

# Ajay Pai

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## Education

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University of Washington, Seattle, WA

Graduation Date: June 2022

B.S. in Computer Science

Cumulative GPA: 3.80

## Skills

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**Programming Languages:** Java, C#, Python, C++, C, JavaScript, Bash, SQL

**Frameworks & Tools:** Git, Unity, Linux, Android, React, NodeJS, Fusion360, Cloud Infrastructure

## Experience

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Software Engineer Intern | Autodesk

2018 – 2019 | 2020 – 2021

- Worked on Synthesis, an Autodesk Technology for open-source 3D virtual robotics simulation
- Converted Fusion360 CAD models into dynamic physical bodies for collision detection and control of vehicles
- Developed a C# API for 3<sup>rd</sup> party developers to create custom functionality in the simulation environment
- Used Unity for front-end and Virtual Reality (VR) development to improve user experience
- Created a cross-platform C# library to interact with the system's default file browser
- Built a custom Mac OSX installer to package and set up the simulation environment
- Participated in Agile Development Methodology using JIRA

President & Vice President | FIRST Robotics Team 2976

2015 - 2019

- Coordinated and directed a team of 60 members
- Responsible for mechanical design, manufacturing, electronics and debugging/reviewing code
- 2018 Houston World Champions

## Projects

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NEAT AI | C++

2021

- Wrote my own implementation of the NeuroEvolution of Augmenting Topologies (NEAT) algorithm
- Uses a genetic algorithm to optimize the structure as well as performance of graph neural networks
- On average 150 networks can train for the XOR problem in 30 iterations

Drone Delivery Autopilot | Python

2021

- Parsed and grouped lidar data from a drone simulation and used ML to identify objects
- Used A\* search for both delivery pathing and object avoidance
- Achieved a 98% delivery success rate and 2% crash rate

Ecosystem Simulation | JavaScript

2020

- Uses a genetic algorithm to simulate natural selection between multiple species
- Uses a Quadtree for collision/range detection to decrease O complexity from  $n^2$  to  $n\log(n)$

Predator-Prey Simulation | JavaScript

2020

- A cellular automaton that models population fluctuations in a predator-prey relationship

Maze Visualization | Java

2017

- Uses recursive backtracking to procedurally generate solvable mazes of any size

## Achievements

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- Oracle Cloud Infrastructure Foundations Certified Associate 2021
- FIRST Robotics Competition (FRC) Houston World Division Finalists 2019
- FIRST Robotics Competition (FRC) Houston World Champions 2018