Arnav Thareja

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Education

University of Washington | *Seattle, WA* Expected Graduation: June 2024
Bachelor of Science, Computer Science and Mathematics

Cumulative GPA: 3.95

Coursework: Algorithms, Machine Learning, Autonomous Robotics, Computer Vision, Databases, Systems Programming, Computational Biology, Data Structures & Parallelism, Probability, Linear Algebra, Differential Equations

Experience

Oracle Cloud Infrastructure June 2022 – September 2022
Software Engineer Intern *Seattle, WA*

- Worked as a part of the Virtual Machines Efficiency team within Oracle Cloud Infrastructure (OCI) Compute
- Designed and built a system to monitor usage of reserved compute resources and identify resources to be reclaimed
- Defined an actionable implementation strategy to address and fulfill system requirements
- Created internal usage metrics, dashboards, and alarms using Java and Oracle Monitoring Query Language (MQL)

Personal Robotics Lab May 2021 – Present
Undergraduate Researcher *Seattle, WA*

- Working on multi-agent autonomous navigation and task allocation with MuSHR cars
- Created an open-source architecture for completing pushing-based manipulation tasks with multiple non-holonomic robots
- Designed and built motion planning algorithms for non-holonomic multi-agent navigation and task allocation in C++
- Extended and tuned model predictive control for the multi-agent domain to eliminate collisions and improve robustness
- Built ROS (Robot Operating System) wrappers around algorithms to enable easy interfacing with existing systems
- Sped up robot trajectory comparison framework by 50x by directly analyzing ROS bags through the rosbag Python API
- Demonstrated and tested system capabilities and translation to real-world environments on physical robots

Husky Robotics October 2020 – October 2021
Software Engineer, Autonomous Navigation Subteam *Seattle, WA*

- Created robot pathfinding and autonomous navigation algorithms for a prototype Mars rover using C++
- Integrated ROS2 into codebase using nodes and topics for navigation plan visualization
- Defined and implemented an algorithm to locate and navigate to targets given only noisy GPS coordinates

Projects

Chess | *Personal Project* *github.com/arnavthareja/chess*

- Built a chess game in Java that can be played in the terminal
- Implemented a minimax algorithm with alpha-beta pruning for automated gameplay with informed move selection
- Used a heuristic-based iterative deepening depth first search algorithm and memoization to improve runtime

CL-CBS (Car-Like Conflict-Based Search) ROS Wrapper | *Personal Robotics Lab* *github.com/arnavthareja/clcbs_ros*

- Created an open-source ROS wrapper and ROS API around the CL-CBS multi-agent path planning algorithm using C++
- Extended CL-CBS to allow parameter reconfiguration and restriction of motion primitives in underlying Hybrid A* planner

Angles | *DubHacks 2020 – Newsprint Track Finalist (Top 3 out of 70+ Projects)* *devpost.com/software/angles-sqdzlt*

- Developed a Chrome Extension that suggests news articles of opposite bias when a news website is visited
- Leveraged Google Cloud NLP with JavaScript to extract keywords from news articles to use in our opposite bias algorithm
- Selected as a finalist in the Newsprint track and recognized as one of the top 3 projects out of over 70 projects

Yearbook 2020 | *Personal Project* *yearbook-hhs.web.app*

- Designed and developed a web application for students and graduates to sign yearbooks virtually during COVID-19
- Utilized JavaScript, HTML, CSS, and Google Firebase for user authentication, cloud storage, and NoSQL database

Skills

Languages Java, C++, Python, C, JavaScript, HTML, CSS, SQL
Tools NumPy, PyTorch, ROS (Robot Operating System), Docker, Linux, CMake, Git