Mitun Kumar Na

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Career Objective

Driven to contribute to the semiconductor industry through efficient digital design, RTL development, and system-level verification. With hands-on experience in HDLs and embedded platforms, I aim to innovate in developing high-performance, reliable, and silicon-ready digital systems that push the boundaries of technology.

Education

Course	Institution	Year of Completion	Percentage/CGPA
B.E. Electronics and Communication Engineering	PSG Institute of Technology and Applied Research, Coimbatore	2026	8.11 (till 6^{th} sem)
Higher Secondary Education	Kids Club Matriculation Higher Secondary School, Tiruppur	2022	97.33%
Secondary Education	Kids Club Matriculation Higher Secondary School, Tiruppur	2020	97.8%

Technical Skills

Programming Languages: C, C++
Hardware Description Languages: Verilog, SystemVerilog
Verification Methodologies: UVM (Universal Verification Methodology)
Assembly Languages: ARM, x86, MCS-51
Protocols: AXI, AHB, APB, CAN, SPI, I2C, UART
Technologies & Tools: Xilinx Vivado, MATLAB, Cadence Virtuoso

Areas of Interest

- Digital Electronics
- Computer Architecture
- Microprocessors and Microcontrollers
- Digital VLSI Design
- Functional Verification

Project Work

AXI3 Protocol: RTL Design and Functional Verification using SystemVerilog Layered Testbench (2025)

- Developed a Verilog-based AXI3 slave with support for fixed, increment, and wrapping burst transactions.
- Built a layered SystemVerilog testbench incorporating generator, driver, monitor, and scoreboard components.
- Verified protocol compliance and data integrity using constrained-random stimulus and functional checking.

Key Technologies: Verilog, SystemVerilog, AXI3 Protocol, Xilinx Vivado.

NovaX7: Custom RISC Microcontroller Architecture and ALU Design (2025)

- Designed a modular 16-bit ALU supporting signed arithmetic, logical, shift/rotate, and comparison operations using Verilog.
- Defined the NovaX7 instruction set architecture (ISA) and created opcode mappings for all core instructions.

A Real-Time Smart Vehicle System using CAN Protocol for Multi-ECU Communication (2025)

- Built a CAN-based STM32 system for real-time communication between multiple ECUs.
- Integrated ADXL345, ultrasonic sensors, and GPS for crash detection and obstacle alerts.
- Triggered LCD warnings and GSM-based GPS alerts instantly upon critical events.

Key Technologies: STM32F103C8T6, CAN Protocol, STM32CubeIDE, C.

Designing a Verilog-Based Sound Generator with PWM Volume Control (2024)

- Designed a Verilog-based sound generator producing square waves at user-defined frequencies.
- Integrated PWM for volume control via duty cycle modulation without affecting frequency.
- Utilized clock dividers for precise frequency generation.

Key Technologies: Verilog, Xilinx Vivado.

Arduino-Based Mass Driver for Launching Magnetic Objects (2023)

- Built a launcher using Arduino to push small magnetic objects forward.
- Programmed timing control to ensure smooth and accurate launching.

Key Technologies: Arduino.

Certifications

- 8086 Microprocessor (Bharat Acharya Education, February 2025)
- Computer Architecture (NPTEL, October 2024)
- Learning UVM Testbench with Xilinx Vivado 2020 (Udemy, January 2025)
- Verification Series Part 1: SystemVerilog Essentials (Udemy, February 2025)
- Verification Series Part 2: Hands-On SystemVerilog Projects (Udemy, July 2025)
- Verilog for an FPGA Engineer with Xilinx Vivado Design Suite (Udemy, October 2024)
- VSD - Static Timing Analysis - I (Udemy, February 2025)
- VLSI SoC Design using Verilog HDL (Maven Silicon, June 2024)
- Digital Design with Verilog (NPTEL, May 2024)

Internship

- **Embedded System Design Internship - Maven Silicon (2024 - 2025)**
  - Trained in Digital Design and Embedded Systems using ARM and RISC-V architectures.
  - Built a Home Automation project using ESP32, integrating multiple sensors for real-time control.

Achievements

- Selected as a **Research Intern** at E-DICE Lab, NIT Trichy
- **2nd Prize – Paper Presentation** – "*An Innovative Fleet of Autonomous Underwater Vehicles for Maritime Safety and Environmental Monitoring*", SSN College of Engineering, Invente'24
- **2nd Prize – Project Expo** – "*Arduino Mass Driver: Electromagnetic Propulsion System*", PSG iTech (Nov 2023)
- **Semi-Finalist** – Nexus'23 Hackathon, CIT College
- **Finalist** – MAKE-A-THON, SSN College of Engineering

Co-curricular Activities

- **PIC Microcontroller: Hands-on Training Workshop** (Organizer and Trainer) PSG Institute of Technology and Applied Research | Yukta'25 (Technical Symposium) | March 2025
  – Conducted a workshop on PIC16F887 microcontroller using MPLAB X and C programming.
  – Led hands-on sessions on LED, 7-segment, USART, ADC, and LCD interfacing.

Roles and Responsibilities

- **Graphic and Video Editor** – Itech Broadcast
- **Secretary** – Eco Club, PSG iTech
- **Member** – Rotaract Club, PSG iTech
- **Sports Secretary** – Kids Club Matriculation Higher Secondary School
- **Member** – IEI, IETE, ISTE

Languages

Tamil - Native or bilingual proficiency
English - Professional working proficiency
German - Elementary Proficiency

Declaration

I, Mitun Kumar Na, hereby declare that the above mentioned details are true to the best of my knowledge and belief.