

# ARNAV THAREJA

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## EDUCATION

**University of Washington** | Seattle, WA  
*Bachelor of Science, Computer Science*

Expected Graduation: June 2024

**Cumulative GPA:** 3.97

**Coursework:** Data Structures & Parallelism, The Hardware/Software Interface, System & Software Tools, Discrete Math, Probability and Statistics, Linear Algebra, Differential Equations

**Planned Coursework:** Algorithms, Operating Systems, Distributed Systems, Autonomous Robotics, Computer Vision, Databases, Systems Programming

## EXPERIENCE

**Personal Robotics Lab**  
*Undergraduate Researcher*

May 2021 – Present  
Seattle, WA

- Working on multi-agent autonomous navigation and task allocation with MuSHR cars
- Designed and implemented algorithms for non-holonomic multi-agent navigation with optimal 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**  
*Software Engineer, Autonomous Navigation Subteam*

October 2020 – Present  
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**  
*Instructor*

May 2019 – June 2020  
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](https://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](https://devpost.com/software/angles-sqdzlt)

- Developed a Chrome Extension that suggests news articles of opposite bias when a news website is visited
- Used Google Cloud NLP to extract relevant 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](https://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

**Popular Music Analysis** | *Personal Project*

[github.com/arnavthareja/music-analysis](https://github.com/arnavthareja/music-analysis)

- Analyzed features in popular music using Python and searched for patterns
- Used the Spotify API to get data about popular music and features from Spotify

## SKILLS

**Languages** Java, C++, Python, C, JavaScript, HTML, CSS

**Tools** ROS (Robot Operating System), Docker, GDB (GNU Debugger), Linux, CMake, Git, GitHub, LaTeX