

Lab 2B: RACECAR Intro

Team 6:
Big Hero 6

*"On a scale of 1 to 10, how would
you rate your pain?"*





Evie
Kyritsis



Juan
Huertas



Brian
Plancher



Alan
Tham



Mario
Pardo



Liang
Zhou



Project Statement

- **Problem(s) to Solve**
 - Lack of familiarity with ROS & RACECAR software architecture
 - Nonexistence of team workspace for future work
- **Achievements**
 - **As a Team**
 - The ability to debug system
 - Remaining coordinated while some completed tasks faster than others
 - Providing assistance when something went wrong
 - **Individually**
 - Personal software environments setup and configuration
 - Completing specific tasks of the lab, and then sharing progress with the team



Lab Goals

- Set up Git environment on VM
- RACECAR control and simulation
 - Gazebo intro, open-loop control with joystick
- RACECAR data collection
 - Update software
 - Stream sensor data
 - Visualize laser scan data (rviz)

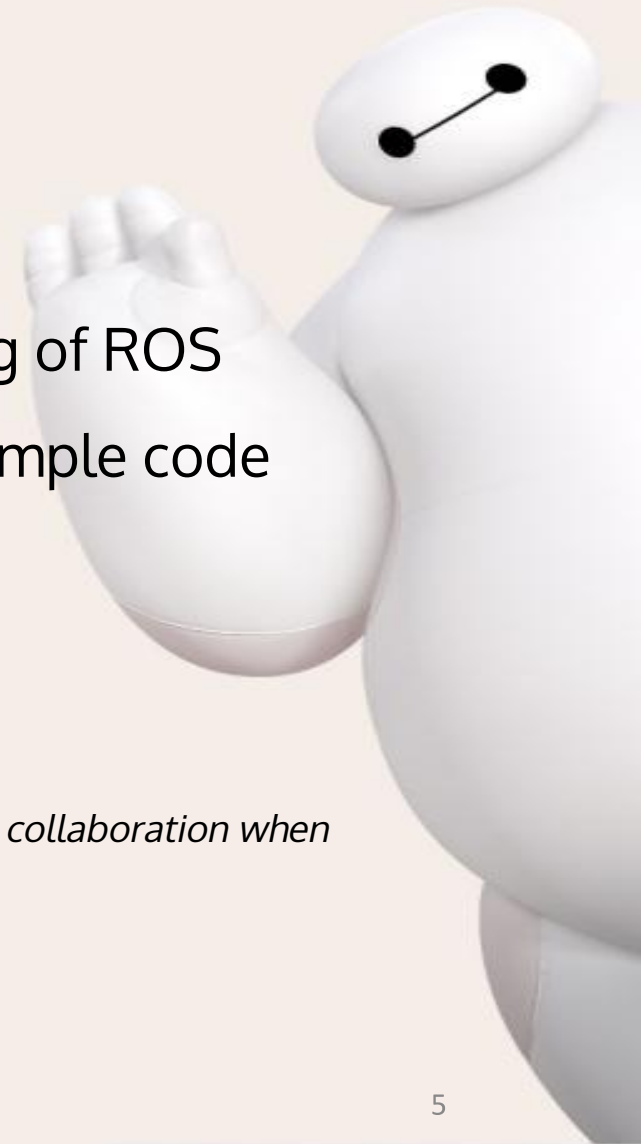
END GOAL: general familiarity with RACECAR system



Technical Approach

- **Follow the instructions** to gain basic familiarity
- **Work together** to help each other gain a basic understanding of ROS
 - **Dive deep into the codebase** and leverage all of the example code already in place
- **Leverage the expertise of TAs** when stuck

Note: For later labs we will need to develop a better system of information sharing to ensure efficient collaboration when we work on different tasks

