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, Autonomous Robotics, Systems Programming, Databases, Data Structures & Parallelism, Probability, Linear Algebra, Differential Equations

Current Coursework: Machine Learning, Computer Vision

EXPERIENCE

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

- Working on multi-agent autonomous navigation and task allocation with MuSHR cars
- Designed and implemented planning algorithms for non-holonomic multi-agent navigation with task allocation in C++
- 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 a navigation algorithm to locate targets based on approximate GPS coordinates
- Designed patterns for driving between two posts given GPS coordinates of the center
- Leveraged Docker for CI (continuous integration)

Mathnasium May 2019 – June 2020
Instructor *Renton, WA*

- Taught K-12 students topics in math up to calculus and helped develop an intuitive understanding of math concepts
- Contributed to smooth operation of the center and interacted with parents and prospective customers

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

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

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

- Created a ROS wrapper and defined a 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

SKILLS

Languages Java, C++, Python, C, JavaScript, HTML, CSS, SQL
Tools ROS (Robot Operating System), Docker, GDB (GNU Debugger), Linux, CMake, Git, GitHub, LaTeX