Varun Ramani

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Experience

U.S. Naval Research Laboratory — **Software Engineering Intern** — **May 2023 – August 2023**

- Independently proposed and modernized C# Windows Forms application to web technologies
- Led redesign using React, Mantine, and TypeScript for enhanced user interactions
- Engineered new HTTP-based communication protocol to replace TCP, using Wireshark for analysis of existing protocol
- Designed and deployed Rust-based server for seamless protocol translation
- Implemented robust mTLS-based user authentication using Department of Defense's Common Access Cards (CAC)
- Collaborated on C# application extension, mastering C++ backend and C# frontend
- Developed Docker/Python-powered build systems for web app, Rust server, and C++ program, simplifying RPM package creation
- Created user-friendly deployment utility using Tauri, ensuring seamless software installation for non-technical users

Meta — **Software Engineering Intern** — **May 2022 – August 2022**

- Enhanced user privacy by transitioning user identifiers to hashed device IDs via contributions to Hack codebase.
- Conducted experiments to evaluate impact of privacy changes on identity matching backend. Built Python experimentation framework for streamlined deployment of similar trials by other developers.

Teaching Assistant (Intro Systems) — **University of Maryland** — **Jan 2023 – May 2023**

- Led discussion sections with up to 40 students, fostering engaging learning environments.
- Graded hundreds of exams and worksheets meticulously, offering prompt and constructive feedback.
- Mentored numerous students during office hours, clarifying intricate concepts related to C, assembly, and operating systems internals.
- Achieved high exam averages in the section, indicative of effective teaching methodologies.

Teaching Assistant (Intro Data Science) — **University of Maryland** — **Jan 2023 – May 2023**

- Graded a substantial volume of projects and exams, maintaining accuracy and consistency.
- Assisted students during office hours, aiding comprehension of course material related to machine learning and data analysis.

FIRE @ University of Maryland — **Undergraduate Research Assistant** — **August 2020 – December 2021**

- Developed UNet-based ML model for LIDAR data semantic segmentation, achieving dense point classification within point clouds.
- Demonstrated project outcomes at an undergraduate research summit, showcasing successful contributions to LIDAR data analysis.

Projects and Awards

Memaid — **Best Social Good Hack / 91 teams** — **gh:varun-ramani/memaid**

- Integrated computer vision, speech to text, and NLP into a dementia aid.
- When someone introduces themselves to the user, the application memorizes their face *after only seeing it once* and associates it with their name. Furthermore, it listens to any subsequent conversation and stores relevant highlights.
- The next time the user meets this person, the application will automatically recognize them and relay their name / last conversation highlights to the user through any connected headphones or earbuds.

Maskif.ai — **First Place / 42 teams, YHack 2020** — **gh:varun-ramani/maskifai-server**

- Accessible computer vision-powered IoT product.
- Product helps businesses deal with anti-maskers during pandemic by intelligently triggering connected smart lock when unmasked individual approaches door; automatically unlocks door after they leave.
- Applied Python, Tensorflow, Flask, and Google Assistant SDK.

Education

College Park, MD — **University of Maryland** — **August 2020 – May 2024**

- **Program of Study**: B.S. in Computer Science
- **Grade**: 3.875 / 4.0
- **Relevant Upper-Level Computer Science Courses**: Algorithms, Machine Learning, Cryptography, Compilers, Computer Networks, Data Structures, Operating Systems, Data Science, Wireless Sensing
- **Relevant Upper-Level Math Courses**: Abstract Algebra, Linear Algebra, Calculus, Number Theory, Statistics

Technical Skills

Languages: Python, Java, JavaScript, C/C++, Go, OCaml, Ruby, SQL, MATLAB
Frameworks: Flask, React, React Native, Flutter, Keras
Tooling and Systems: Git, AWS, Google Cloud Platform, Heroku, Docker, Linux
Libraries: pandas, NumPy, Matplotlib