Swastik Agarwala

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EDUCATION

Purdue University — West Lafayette, IN
*B.S. in Computer Science, Minors in Math, Economics (**GPA: 3.90/4.0, Dean's List**)* — *Expected May 2026*
Coursework: Statistical Machine Learning, Artificial Intelligence, Numerical Methods, Operating Systems, Analysis of Algorithms, Computer Architecture, Software Engineering
Competitive Programming: ICPC-ECNA Regional; IOI Training Camp '21; Codeforces Rating: 1862.

TECHNICAL SKILLS

Programming: C, C++, Python, Java, JavaScript, TypeScript, Scala, Multithreading, CMake, JUnit
Web/Backend: React, Redux, RTK Query, HTML, CSS, Express.js, Spring, Flask
AI/Machine Learning: LangGraph, LangChain, LLMs, RAG, Prompt Engineering, NumPy, Pandas
Data/DevOps: PostgreSQL, Redis, MongoDB, Zilliz, AWS, Docker, Git, Linux, Bash, Agile

EXPERIENCE

AI Intern | *RMgX Technologies LLP* — May 2025 – Present
- Developing a scalable, multi-agent travel chatbot with LangGraph & LangChain, targeting large-scale deployment
- Optimized token usage by 30-40% by building intelligent memory system that dynamically creates and retrieves contextual memories through hybrid search (cosine similarity + keyword matching)
- Architected multimodal RAG system enabling AI reasoning over unstructured content in PDFs, spreadsheets, and rich-text files including charts, figures, and complex layouts

Software Developer (Contract) | *Jyoti Broking Pvt. Ltd. (Stock Broking House)* — Jun 2023 – Present
- Enhanced Risk Management System for broking house serving 3,500+ clients ($430M+ monthly turnover)
- Reduced latency by 41% by implementing Redis streams in place of polling for data pipeline optimization
- Refactored monolithic backend into modular C++ services, supporting 200+ TPS during peak market activity

Undergraduate Teaching Assistant | *Purdue University* — Jan 2024 – Present
- Mentored students in C/C++ programming, algorithms, data structures, and system-level projects (custom shell, HTTP server) while providing guidance on Linux, debugging with GDB, Qt, and OOP principles

Undergraduate Research Assistant | *Purdue University* — Feb 2025 – May 2025
- Worked with Prof. Yongle Zhang to design algorithms for guiding fuzz testing in distributed systems, optimizing test selection strategies for faster, automatic bug detection during version upgrades on Java-based systems

PROJECTS

MiniScala Compiler | *Scala, Algorithms, Data Structures, Systems Programming* — Jan 2025 – May 2025
- Developed a functional compiler and garbage collector for MiniScala, translating high-level code to assembly, demonstrating strong language theory, systems programming and memory management fundamentals
- Implemented core compiler phases including lexical analysis, AST construction, type-checking, and error handling
- Engineered language transformations, efficient value representations, code optimizations (e.g., constant folding)

Investify | *React, Redux, RTK Query, Spring Framework, PostgreSQL, AWS* — Aug 2024 – Dec 2024
- Implemented a responsive, interactive UI with complex state management and data caching using React
- Designed a maintainable and scalable front-end with React hooks and modular components
- Integrated Redux and RTK Query for state management and data optimization
- Collaborated closely with a 5-person team, contributing 5000+ lines of code across the full development lifecycle, defining features, ensuring timely delivery, and upholding clean code principles with Git version control

LEADERSHIP

Orientation Leader | *Boiler Gold Rush (Purdue Orientation Programs)* — Mar 2023 – July 2025
- Guided 40+ incoming students, including 20+ international students, through Purdue's week-long orientation
- Facilitated smooth transitions for international students facing cultural differences, leveraging strong interpersonal and problem-solving skills