

The Thirty Gallon Robot

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Project Overview

- Implement an indoor navigation system for a cheap, easy-to-build robot that can find its way around indoor facilities
- Use existing tools and hardwares to improve the navigation system of the robot within Engineering building and avoid any obstacles





Client: Dr. Leverington

- NAU is missing bigger representations of robotics
- Dr. Leverington has been working on thirty gallon robot for 3 years to base the project as an introduction to robotics
- Future prospect of the project is to be able to engineer robots those can navigate throughout NAU buildings





The Current Implementation

- The current solution uses WiFi scans to get nearby WiFi information and use that to determine the position
- The average scan time was found to be a little over three seconds.
- Improving upon this requires expensive hardware or changing the router access points in the building



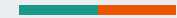
Our Solution

- Building a 3D map using LiDAR
- Using a building map combined with a search algorithm to dynamically build routes
- Use a built-in LiDAR sensor to determine the robot's location



Our Plan for Development

- Weekly meetings
 - Stay on track
 - Make note of problems or roadblocks
- Learning about tech options
 - Limits and uses of LiDAR
 - Other solutions to the problem
 - Interactions between python and the robot's percepts/actuators
- Other issues
 - How to deal with static hazards
 - What about random dynamic hazards (a door swinging open or a person walking)



Thank you.

