

# Aman Pathak

7061 5519 85 | [vajradevam@gmail.com](mailto:vajradevam@gmail.com) | [github.com/vajradevam](https://github.com/vajradevam)

## EDUCATION

### Kalinga Institute of Industrial Technology

*Bachelor of Technology in Computer Science*

CGPA: 8.64

2022 – 2026

## EXPERIENCE

### Undergraduate Research

Feb. 2023 - Aug. 2024

*KIIT University*

- Studied RF communication in THz and GHz domain.
- Designed Microstrip Patch Antennas for Ku and X band in CST Studio.
- Developed CST Studio ASCII data preprocessor (GUI Based) in Python.
- Studied Deep Learning techniques for interpretation of Antenna Datasets.

## PROJECTS

### CHIP-8 Emulator | C, SDL2

2024

- Developing a CHIP-8 emulator to replicate the functionality of the classic virtual machine architecture.
- Should implement core components, including an opcode decoder, memory management, and a CPU emulator.
- SDL2 for rendering the 64x32 display and handling input for games.
- Clean and beautiful C Code.

### Luma Lang | Java

2024

- A programming language with support for both interpreted and compiled execution models.
- Implemented key features like a lexer, parser, and intermediate representation for efficient execution.
- Focus on creating a robust and usable language; with real programming paradigms which include both functional and procedural concepts; with list processing of statements just like our founding fathers intended.

### RV32I RISC-V Single-Bus Emulator | Java

2024

- Developed an monolithic emulator for the RV32I instruction set architecture with a single-bus design.
- Implemented instruction fetch, decode, execute, and memory access stages to simulate CPU functionality.
- Designed a memory subsystem and register file to support RISC-V operations and debugging.

### Simple Shell Implementation | C

2024

- Developed a simple shell program in C capable of executing system commands.

### Automated Graph Plotting Script | Python, Matplotlib, NumPy

2024

- Created a script to automate high-quality graph plotting for CST Studio results in ASCII format.

### YASL: Yet another Simple Language | Python

2024

- Designed and implemented a basic Turing-complete programming language in Python, including a parser, interpreter, and code executor.
- Explored core concepts of compilers, such as syntax analysis, semantic validation, and execution model design.

### Community OSINT and SEO Strategy | Python, Web Scraping, Reddit API

2022

- Conducted Open-Source Intelligence (OSINT) to gather insights from Reddit and the web about target communities.
- Developed a data-driven SEO strategy to improve brand visibility for a community-focused initiative.
- Analyzed community sentiment, engagement patterns, and trending topics to optimize content strategies.
- Utilized Python-based automation for data collection and keyword analysis.

## TECHNICAL SKILLS

**Languages:** Java, Python, C, SQL, NOSQL, Lisp

**Developer Tools:** Git, Docker, Vim, GNU+Linux, OpenBSD, L<sup>A</sup>T<sub>E</sub>X

**Interests:** Compilers, Operating Systems, Computer Architecture, Digital Logic, Automata Thoery, Number Theory, Graph Theory, Linear Algebra, Cryptography, Embedded Systems (Design and Verification), FPGAs, ASICs, Sound Design, High Performance Program, Assembly (x86, arm64, RISCv)