

# Arav Singh

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## Skills

- Programming Languages: Java, Python, C, JavaScript, HTML, CSS, SQL, Assembly, C++, MATLAB, R, Android Studio
- Frameworks: Flask, React, NodeJS, AngularJS, Django, jQuery
- Platforms: Linux, Bash, Powershell, ROS, Docker, AWS Cloud, Git, Postman, Microsoft Azure, JIRA
- Concepts: Machine Learning, Computer Vision, API Usage, Artificial Intelligence, Data Structures, App Development, Web Development, Frontend Development, Backend Integration, Package Integration, Shell Scripting

## Experience

*Peraton, Blacksburg VA | Incoming Spring 2026 Software Engineering Co-op* *Starts Jan 2026*

*Noblis, Reston VA | Autonomous Systems Intern* *June 2025 – Current*

- Edited a Python script to automate the test/eval error of the pose estimate error between a drone and an AprilTag
- Calibrated the camera to reduce the average error by 33% and researched filtering methods (Kalman/Particle/Low Pass)
- Learned how to work in container-based environments for robotics using Linux, Docker, and ROS with Python/C++
- Got familiar with an agile work environment through JIRA and weekly progress reports incorporating data visualization

*Hume Center for National Security and Technology | Research Assistant* *Oct 2024 – May 2025*

- Worked with a team led by Dr. Jin-Hee Cho on an AI-powered conversational agent to improve internet safety
- Fine-tuned Ministral model using Linux, sbatch, Python, and the dataset to generate responses for our simulation
- Utilized Claude API and batch processing to optimize labeling mass datasets
- Researched evaluation metrics to judge responses from the chatbot, primarily using LLM's
- Worked in the Department of Defense-sponsored VICEROY workforce development program

*Virginia Tech College of Engineering | Undergraduate Teaching Assistant* *Sep 2024 – Dec 2024*

- Undergraduate Teaching Assistant for the lecture-style course Intro to Problem Solving in CS (CS2104)
- Assisted 100+ students with learning collaborative CS skills such as Git, regex, Agile, API/HTTP requests, and SQL
- Helped students with problems in and out of class and also helped Dr. Siwei Cao with grading assignments

*IDPro @ Virginia Tech | Undergraduate Researcher* *Jan 2024 – Dec 2024*

- Leader of interdisciplinary team to automate plant growth tracking with detecting plants and its area in pictures
- Trained semantic segmentation model to 93% accuracy for plant detection
- Added feature that utilizes YOLO model for auto-scaling of plant images so the area measurement is accurate

## Education

*Virginia Tech, Blacksburg, VA | BS in Computer Science, Minor: Mathematics*

- GPA, 3.88/4.00, In-Major GPA: 4.0/4.0
- Expected Graduation: December 2026 (Rising Senior)
- President's List (4.0 GPA) - Fall 2024, Spring 2025
- Dean's List with Distinction (3.75 GPA and above) - Fall 2023, Spring 2024
- Boeing Transformations Challenge 2024 Finalist
- Relevant Courses: Data Structures & Algorithms, Software Design, Comparative Languages, Discrete Mathematics, Applied Combinatorics & Graph Theory, Computer Organization

## Certifications

- Intermediate Technical Interview Prep (Advanced) – CodePath, Issued May 2025
- AWS Certified Cloud Practitioner – Amazon Web Services (AWS), Issued Jul 2024

## Personal Projects

- Resume scanner using Flask and Tensorflow: Trained a custom Tensorflow model that analyzes the similarity between a resume PDF file and a job description, the UI is set up on a Flask application and the model is currently at a 92% accuracy
- Planetary navigation system using A\*, K-means clustering, and NodeJS: Worked on a NodeJS website enables users to navigate planetary locations, avoiding clustered danger zones, and find the shortest path using the A\* algorithm
- Hand-Controlled Drone using Arduino and MediaPipe: Worked on a summer project with an aerospace discipline where a drone can be wirelessly controlled by hand tracking
- Music Classifier App using Flask, React, TensorFlow: Worked on a machine-learning project with Flask and React that allows users to type in music search term, get genre recommendations, upload audio files, and share their recommendation with other users; the website was deployed using Heroku