

VARUN RAMANI

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EDUCATION

University of Maryland

B.S./M.S. Computer Science, Minor in Mathematics. GPA 3.9/4.0.

Computer Science: OS, Networks, Compilers, Machine Learning, Data Structures/Algorithms

Math: Signal Processing, Cryptography, Abstract Algebra, Linear Algebra, Statistics, Calculus

College Park, MD

Aug. 2020 – Dec 2024

EXPERIENCE

Naval Research Laboratory

Software Engineering Intern

- Rebuilt C# RADAR app in **TypeScript, React, Mantine**: 98% **faster load times**.
- Implemented mTLS authentication for military-grade security.
- Developed **Docker/Python** build system: 25% faster prod. build, 99.96% faster dev. build.
- Created **Rust-powered** compatibility layer for legacy backend: enhanced productivity.
- Developed Tauri (**Rust/React**)-based deployment system: automated software installation by 92%.

Jun. 2023 – Aug. 2023

Washington, D.C.

Meta

Software Engineering Intern

- Enhanced user privacy with secure hashing techniques.
- Core module optimization: reduced CPU usage, **saved billions of operations**.
- Developed simulation framework for rapid development iteration

May 2022 – Aug. 2022

Menlo Park, CA

University of Maryland

Undergraduate Research Assistant

- Developed autoencoder **ML model** for **LIDAR** data segmentation: achieved dense point classification.
- Investigated FMCW **RADAR** implementation using low-cost SDR and directional antennas.
- Researching pose estimation with **transformer models**, IMUs, and **PyTorch**.

Aug. 2020 – Present

College Park, MD

University of Maryland

Teaching Assistant (Data Science / Intro to Computer Systems)

- Led discussion sections for up to 40 students, promoting engaging learning.
- Mentorship in office hours: clarified concepts in C, **operating systems**, data analysis.

Aug. 2022 – Present

College Park, MD

PROJECTS & AWARDS

GeekOS | C

- Implemented crucial **OS** features in **C** for UMD's OS course.
- Added pipes, process control, signals, virtual memory (paging) and virtual filesystem.

Aug. 2023 – Present

OccupanSee | [devpost:occupan-see](https://devpost.com/occupan-see) | **Computer Vision**, React, Python

- Improved crowd fire safety by automating overcrowding detection; recognized by Bloomberg.
- Applied **Detectron2** model to efficiently count people in webcam feed; streamed video to **React** app.

Apr. 2023

Memaid | [devpost:memaid](https://devpost.com/memaid) | **Computer Vision**, Speech To Text, **NLP**, Google Cloud, Python, Flutter

- Furthered quality of life for dementia patients; recognized by Google.
- When meeting someone new, app **memorizes face/name** and stores **conversation summary**. Automatically **recalls/relays** info next time same face recognized.

Apr. 2022

Maskif.ai | [devpost:maskif-ai](https://devpost.com/maskif-ai) | **Computer Vision**, IoT, TensorFlow, Python, Google Cloud

- Developed accessible solution enforcing mask compliance; **grand prize** at Yale's YHack 2020 hackathon.
- Computer vision** triggers "smart" lock when unmasked individual approaches door; unlocks after they leave.

Nov. 2020

TECHNICAL SKILLS

Languages: Rust, Python, Java, JavaScript, C/C++, Go, OCaml, Ruby, SQL, MATLAB, HTML, CSS

Frameworks: Flask, React, React Native, Flutter, TensorFlow, PyTorch

Tooling and Systems: Git, AWS, GCP, Docker, Linux

Libraries: pandas, NumPy, Matplotlib

General: Low-Level Systems