

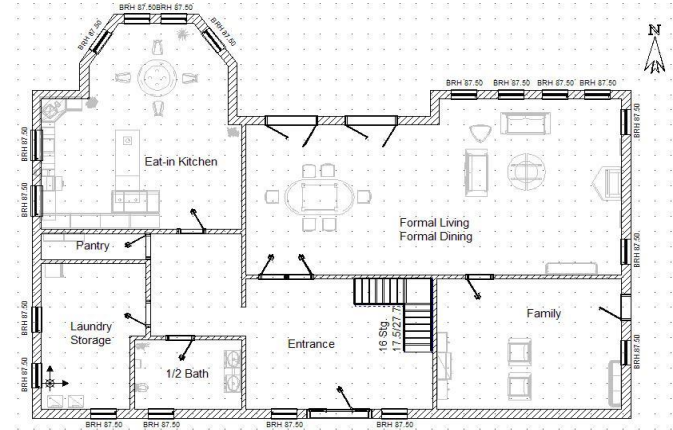


Autonomous floor plan mapper with Jetbot AI

By Ankit, Darwin, Leon, Thomas

Motivation

- Hands-on approach with robot
- Interaction of software and hardware
- Creating new and updated floor plans for real estate
- Use output for other applications e.g. Vacuum robot



Concept

- Deployment of robot in unknown indoor environment
- Autonomous robot navigation
- Mapping of environment based on sensors
- Output is a floor plan



