Allison Yu

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Education

University of Maryland College Park, MD

Bachelor of Science in Computer Science, Minor in Mathematics *Aug. 2024 – May 2027*

- Cumulative GPA: 3.91
- Relevant Coursework: Data Structures and Algorithms; Computer Systems; Object-Oriented Programming; Linear Algebra; Discrete Structures; Statistics; Multivariable Calculus, AP Physics C: Mechanics, AP Physics C: Electricity & Magnetism

Experience

FIRST Robotics Competition (FRC) Computer Vision Team Member Cupertino, CA

FRC Team 2473 *Aug. 2023 — Jun. 2024*

- Built a 32" x 32" x 48" robot to pick up and shoot rings into various goals and grapple onto chains
- Led transition from pre-written computer vision functions using PhotonVision framework to custom computer vision algorithms with Python and a Raspberry Pi
- Programmed object detection and distance estimation algorithm to calculate distance between camera and ring on playing field using Python, enabling robot to move autonomously to optimal position for pick-up
- Developed a program to detect visual markers called AprilTags, enabling robot to align with them for scoring
- Achieved 96% shot accuracy, ranked 7th in 2024 Silicon Valley Regional, 18th in 2024 Monterey Bay Regional

FRC Team 2473 *Aug. 2022 — Jun. 2023*

- Developed computer vision algorithms that enabled a 26" x 42" x 48" robot equipped with telescoping arm and pivot system to pick up and place cones and cubes into slots on a grid
- Used PhotonVision with Java to estimate cone and cube positions on the field relative to the robot's camera
- Led workshop teaching robotics team students to use OpenCV with Java to detect colored cones from a camera stream, enabling them to use computer vision in their robot automation for the first time
- Ranked 12th in 2023 Silicon Valley Regional, 34th in 2023 Central Valley Regional

FIRST Tech Challenge (FTC) Robotics Software Team Lead Cupertino, CA

FTC Team 7128 *Aug. 2021 — Jun. 2022*

- Built a 12" x 12" x 12" robot equipped with single-joint grabber to pick up and place cubes onto stacked circular platforms of various heights corresponding to the location of a rubber duck on the playing field
- Led a team of 4 software members to program mechanism, computer vision, and Mecanum wheel drive code
- Wrote a program using Java and Android Studio that controls the robot for autonomous and manual navigation through the playing field, enabling it to place cubes onto platforms
- Wrote a program that detects a rubber duck's location within the camera frame, enabling the robot to place cubes onto the correct corresponding platform
- Taught new members the fundamentals of Java and robotics software and guided them through programming tasks
- Ranked 4th at the CA-Northern San Jose Qualifying Tournament and won Design Award

Outreach Team Lead Cupertino, CA

Cupertino Robotics Club *Jun. 2022 — Jun. 2024*

- Led a team of 12 members in organizing outreach events to promote STEM education within our community
- Organized and oversaw over 22 events, such as teaching robotics basics to schoolchildren in India, by working with team members and coordinating with external organizations
- Facilitated weekly team meetings, communicating expectations and goals for the following week
- Provided guidance and support to members, helping them develop their own planning and leadership skills, ensuring successful outreach programs

Technical Skills

Languages: Java, Python, C/C++, MATLAB, R
Frameworks and Tools: Linux, JUnit, PhotonVision, VS Code, IntelliJ, Eclipse, PyCharm, Android Studio
Libraries: NumPy, OpenCV, TensorFlow