MADHUR THAREJA

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EDUCATION

Birla Institute of Technology and Sciences Pilani, Pilani   August 2023 - 2027
B.Sc.(H) Computer Science, CGPA: **9.93**

Indian Institute of Technology, Chennai   September 2023 -2027
B.S. Electronic Systems, CGPA: **8.69**

EXPERIENCE

International Institute of Information and Technology Bangalore   January 2025 - February, 2025
Project Intern @Samsung's Chip Design Studio   *Bengaluru, Karnataka*

· Working on a Vector Processing Unit which will be integrated with the RISC-V CPU design, my goal is to run it at 120-130 MHz frequency, so that it could be implemented for IOT with a boost of vector operations.

Indian Institute of Technology Ropar   August 2024 - December, 2024
Minor in AI - Teaching Assistance and Curriculum Designing   *Ropar, Punjab*

· Heading the project as a Lead from IIT Ropar
· Contributed as a Teaching Assistant, responsible for developing case study based problems out of concepts like Linear Regression, Markov Chains, Perceptron Learning Algorithm and many more topics aligned with Machine Learning.
· Used Manim like powerful tools to create various animations and presentations.
· Assisting **Prof. Sudarshan Iyengar** design the curriculum innovatively as a part of research in the domain of Education Design.

NPTEL   July 2024 - Present
Teaching Assitant   *Remote*

· Contributed as a Teaching Assistant, responsible for developing case study based problems, assignments out of various concepts around Discrete Mathematics and helping the students enrolled in the doubts faced by them. [July,2024 - October, 2024]
· Currently a teaching assistant for Social Networks course.

iHub AWaDH, Indian Institute of Technology Ropar   August 2024 - December, 2024
Young Professional   *Ropar, Punjab*

· Worked for skill training and development at iHub-AWaDH, hosting various workshops for over 1000+ students.
· Successfully completed summer school: **AI Vicharana Shala** by **Prof. Sudarshan Iyengar**
As a part of summer school created the projects given including Recommendation Systems, Estimation (Like German Tank in 2 or 3 Dimensions), PageRank using Power Iteration, Simulated Annealing, Data Compression.
· Developed the understanding of Computer Vision, Supervised Learning, Self Supervised Learning, Natural Language Processing.

PROJECTS AND LAB ACTIVITIES

Gesture Detection

· Engineered a sophisticated gesture detection system incorporating hand raise and nod detection for multiple individuals, utilizing YOLOv8n and MediaPipe.

Recommedation Prediction Model

· Architected a sophisticated friendship prediction model employing Matrix Factorization, attaining exceptional precision and markedly elevating the predictive acumen of social network analysis.

Chatbot using Retrieval Augmented Generation

· Conceived and developed an intelligent chatbot using Retrieval Augmented Generation, which was using Gemini's API and Supabase as a database. This chatbot proficiently answers generic as well as specific queries and meticulously presents the responses, demonstrating remarkable utility and efficiency.

RISC-V CPU

· Implemented the design of RISC-V Single Cycle CPU as well the Pipelined CPU which was capable of running at a frequency upto 125 MHz as confirmed on FPGAs ZCU104 and PynqZ1. **Physical Design Flow** to convert the design from imagination to GDSII file for tapeout.

TECHNICAL SKILLS

Software	Quartus Prime, LTSpice, MATLAB, Cadence, Vivado
Languages	C++, Python, Java, Bash Shell Scripting, Verilog, System Verilog
Computer Fundamentals	Data Structures, Algorithms, Database Management System
Electronic Fundamentals	Digital Design, Electronic Circuits, Embedded C Programming
Machine Learning	Numpy, Pandas, Scikit-learn, Regression, Classification and Clustering Algorithms
Relevant Coursework	Analog Electronic Systems, Digital System Design , Ordinary Differential Equations
Soft Skills	Problem Solving, Self-learning, Presentation, Adaptability

CO-CURRICULARS AND ACHIEVEMENTS

- **2nd Position Nationally** at Samsung's Chip Design Studio

- **Deputy Secretary** at Ramanujan Society of Research, IIT Madras.

- **President** at Coding Club, BITS Pilani.

- Currently participating in eYantra, IIT Bombay, and developing Eco Mender Bot alongside a great team, Phase 1 cleared.

- Co-Authored books titled, 'The Unsaid Words' and 'The Unforgattable Stories' which are available on Amazon

- Represented Gurugram in Badminton in the State Championship held in Delhi

- Achieved **Bronze Medal** in Delhi region Science Quiz represeting my school.