Smaran Vallabhaneni

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Education:

Olin College of Engineering May 2029
Bachelor of Science, Engineering in Computing Needham, MA

- GPA: 4.00 (Fall Semester)

Relevant Courses: Modeling and Simulation, Linear Algebra, Data Science, Multi-Variable Calculus, Software Design (Python with Jupyter and Quarto), Kernel Development (C with Buildroot and make), Products and Markets, Introduction to Sensors, Instrumentation, and Measurement.

Skills:

Programming Languages: Java, C++, Python, NumPy, pandas, matplotlib, Django, PyTorch, Kivy, HTML, CSS, JavaScript, Flutter, Dart, LaTeX, MySQL, C, C#, .NET, R, React, Node.js, PBASIC, Swift/SwiftUI, Metal API, MATLAB
Operating Systems: Windows, macOS, and Linux (Raspberry Pi OS, Debian, and Arch based)
Tools: Fusion360, AutoCAD, Autodesk, SolidWorks, Figma, Adobe Creative Suite, Excel, IntelliJ, VSCode, Xcode, Overleaf, MATLAB, Tableau Desktop, Docker, MissionPlanner, ArduPilot, GitHub Copilot
Frameworks: Simulink, SBCs, ESP32, Arduino, Raspberry Pi, Git, Version Control, CI/CD Pipelines, UI/UX, LLMs, RAG Systems, NLP, Computer Vision, Internet of Things, Cloud Computing, AWS, GCP, Azure, Ollama, HuggingFace, Databases, Database Management, Cryptography, Encryption, Embedded Systems, System Design, Testing and Debugging, Algorithm Development, Data Structures, Dev Ops, ROS/MAVROS
Languages: English, Spanish, French, Chinese, German (Limited), Telugu

Projects:

CLOS (Command Line Operating System) April 2023 - Current

- Developing a centralized terminal/graphical mathematical tool that runs on every major platform, featuring equation solving, graphing, symbolic derivation/integration, trigonometry, and more.
- Implementing a custom database engine, AES-based encryption, custom high-efficiency symbolic math parser, spreadsheet handler, and a zero-latency, ultra-lean, high performance 3D rendering library using pure C++, Java, HTML, CSS, and Bash.

ClassicTunes October 2025 - Current

- Designing an open-source remake of the classic iTunes 7-10 for modern Apple Silicon macOS, featuring remakes of CoverFlow, MiniPlayer, and Smart/Genius Playlists.
- Programming full-stack system using Swift, SwiftUI, and the Metal API, featuring custom song and album processing frameworks, universal playlist support, and lrclib API for lyric retrieval.

Whoa-Scope February 2026 - Current

- Contributing to the development of an open-source fork of oscilloscope software used in hardware laboratories at Olin College of Engineering.
- Working with Python and Kivy to add several quality-of-life improvements such as revamped file handling, wave generator snapping, themes, and performance optimizations that reduced RAM usage by 200 megabytes.

MouseSteering January 2026

- Created a highly efficient and easy-to-use WinExe application that captures mouse movements inside a window and translates it into controller input for racing and driving games.
- Built using C#, the .NET Framework, and vJoy Controller Emulator libraries for Windows 10/11.

Experience:

AERO Project Team – Head of Ground Station Development September 2025 - Current

- Working on an airplane for the AUVSI SUAS competition to deliver water to specified targets in a “forest” environment using image recognition.
- Responsible for the ArduPilot, MissionPlanner, and MAVROS control systems and low latency fly-by-wire on the CubeSat and Jetson on-board computer to create a ground station software for monitoring, safety, and telemetry collection.

Geeky Insights (Internship) – Full-Stack Android App Developer April 2024 – April 2025

- Designed and prototyped the UI/UX of a responsive and customizable alarm clock using Figma and the Adobe Suite, keeping in mind ease of use and accessibility for the end-user.
- Programmed the entire frontend and backend system using Flutter, Dart, and Java, and then tested and debugged heavily to ensure compatibility across various Android platforms and versions, ensuring a bug-free experience in a 15 megabyte package.

Activities:

Olin ICPC – Team Member – Competitive Programmer January 2026 - Current

- Solving high-difficulty algorithmic problems under competitive time constraints in bi-weekly ICPC-style contests.
- Applying advanced techniques such as segment/Fenwick trees, dynamic programming, graph algorithms, string algorithms, and computational geometry to optimize and debug solutions.

Research Publications:

C++ and Java Performance in Android Environments research August 2025

- Measured C++ and Java runtime performance in an Android environment.
- Observed benefits of C++ usage in resource-intensive applications in apps and benefits of Java in terms of stability using various test programs and algorithms across several Android devices.

C++ Memory Analysis research October 2024

- Analyzed C++’s memory safety using a test program with different memory scenarios and leaks.
- Compared the results from C++ with Java equivalent features and leaks to reveal reasons for using Java over C++, despite significant speed loss.