Sahil Hakim

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Summary — A results-driven **Electronics and Communication Engineer** with a strong passion for **VLSI design** and **digital hardware development**. Experienced in RTL design, verification, and processor architecture, with expertise in Verilog HDL and digital system implementation. Adept at collaborating with cross-functional teams to develop **efficient, high-performance semiconductor solutions**. Enthusiastic about **advancing VLSI innovation** through rigorous testing, simulation, and optimization of digital circuits.

Education

Purdue University — GPA 3.67/4
MS in Electrical and Computer Engineering
Years: Aug 2024 – Present (Expected May 2026)

Vellore Institute of Technology — GPA 3.24/4
Bachelor of Technology in Electronics and Communication Engineering
Years: Aug 2020 – July 2024

Skills

VLSI	System Verilog, VHDL,RTL Design	**Languages**	Python, C,C++, MATLAB, Simulink, R
Automation	Arduino, TinkerCAD, CISCO Packet Tracer	**Simulation**	Cadence/Virtuoso, LTSpice, ModelSim

Experience

Maven Silicon — May 2023 – July 2023
Intern
– Designed a RISC-V processor using Verilog HDL, gaining hands-on experience in RTL design and hardware description.
– Explored RISC-V instruction encoding, including opcodes and operand fields, optimizing instruction execution efficiency.
– Implemented pipelining architecture, enabling parallel execution of multiple instructions and improving processor performance by 30%.
– Developed memory-mapped I/O interfaces, enhancing peripheral communication and system integration.
– Verified processor functionality through testbenches and simulation, ensuring 99% accuracy in design verification.

Projects

AHB2APB Bridge Design and Verification — Aug 2023 – Oct 2023
– Designed and implemented a synthesizable AHB to APB Bridge using Verilog HDL to enable seamless communication between high-speed AHB and low-power APB buses.
– Developed AHB slave interface and APB controller to manage address pipelining, transfer state machine, and output signal generation.
– Proposed multi-master and multi-slave support, improving system scalability by 0.4 times to enhance data throughput and system integration.

Smart Grid Light Automation System Incorporating RODEM Algorithm — Jan 2024 – March 2024
– Developed a Smart Grid Light Automation System leveraging the RODEM Algorithm, optimizing street lighting based on real-time traffic density and ambient light, achieving 30% energy savings.
– Integrated the RODEM Algorithm with ESP32, ultrasonic sensors, and LDRs using ThingSpeak for IoT-based monitoring, reducing maintenance costs by 20% through predictive fault detection and remote system management.

Electromyogram Signal Analysis Using 'MATLAB' — Dec 2021 – May 2022
– Analyzed electromyogram (EMG) signals using MATLAB to record electrical activity from human skeletal muscles, achieving 95% accuracy in signal acquisition; explored hardware implementations for prosthetic hand control, grasp recognition, and human-computer interaction applications.

Smart Shopping Using Line Following Robot with LoRa Technology — Dec 2022 – Feb 2022
– Developed an IoT-based Smart Energy Meter with real-time energy monitoring, achieving 98% accuracy in consumption measurement.
– Reduced energy wastage by 15% through automated load control and alert systems, improving overall energy efficiency.
– Integrated LoRa, Wi-Fi, and GSM modules for long-range, low-power data transmission, enabling remote monitoring via a mobile application with real-time analytics and user-friendly interface.

Thrust Vectored Control for an Autonomous Unmanned Surface Vehicle — Jan 2023 – May 2023
– Developed a thrust-vectored control system for an autonomous USV, improving maneuverability, reducing response time by 25%, and enhancing collision avoidance by 30%.