Perception: Map Building

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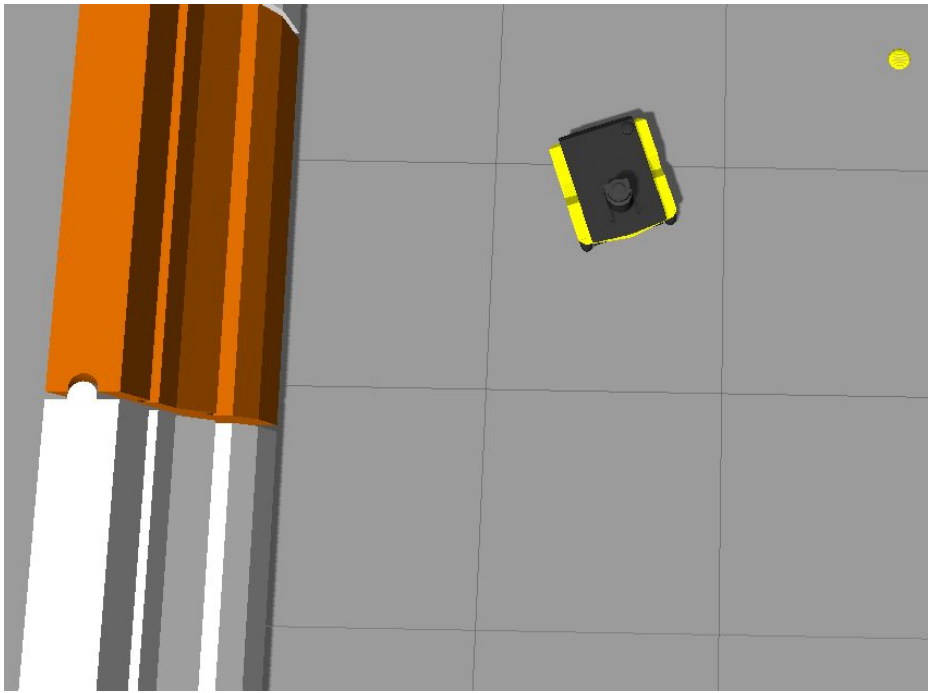
Contents

Intro and Purpose

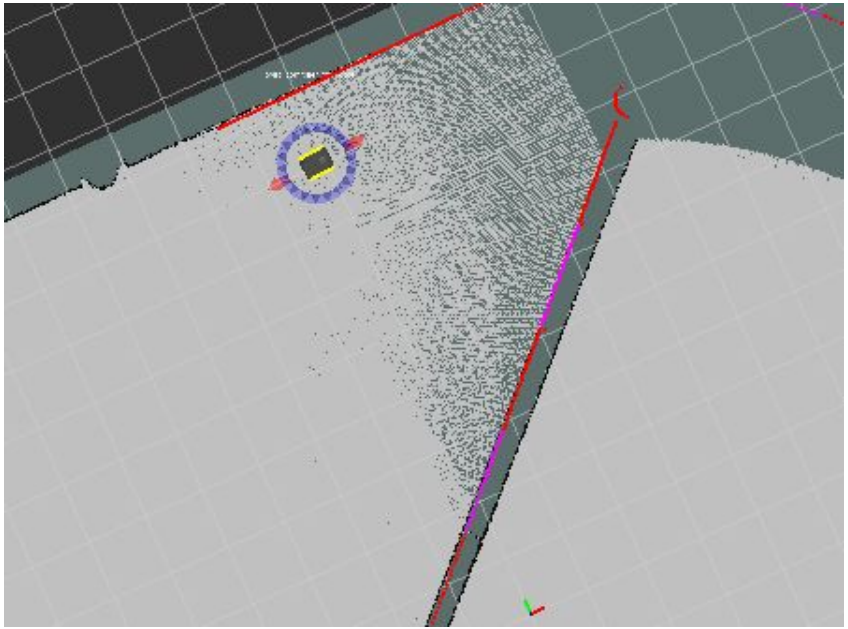
- Build on our previous work to explore a new ‘world’
- Capture a map of this world

