

Debaditya Malakar

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Second-year CSE student at SRMIST with a strong foundation in full-stack development, systems programming, and AI tooling. Builder of production-ready open-source tools including an AI research notebook, a symbolic math library, an esoteric compiler, and a FORTRAN subset compiler. Adept at working across the stack — from assembly and C to TypeScript and Python.

EDUCATION

B.Tech in Computer Science and Engineering (Cloud Computing)

Aug 2024 – May 2028

SRM Institute of Science and Technology, Kattankulathur

PROJECTS

OpenRecords Python · FastAPI · SQLite · Next.js · RAG · OpenRouter

- Built a local-first, privacy-focused AI research notebook as an open-source alternative to NotebookLM, with zero cloud dependency.
- Implemented document ingestion, retrieval-augmented generation (RAG), visual infographic synthesis, and A4 PDF archival export.
- Designed a full monorepo with a FastAPI + SQLite backend and a Next.js frontend, supporting complete offline operation.

Literary Analysis Pipeline Python · Fireworks AI · PyPDF2 · JSONL · Parallel Processing

- Developed a PDF-to-AI-conversation pipeline generating ELI5 and formal literary analyses using the DeepSeek-V3 model via Fireworks AI.
- Built parallel processing with intelligent rate limiting, resume capability, and 5 output formats including ShareGPT and JSONL.
- Shipped a comprehensive test suite of 46 tests covering unit, integration, mock, and error-handling scenarios.

SympJS (@auriel/sympjs) TypeScript · npm · Fourier Series · Linear Algebra · SymPy-inspired

- Published a TypeScript symbolic mathematics library to npm supporting differentiation, integration, matrix ops, and Fourier series.
- Implemented algebraic simplification, equation solving (linear & quadratic), complex numbers, and Taylor series expansion.
- Built a beautiful HTML math renderer with Greek symbols, LaTeX-style formatting, and auto-container detection.

Word of God — Esoteric Language & Compiler Go · AST · Lexer · Parser · Interpreter · VS Code Extension

- Designed and built an esoteric programming language where code reads as biblical scripture, with full AST-based interpretation in Go.
- Implemented a 3-stage pipeline: lexer (multi-word keywords), recursive-descent parser (lineage constraints), and interpreter (goto semantics).
- Shipped a VS Code syntax highlighting extension, cross-platform build system, and example programs including Fibonacci and a counter.

F9S — FORTRAN 95 Subset Compiler C · NASM x86-64 · Clang · Windows x64

- Wrote a native compiler for a FORTRAN 95 subset in C and NASM assembly, targeting Windows x64 and producing real .exe files.
- Implemented a recursive descent parser, AVL tree symbol table, NASM x64 code generator, and full control flow (IF/DO/STOP).
- Included SSE/AVX runtime detection, pat/slap diagnostic system, and a full REPL with infix and verb-style calculator mode.

SKILLS

Languages: C, C++, Python, JavaScript, TypeScript, Go, Java

Frontend: HTML, CSS3, Bootstrap 4, ReactJS, Svelte, Next.js

Backend: FastAPI, Flask, ElysiaJS (BunJS), Node.js

Databases & Tools: MongoDB, SQLite, MySQL, Git, NASM x64, Go toolchain

CERTIFICATIONS & ACHIEVEMENTS

NPTEL Elite — Fundamentals of Object Oriented Programming (IIT Roorkee)

Score: 82% | Jan–Apr 2025

Top 25 Teams — OSSOME HACKS 2.0 Hackathon (GitHub Community SRM)

Mar 2025

Udemy — Complete Python Developer: Zero to Mastery (30.5 hrs)

Oct 2020

LANGUAGES

English – Professional | **Hindi** – Native | **Bengali** – Native