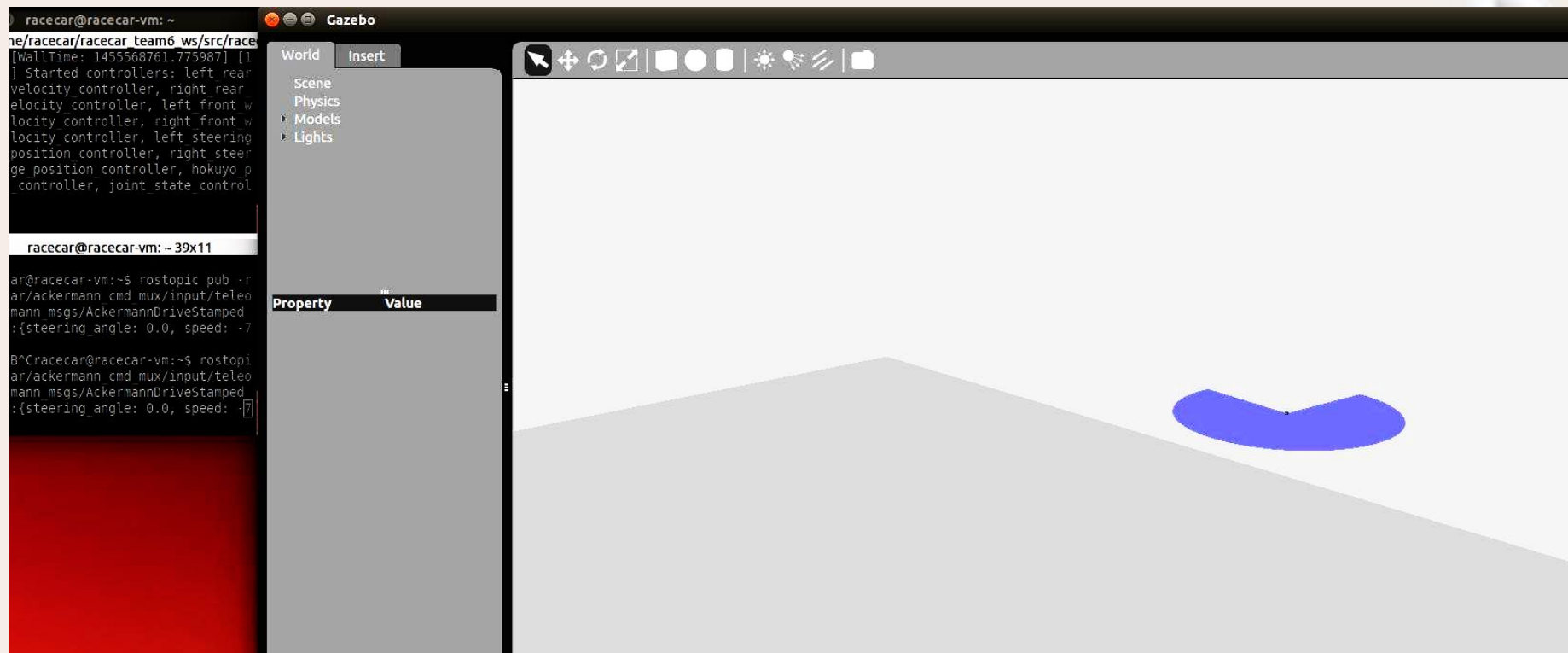


Results

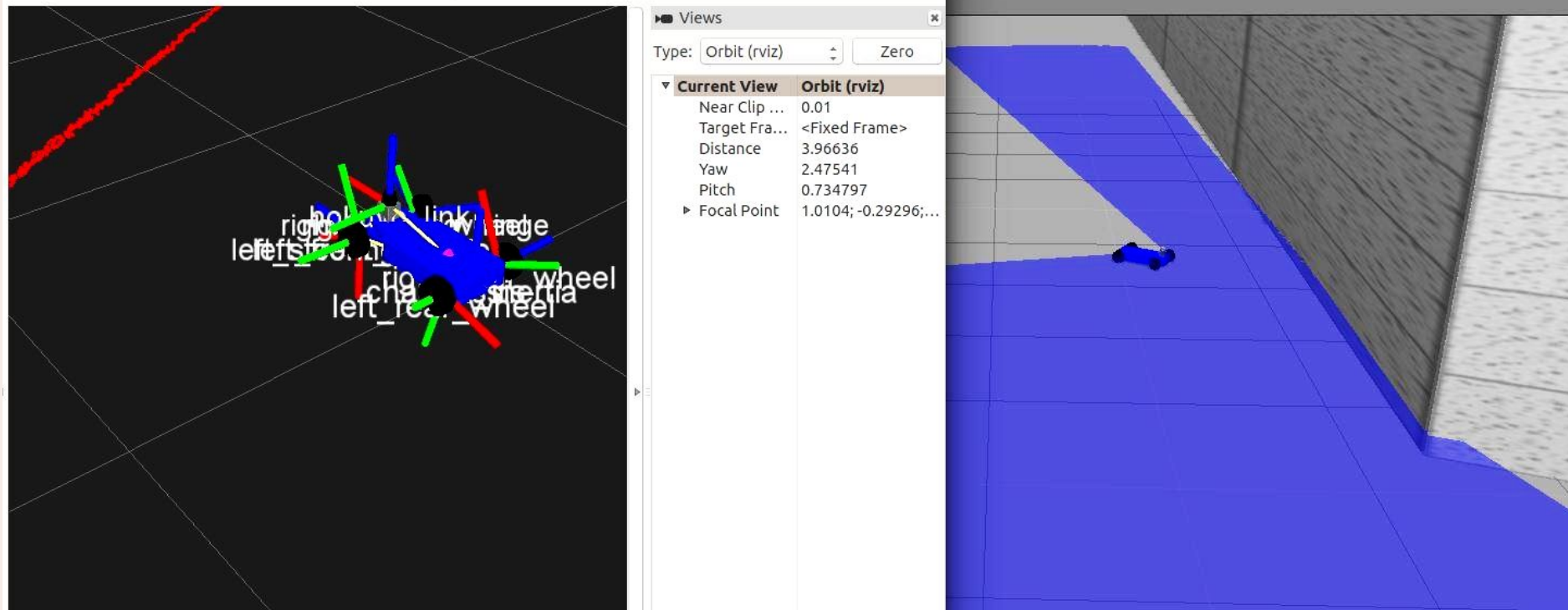
- **Module 1:** successfully set up Git environment
- **Module 2:** able to simulate robot and laser scanner to detect virtual walls, drive simulated car with commands
 - **Roadblocks:** could not get joypad to work with simulation for open loop control
- **Module 3:** stream camera data to robot , update software, Mount SSD



