Ansh Gandhi

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Education

Georgia Institute of Technology *Atlanta, GA* — *4.00 GPA, Expected Graduation: May 2025*

Bachelor of Science in Computer Science

Selected Coursework: Perception and Robotics, Artificial Intelligence, Advanced Computer Organization, Machine Learning, Honors Analysis of Algorithms, Computer Systems and Networks, Objects and Design, Data Structures and Algorithms, Linear Algebra

Mission San Jose High School *Fremont, CA* — *Valedictorian, 4.00 GPA*

Selected Coursework: Discrete Mathematics, Multivariable Calculus, Linear Algebra, Introduction to C++

Awards: AIME 3-Time Qualifier (2020-22), Eagle Scout (2021)

Skills

Languages: Python, Java, C, C++, LaTeX, JavaScript, Dart, SQL, MATLAB, LabVIEW

Frameworks: OpenCV, NumPy, Git, Linux, ROS/ROS2, Discord API, Selenium, Tensorflow

Tools/Programs: Android Studio, GitHub, Autodesk Inventor, Fusion 360, Onshape, Heroku

Experience & Research

PAIR Lab @ Georgia Tech Undergraduate Researcher — *September 2023 - Present*

- Mentored by Professor Animesh Garg at People, AI, and Robotics (PAIR) Lab
- Working on data collection platform to enable human fine tuning for RL manipulation/grasping models at scale
- Developed Android application using ARCore to track phone pose and additional states in real time

Tesla (TeslaBot) Controls Engineering Intern — *May 2023 - August 2023*

- Implemented critical safety features and improvements for TeslaBot humanoid platform using embedded C
- Increased reliability, performance, and determinism of overall code stack through incremental improvements
- Wrote holistic software-in-the-loop tests in Python to validate joint level software changes before testing on real hardware
- Created and maintained holistic new-hire guide to reduce onboarding time for new employees on firmware and integration teams

Hybrid Robotics Lab @ UC Berkeley Summer Research Assistant — *June 2021 - Sept 2021*

- Developed computer vision algorithm to detect and locate stepping stones for bipedal robot in three dimensional space
- Analyzed Intel RealSense D455 image frames and point cloud on Robot Operating System (ROS) using Python and OpenCV
- Used Linux and ROS commands to benchmark performance and optimize vision pipeline to process input data at 11 FPS

Organizations

RoboJackets Software Developer — *Sept 2022 - April 2023*

- Developed intuitive telemetry dashboard using HTML/CSS/JS to display critical rover states for University Rover Challenge
- Used PDFTron API to overlay live rover GPS data onto topographic map to assist drivers during remote operation
- Assisted in designing aerial ArUco tag searching algorithm and drone landing behavior using C++ and ROS2

FTC Team #7303 RoboAvatars Software Lead — *July 2019 - June 2022*

- Oversaw a team of 4 software members, planned challenging season goals, and worked closely with hardware and driver teams
- Implemented advanced robot control and computer vision algorithms like PIDF control, state estimation, and object localization
- Wrote a multi step algorithm to autonomously detect foam rings on the playing field and generate a path to collect the rings
- Won 2nd place Control Award at Northern California Regional (2021-22), Winning Alliance at 2021 Maryland Tech Invitational

FRC Team #8404 Skywalkers Software Captain — *Jan 2022 - April 2022*

- Led a team of 7 software members, organized training for newer members, assisted hardware team with subassembly testing
- Implemented computer vision with data-driven PIDF feedback control on flywheel angle/velocity for accurate target shooting
- Finalist Alliance at 2022 Silicon Valley Regional

Projects

Rubik's Cube Solver Robot — *April 2022 - May 2022*

- Used Python and C to write complete software stack for robot that can solve a Rubik's cube in under 4 seconds
- Developed an OpenCV pipeline to scan the cube and implemented the Old Pochmann algorithm to generate solutions
- Designed and 3D printed a cage with 5 motors, and built Arduino circuit with motor drivers to quickly turn cube faces
- Optimized motor controller and improved solving algorithm efficiency by ~25x to achieve 15 turns per second speed

Mission Maps — *Dec 2021*

- Created a maps application for my high school to generate efficient routes between classrooms in under 20 ms
- Created and refined a thoroughly annotated campus map using OpenCV and MS Paint, displayed path using C++ SFML library

Breadboard Simulator — *April 2020*

- Built a breadboard simulator using Python's Tkinter library to give students circuit design exposure during COVID lockdown
- Won Best Beginner Project award out of 300+ participants at Silicon Valley Hacks