Exploration Algorithm

- Use laser sensor data to avoid collisions or flipping the robot.
- Approaching an obstacle to on the side, turn the other way.
- Approaching an obstacle head on, backup and turn until clear.
- When path is free, move in a generally forward direction with random amounts of deflection.
- Terminates after 10 minutes

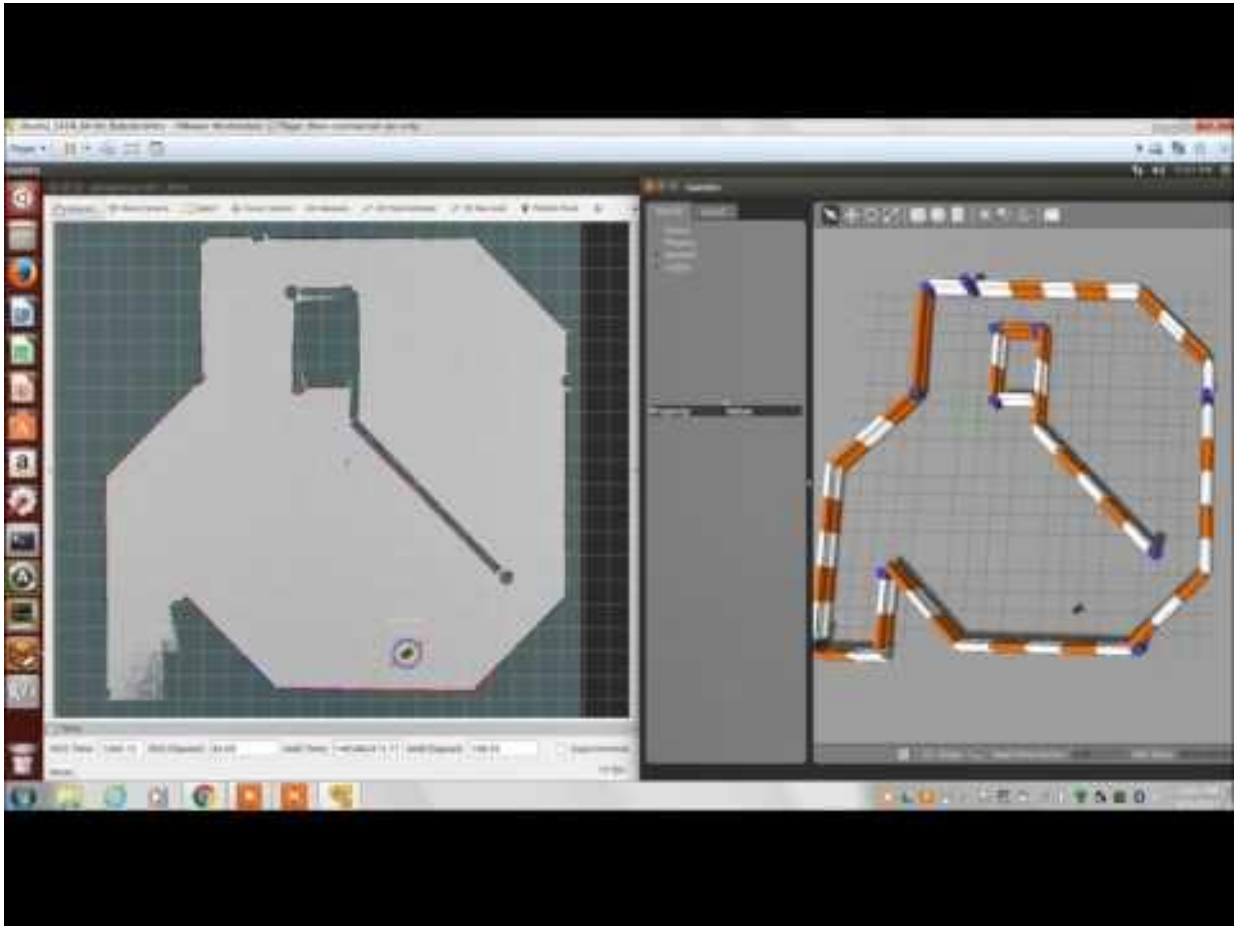


Map Capture

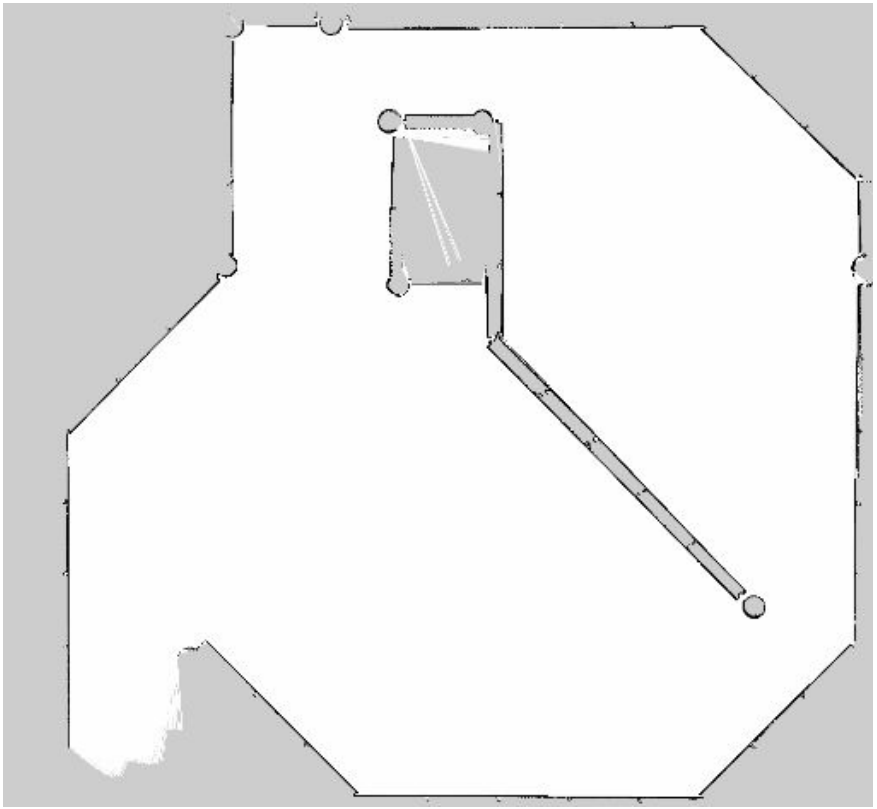


- Run slam_gmapping node from launch file.
  - Creates a 2D map using laser data.
- During conclusion of the exploration script a map_saver node is run.
  - Saves map to file.