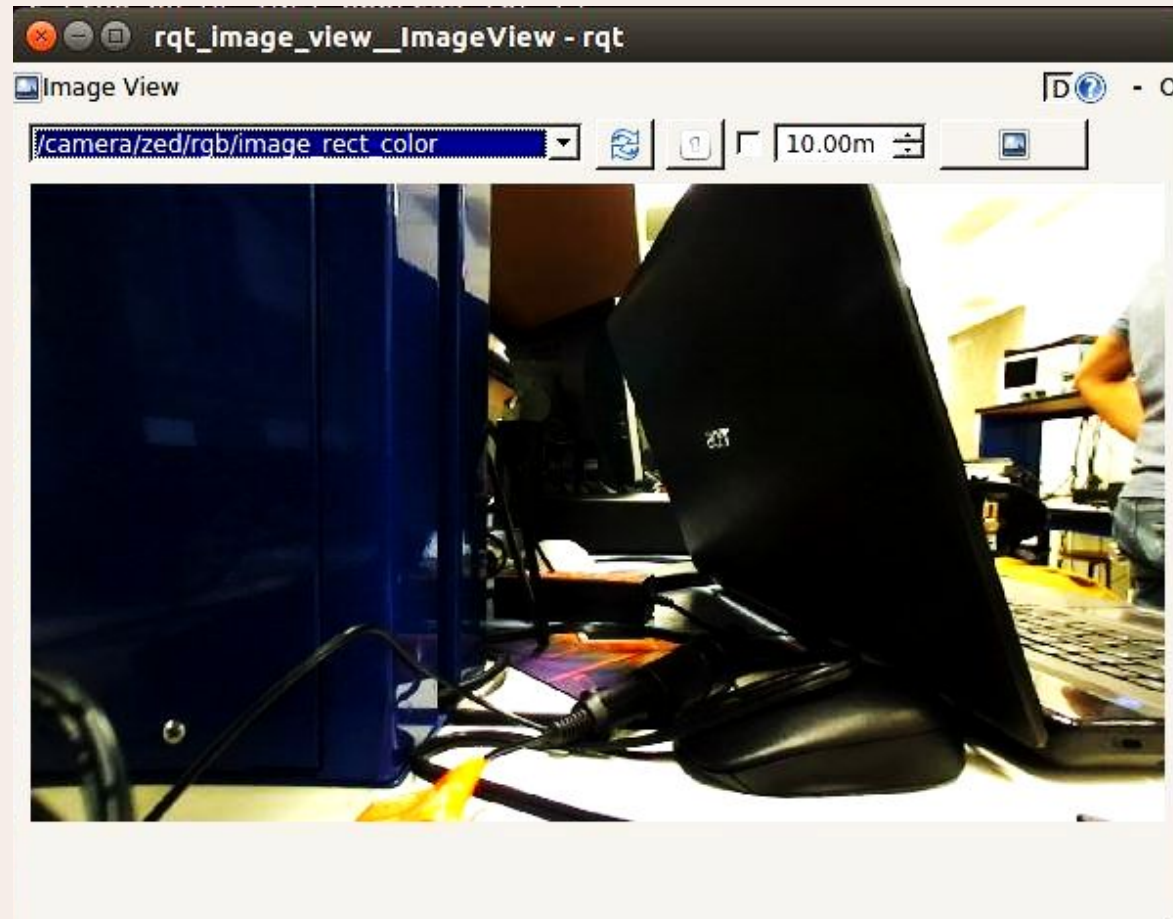
Open Loop Control



Visualize laser scan data



Stream Sensor Data



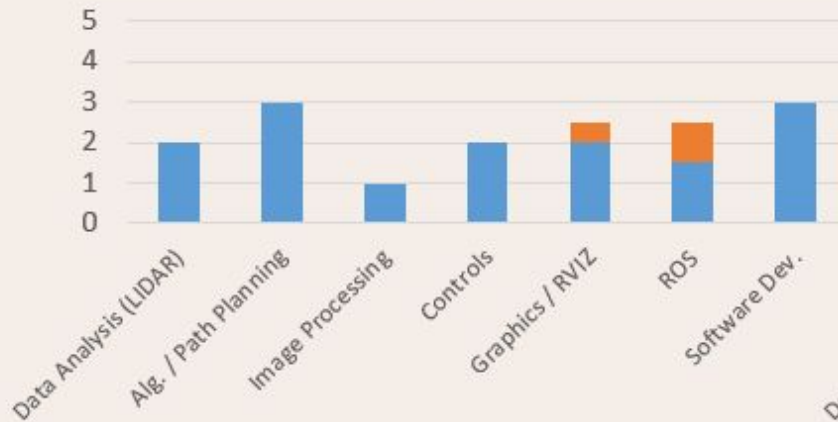
Lessons Learned

1. **Read through lab notes before execution**
 - a. Gain better understanding of the problem and approach
 - b. Better learning through such reflective approach
2. **Apply scientific method to Debugging**
 - a. Create hypotheses, experiment, test, validate
 - b. Stepping through process systematically reduces solution space
3. **Better defined team roles and responsibilities**
 - Balance between skills and learning objectives
 - All members have different skillsets - ask and learn what you don't know
 - The team that works together, travels far together

