Manu Bhat

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Self-motivated Software Engineer proficient in writing low-level code, applying mathematical thinking, and contributing novel ideas.

Education

University of California San Diego Sep 2022 - June 2026

B.S. in Mathematics and Computer Engineering (3.98 GPA, 4.0 Major GPA)

Honors

ICPC North America Championship - 21st of all schools in North America, 2nd in region *May 2025*

Codeforces - Master *Sep 2024*

picoCTF 2024 - 7th place globally in cyber security competition (of 6000+ teams) *Mar 2024*

USA Computing Olympiad - Platinum Division *Dec 2022*

Experience

Software Engineer Intern *Jun 2025 - Present*

Citadel Securities *New York, NY*

- Ongoing work in Low Latency team

Research Intern *Jun 2024 - Sep 2024*

Turakhia Lab *San Diego, CA*

- Designed/implemented parallelizable algorithms for virus discovery from wastewater data
- Reduced runtime by a linear factor; introduced ~50 times speedup of entire pipeline and allowed project to tackle significantly larger datasets

Embedded Software Engineer Intern *Jun 2023 - Sep 2023*

MaXentric Technologies *San Diego, CA*

- Automated calibration of radars and modified FreeRTOS firmware to allow loading of configuration via SD card.
- Developed UDP-based data transfer script to track packet loss on a V band network.
- Utilized Wireshark and JTAG interfaces for intricate debugging.

Machine Learning Researcher *Dec 2022 - Present*

Rose Spatiotemporal Lab *San Diego, CA*

- Researching how machine learning can be applied to symmetry and equation discovery
- First author of AtlasD: Automatic Local Symmetry Discovery, *International Conference on Machine Learning*, 2025

Projects

Monocurl *Jul 2020 - Present*

- Monocurl is a desktop application that animates videos and slideshows using math.
- Animations are specified using a programming language I designed myself
- 40k+ lines of C involving custom compiler, computational geometry, Metal/Direct3D GPU shaders, a multi threaded environment, and more
- Developing custom cross platform UI library in Rust that will be used in future version of app

Lean4ij *Sep 2024 - Present*

- Lean4ij is a plugin for Intellij that adds language support for the Lean theorem prover
- I am mainly responsible for the automatic type and goal hints feature

CHS Admin Submission Viewer *May 2022 - Sep 2022*

- Selected by teacher to write an Electron admin tool that views, filters, and downloads submissions from the school's updated APCS website.

Knowledge

Programming Languages: Rust, C++, C, Lean, Swift, Python, Java, Typescript

Tools/Frameworks: OpenGL, Ghidra, React, SwiftUI, MySQL, PyTorch, Electron, Linux, Zsh, Git, LLDB

Computer Science: AI/ML, Shaders, Proof Assistants, Compilers, Networks, Databases, Web/App Dev