JATIN MAHAWAR | 22CS30032

B.Tech.(Hons.) in COMPUTER SCIENCE AND ENGINEERING and M.Tech. in COMPUTER SCIENCE AND ENGINEERING

EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2027	M.TECH Dual Degree 5Y	IIT Kharagpur	8.54 / 10
2022	Class XII RBSE	Keshav Public Sr. Sec. School, Jaipur	94.20%
2020	Class X RBSE	Govt. Sr. Sec. School, Paldi Meena, Jaipur	82.67%

INTERNSHIPS

Founding Engineering Intern | CallKaro AI | Backed by Microsoft for startups **Dec 2024 - Jun 2025**
Objective: To build a **Gen AI SaaS Platform** that automates inbound and outbound calls to boost business productivity and engagement
- Developed and deployed a Call Scheduling API that boosted conversions by **20%**, using RESTful endpoints and **Azure Cache for Redis**
- Integrated **Hybrid RAG** using **Azure OpenAI** embeddings model, **NumPy** vectors, and **cosine similarity** for **context-aware** insights
- Constructed a paginated inbox with **React Infinite Scroller** and **bi-directional WebSockets** handling **60K+** calls and WhatsApp messages
- Implemented call priority, concurrency, and **synchronization** using global and user-level **priority queues** and **asyncio semaphores**
- Built a Batch Call Dashboard for **call data analysis** using **Nivo funnels**, **AntUI tables**, **XLSX downloads**, boosting conversions by **40%**
- Deployed frontend and backend on **Azure Virtual Machines**, leveraging **Azure Storage** for call recordings and RAG knowledge base

Full Stack Developer | iProp91 **Aug 2024 - Oct 2024**
Objective: To build a **responsive** real estate platform to provide property buying, selling, renting services and legal advocates to customers
- Architected the entire system, handling **state management** and **API** integrations with **real-time** responses and **microsecond latency**
- Established secure **multi-method OTP** authentication via phone/email using **OTPLESS** and **JWT**, enhancing UX and platform security
- Built property listings, dashboards, forms, and admin panel using **React**, **Node.js**, **Express,** and **MongoDB** for property management
- Implemented group chat feature via **WebSockets**, supporting text, links, images, video messaging among customers, owners, advocates

PROJECTS

Tiny-C Compiler | Course Project | Prof. Abhijit Das and Prof. Bivas Mitra **Nov 2024**
Objective: To build a **machine-independent compiler** that translates C into **3-address code** and optimized **target-level instructions**
- Engineered **120+** semantic rules using **Bison** and **Flex**; enabled 3AC translation with quad array generation and **nested symbol tables**
- Integrated **backpatching** algorithms, **type checking**, and automatic **type conversion** to support reliable and efficient semantic
- Achieved **100%** correctness over 5 test suites with error-free code emission using global symbol management and type-safe translation

32-bit RISC Processor | Course Project | Prof. Indranil Sengupta and Prof. Sarani Bhattacharya **Oct 2024 - Nov 2024**
Objective: To design a **32-bit RISC Processor** using **Xilinx Vivado & ISE** in **Verilog** with **BRAM**-based memory and test on an **FPGA** board
- Architected the Processor via **multiple addressing** modes, handling arithmetic, logic, branch, load-store, move, and **control operations**
- Documented ISA specification, instruction formats, and **micro-operations**; prepared **test benches** for validation across instruction types
- Ran complex programs like division, **Booth multiplication**, **factorial,** and **insertion sort** on ISA; verified correct execution on **FPGA**

LLMSQL | Course Project | Prof. Pabitra Mitra and Prof. K.S. Rao **Mar 2024 - Apr 2024**
Objective: To develop **LLMSQL**, an LLM-powered system that translates natural language into optimal **SQL** queries for non-experts
- Fine-tuned **Mistral-7B** (4-bit LoRA) using **78.9k** ChatML-format samples to generate low-cost **PostgreSQL**-compatible queries
- Achieved **86.2%** syntactic SQL accuracy on testing; optimized generation pipeline reduced hallucinations and token misuse errors by **38%**
- Created a **Flask**-based backend with inference-serving and **psycopg2** query execution; latency under **1.2s** per request on **T4 GPU** setup

K-Nearest Neighbor Search | Course Project | Prof. Debasis Samanta and Prof. Sourangshu Bhattacharya **Mar 2024**
Objective: To create a library to process **multi-dimensional** data vectors to find similarities using **KD and RP Trees** for less time complexity
- Implemented a **C++** vector processing library featuring a DataVector class supporting addition, subtraction, and dot product operations
- Created a VectorDataset class with **constructors**, **destructors**, **data accessors**, and a ReadDataset method to manage dataset handling
- Executed and validated KNN search on **MNIST Dataset** (**60K datapoints of 127 dimensions**) and implemented tree-based ANN indexing

SKILLS AND EXPERTISE

Programming Languages and Scripting: C | C++ | Python | Assembly | Verilog | Gawk | bash
Web Development and Libraries: HTML | CSS | JavaScript | React.js | Tailwind CSS | Node.js | Express.js | Numpy | Pandas | Tkinter
Databases and DevOps: Microsoft Azure | PostgreSQL | MongoDB | Supabase | Ngrok | Render | Vercel | CPanel
Tools: Git | GitHub | Valgrind | gdb | gprof | makefile | Postman | Google Collab | VS Code | Trae

COURSEWORK INFORMATION

Hardware and Electronics: Computer Organization and Architecture | Switching Circuits and Logic Design | Electrical Technology
Systems and Applications: Software Engineering | Machine Learning | System Programming Lab | DIY Lab
Computer Science: Discrete Structure | Algorithms | Graph Theory and Randomized Algorithms | Formal Language and Automata Theory | Compilers | Computer Networks | Database and Management Systems | Operating Systems | Programming and Data Structures

CERTIFICATIONS

AZ-201: Applied Algorithms and Data Structures | Algozenith
- Completed a **16-week live training** in the **DSA and OOPs**, gaining expertise in topics such as Linked List, Binary tree, DP, and Graph
- Solved over **700+** DSA questions on Codeforces, Algozenith, and LeetCode, demonstrating algorithmic expertise and problem-solving skills
- Achieved a highest Codeforces rating of **1480**, earning the **Specialist** title under the username **Dynamic_landing,** showing consistency

!Self declared by the student, CDC could not verify the relevant documents