Bryan Zheng

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Education

National University of Singapore Aug 2018 – Jun 2022

Bachelor of Engineering in Mechanical Engineering (Honours) *Singapore*

- Minor in Computer Science, Specialization in Robotics
- GPA: 4.68/5.00 (Highest Distinction)
- Dean's List for 3 Semesters

Experience

Micron Technology Jun 2020 – Nov 2020

Autonomous Vehicle Intern *Singapore*

- Enhanced perception system by integrating new lidar obstacle detection packages into software stack, resulting in obstacles being represented more accurately
- Implemented Separating Axis Theorem to check for collisions between vehicle and obstacles
- Parallelized collision checks during path planning to decrease time taken for each planning cycle
- Integrated camera object detection package based on YOLOv3 into software stack and extended it to utilize depth information to determine position of detected objects in 3D space
- Added visualizations for various algorithms, leading to the discovery of an existing bug

Projects

NUS Module Planner | *Android, Java, SQLite, Room, Retrofit, NUSMods API, Disqus API*

- Developed an Android application for viewing NUS module information and timetable planning
- Implemented using 3-layered architecture and MVVM
- Fetched data from NUSMods API and Disqus API using Retrofit
- Persisted data locally using SQLite/Room

Autonomous Remote-Controlled Car | *C++, ROS, Boost Graph Library, NLOPT*

- Converted a standard one-tenth scale remote-controlled car into an autonomous vehicle
- Implemented local path planning algorithm based on the paper "Focused Trajectory Planning for Autonomous On-Road Driving"
- Represented space around vehicle as a graph and then searched for coarse paths using Boost Graph Library
- Computed candidate paths for execution by using NLOPT to solve for optimal path parameters
- Computed configuration-space obstacles to reduce time complexity of grid-based collision checking algorithm from O(n) to O(1)

Maze Royale | *JavaScript, HTML, Node.js, Socket.IO, Bootstrap, Google Cloud Platform*

- Developed a multiplayer browser-based 2D shooter game set in a randomly generated maze-like map
- Implemented real-time communication between client and server using Socket.IO
- Introduced collision resolution to allow players to slide against obstacles, resulting in a smoother feeling movement system
- Implemented random map generation using DFS and fog of war using ray casting
- Automated deployment to Google Cloud Platform using GitHub Actions

Exosuit Sensing System | *C++, ROS*

- Designed sensing system for a soft exosuit as part of a team
- Initiated development of a sensor data visualization tool to facilitate testing and debugging
- Integrated Bluetooth module into suit to allow sensor data to be visualized without a physical connection

Technical Skills

Languages: Java, C++, Python
Libraries, Frameworks, and Tools: Git, Linux, ROS, JUnit