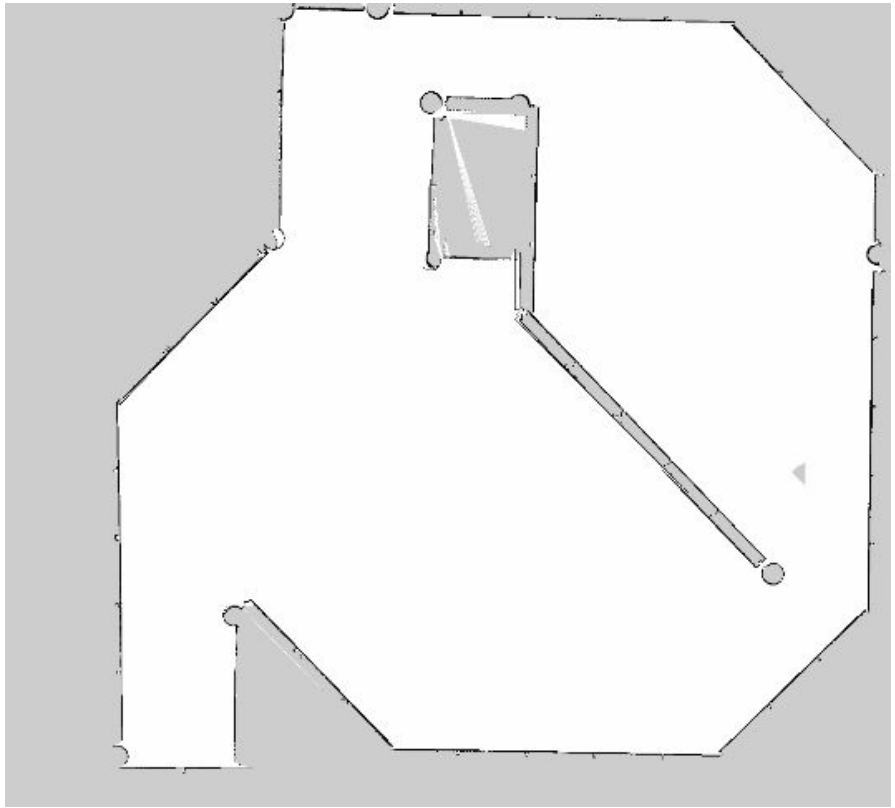
Demo



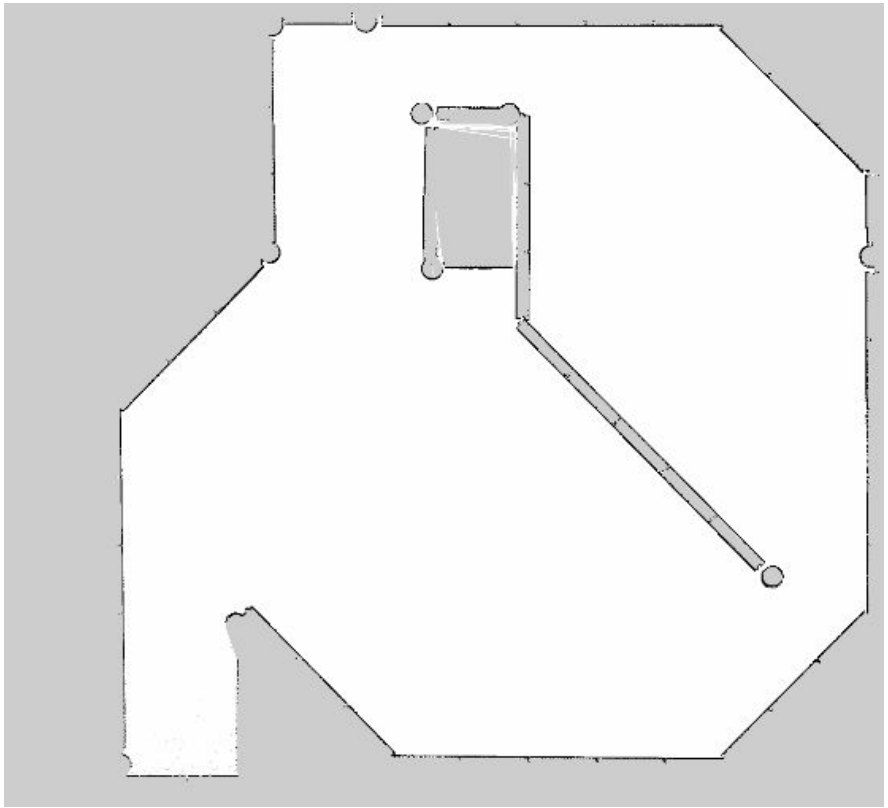
Results - Good



Results - Better



Results - Best



Problems Overcome

- Navigating the world in a more productive way than last week.
- Using laser data to avoid collisions.
- Using gmapping and map_saver.

Contributions

Derek

- Exploration script
- Mapping

Akhil

- Laser sensor interfacing
- Exploration Script

James

- Mapping
- Documentation and project admin

Questions?