Implementation

Mapping

RF2O Laser Odometry
SLAM Toolbox



Platform

Jetbot AI with ROS2
operating system



Navigation

ResNet-18 Collision
Avoidance Model

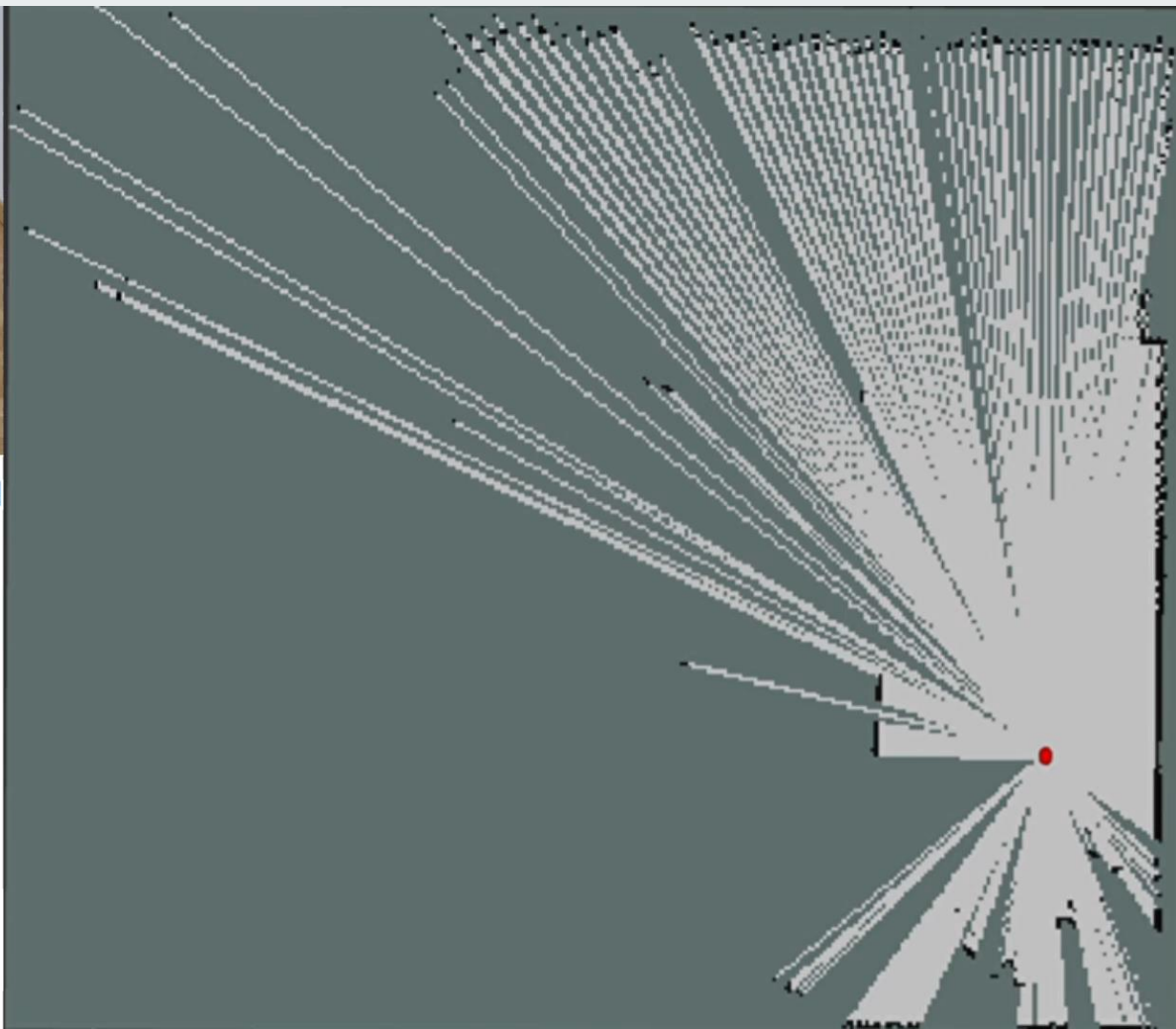




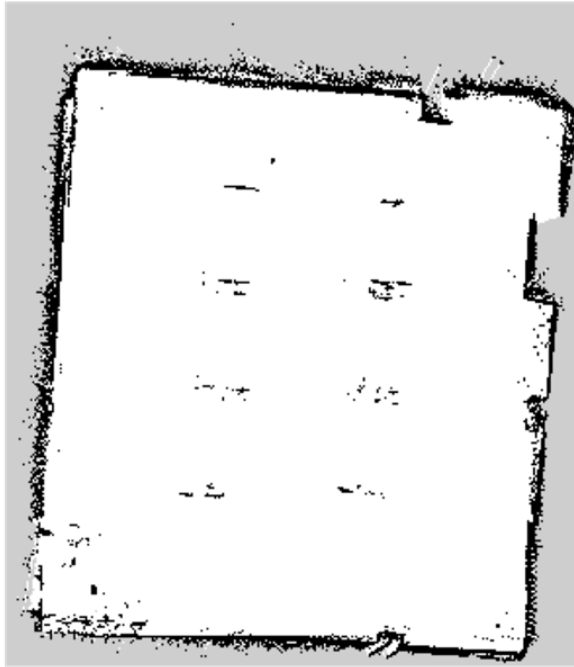
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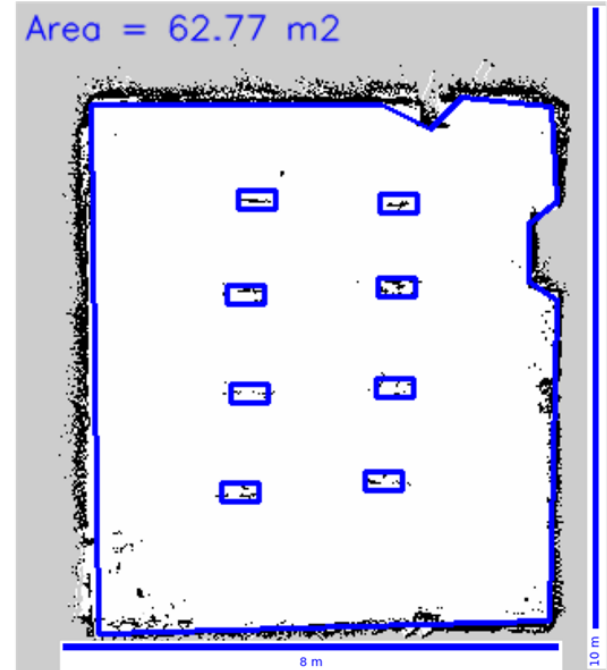
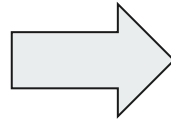


Floor plan post-processing



Rotation
Canny Edge
Morphing

Polygon detection
Blob detection





Lessons learned

- Time consuming setup of robot hard- and software
- Malfunction or break down of hardware can delay overall project progress significantly
- Require knowledge of computer science, electronics, mechanics
- Theoretic concepts might not work in real world robot applications



Sources

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