Sumukh Vijaykumar

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I am a motivated ECE student eager to explore new opportunities and other avenues of growth, I am excited to learn and tackle new challenges and make meaningful contributions to the industry. I am fully committed to expanding my expertise in various fields of ECE, in particular VLSI.

EDUCATION

B.E Electronics and Communication Engineering [CGPA: 8.6] 2021 – till date
Dayananda Sagar College of Engineering

EXPERIENCE

Intern Sep 2024 – till date
IEEE CAS Student Internship Program 2.0
- Working on implementing an in-memory computing unit.
- Developing an FSM to emulate a ReRAM unit and perform operations like matrix multiplication to showcase the reduction in execution time compared to traditional pipelined architectures.

Intern Nov 2023
Excel VLSI Technologies Pvt. Ltd.
- Gained knowledge in IP design and verification.
- Obtained hands on experience in implementing and simulating various projects using Verilog, such as Arithmetic Logic Unit (ALU), Clock Dividers, Sequence Detectors, Vending Machine Controller, LIFO, Synchronous and Asynchronous FIFO, etc.

Intern Nov 2022
Skanda Electronics Pvt. Ltd.
- Completed an internship at Skanda Electronics Pvt. Ltd., where I developed skills in through-hole and surface-mount soldering, microcontroller programming with Arduino and Raspberry Pi, and circuit simulation using LTspice.

INVOLVEMENT

CAD and Layout Designer Jun 2024 – till date
Project Trishula – Collaborating on a tape-out level project for which I will be designing the layout of a buck converter using open-source tools.

IEEE Student Branch Member Oct 2023 – till date
CEDA (Treasurer), SPS, CAS, ExeCom – Organized and Coordinated IEEE events and workshops at DSCE.

Event Organizer and Coordinator Jun 2023 – till date
Open Day – Organized and coordinated two open days at the dept. of ECE, DSCE.

Technical Member Dec 2022 – till date
The Point Seven – Technical club of electronics.

PROJECTS

2x2 Network on Chip (NoC)
Currently working on a 2x2 NoC using virtual channels with wormhole switching to minimize buffer usage and prevent deadlocks. Working on interfacing each node with a MIPS processor via a network interface to enable data transmission through the network.

Digital Alarm Clock using Verilog
Developed a digital alarm clock using a clock divider circuit to accurately set the current time, alarm time, and to trigger an alert at a specified time. Implemented additional features for user customization, such as adjustable alarm settings and snooze functionality.

Simulation of Half-Rate Convolution Encoder
Worked on a convolution encoder that outputs two code bits for every input bit and the output was verified by theoretical calculations. The implementation was done in Verilog using 3 linear shift registers.

Finite State Machines (FSMs)
- **Implemented Moore and Melay Sequences Detectors**
- **Implemented a Vending Machine Controller**

Embedded System Projects
- **Augmented Reality based Text Visualizer –** Developed an app to detect text using OCR and display the 3D models of the same.
- **Virtual Mirror –** Built a virtual mirror with the help of Harr Cascade algorithm to allow users to try on various outfits and accessories.
- **RFID based Attendance System –** A project that uses RFID to track and manage attendance automatically.
- **Data Management Website –** A project focused on creating a website for managing and organizing data.

SKILLS

Programming : Verilog, Matlab, C, C++, Python, HTML.
EDA Tools : CadenceVirtuoso, ModelSim, Intel Quartus Prime, NI Multisim.
Boards Used : Arduino UNO, Raspberry Pi 4B, Terasic DE 10-Lite board.
Protocols : SPI, I2C, UART, TCP/IP.
Soft Skills : Proactive and collaborative team player, good communication and problem-solving skills.

ACHIEVEMENTS

Came 3rd in “Capture The Signal”, a signal processing hackathon conducted by IEEE SPS, BMSIT.