NOVEL
Weekly Progress Report #1
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This Week's Goals

Based on our project proposal, the goals for this week were:

- Software
    - Ensure camera and LIDAR are working and can obtain necessary data from them
    - Create environment in RVIZ and Gazebo
- Hardware
    - N/A
- Testing
    - Visualize camera + LIDAR data in RVIZ
- Other
    - Finish editing proposal and resubmit

This Week's Progress

- Software
    - RGB Camera and LIDAR are working
        - Camera depth field may not be functioning properly
        - Intrinsic parameters of camera may not be precise anymore
    - Can simulate RVIZ and Gazebo environments
- Hardware
    - Turtlebot, LIDAR and Intel RealSense r200 acquired
    - Associated software drivers and packages installed
- Testing
    - Can visualize RGB, IR camera streams and LIDAR in RVIZ and Gazebo environments
- Other
    - Proposal submitted

Changes in Project Scope/Goals

- We will be working with ArUco marker detection as our “object classification” first before actually moving with a neural network

Lessons Learned

- Depth camera may not be so important given the LIDAR, but we hope to have it working anyway
- In order to start as simple as possible, our first step before object classification will be detecting ArUco markers, which we can simply attach to the target objects for our demo if we cannot classify objects using neural nets

Next Week’s Goals

Slightly altered from our project proposal and incorporating our lessons learned, next week’s goals are:

- Software
  - Write node for object detection based on LIDAR
  - Write node for ArUco marker detection based on Realsense images
  - Create xacro model of robot
- Hardware
  - Design / 3D print holder for camera to attach to robot chassis
- Testing
  - Test LIDAR object detection in simulation
    - Compare single object detection performance versus multi-object detection (up to 3 novel objects)
  - Test object classification/localization using actual images from Realsense camera

These have not changed based on this week’s progress.