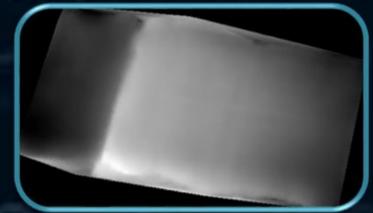
### Ubiquity Magni Silver (Rover)



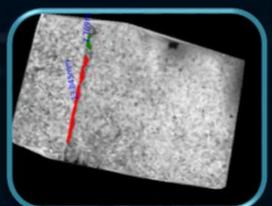
### Point Cloud



### 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.