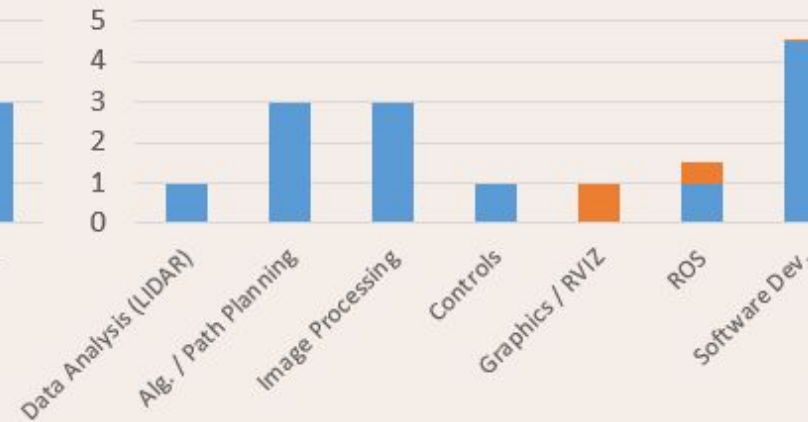


Technical Self Assessment

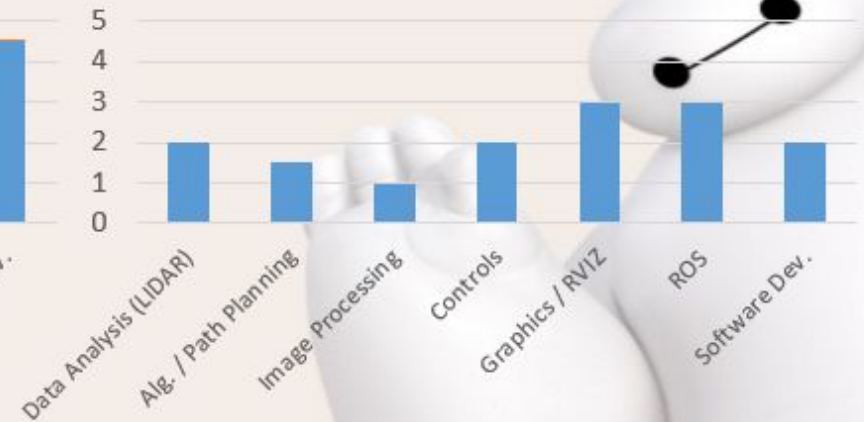
Evie Kyritsis



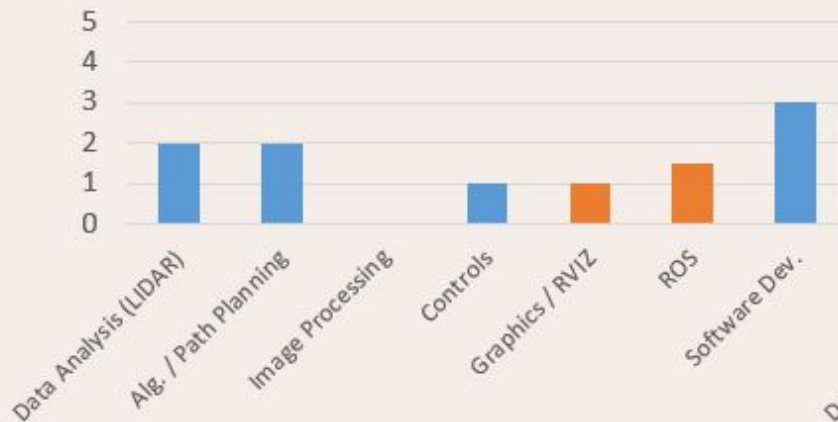
Juan Huertas



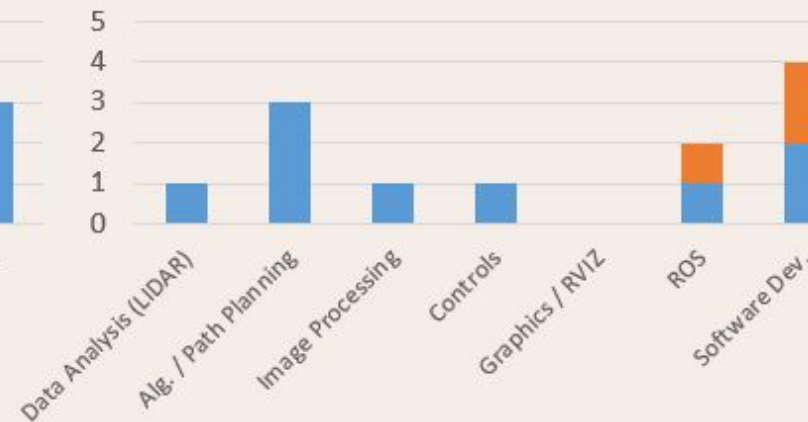
Mario Pardo



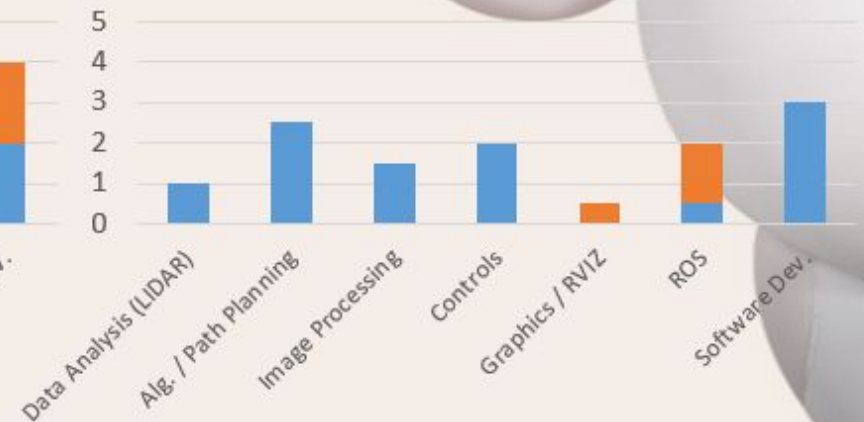
Brian Plancher



Alan Tham



Liang Zhou



Questions?
Comments?

