



## Invention Disclosure IDF-51977

Submitted by Ammar Husain on May 07, 2021 11:53 PM

Title: Spotting navigation regressions using logged trajectories

Project: Proxy

Invention Description: The perception system that enables Proxy robots to navigate from point A to B is built heavily around geometric processing of 3D point clouds to determine drivability of the environment its operating within. This can be split up broadly into two sections: (i) point cloud segmentation and (ii) occupancy grid generation.

Both stages of this pipeline rely heavily on manually tuned heuristics that ultimately results in a binary decision on whether a given cell (5cm x 5xm) is drivable or not drivable. The manual tuning is mostly a process of incorporating observations from robot performance on the field and reasoning about whether tuning a parameter one way or another benefits the failure case while not significantly inducing other failures. This heuristic tuning is quite common across the software stack in all robotic systems, especially perception. This proposal aims to prevent regressions in performance of robot navigation on past trajectories/environment by quantifying the effect of algorithmic changes or tuning a heuristic with respect to past robot performance.

Please find design details in the attached design doc.

Description of Use Outside of X: This is planned to be implemented as a regression framework in Q4'21 or Q1 next year.

Collaboration with Other Bet/Google: No

Collaboration Description:

## Inventors

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## Attachments

spotting navigation regressions using logged trajectories - google docs.pdf