Abu Saleh Khan

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EDUCATION

Indian Institute of Information Technology (IIIT), Jabalpur, India **CPI: 7.8/10.0**
Major: BTech: Electronics and Communication Engineering (ECE) 11/2020 – 05/2024

Shanti Niketan a Bal Vid Shanti Nagar Muzaffarpur **CBSE: 93%**
Senior Secondary 2017 – 2019

Relevant Coursework: Digital IC Design, Computer Architecture, VLSI System Design, CMOS Memory Design, STA

WORK EXPERIENCE

IIIT- Hyderabad, I- Hub Data Foundation Hyderabad, India
Young Research fellow 01/2024 – 06/2024

- Engaged in cutting-edge research in **medical IoT** applications, contributing to advancements in **Embedded/IoT** system Eng.
- Led the design, development, production, testing, and maintenance of embedded systems, **sensors**, and PCBs, ensuring high performance and reliability.
- Utilized ultra-low power **ARM Cortex M3** AD3029 MCU, achieving significant power efficiency improvements; designed custom **2-layer PCBs** and created a comprehensive Bill of Materials (BOM) for AD5940.
- Debugged AD5940 code using **Keil software**, facilitating seamless communication with AD3029 MCU and enhancing system integration efficiency.
- Mounted Surface-Mount Devices (**SMD**s) on PCBs, streamlining the assembly process and improving production efficiency.

IIT Tirupati Chanakya UG Fellowship Remote
Undergraduate Research fellow 01/2024 – 07/2024

- Achieved a **30% increase** in antenna efficiency by designing and optimizing a Bruce array antenna using HFSS, compared to conventional microstrip patch antennas.
- Developed an RF energy harvesting system that **converted 81%** of received RF power to DC, providing efficient power to low-power sensors in remote locations. Improved **signal-to-noise ratio by 25%** through advanced signal conditioning circuit designs and algorithms for industrial automation and IoT devices.
- Reduced design iteration **time by 20%** and enhanced overall design accuracy using Cadence Virtuoso and Altium Designer for PCB layouts. **Skills**: **Ansys HFSS, Advanced Design System (ADS), PCB designing, Altium, OrCAD, Antenna**

Bureau of Indian Standards (BIS) HQ | LINK New Delhi, India
Research Intern 05/2023 – 07/2023

- Developed specifications for substation battery chargers, **ensuring 99.9%** uptime of essential substation systems during power outages, in compliance with Indian Standards.
- Led technical requirements definition for substation battery chargers optimizing charger performance by 15% through accurate specification of AC/DC input and output voltages, ensuring compatibility with various regional power distribution.
- Float and boost charging systems, reducing battery maintenance **time by 20%** and ensuring **100% quick recovery**, maintaining continuous operation of critical substation equipment.
- Ensured EMC compliance for battery chargers, reducing electromagnetic interference **by 30%,** in adherence to IEC standard

PROJECTS

DESIGN AND SYNTHESIS OF 5 STAGE PIPELINED MIPS PROCESSOR 03/2023 – 05/2023

- Created RTL designs for basic processor elements such as Control Unit, ALU, Data Memory, Register File.
- Integrated Data Forwarding, and Hazard Detection units to overcome pipeline hazards and reduce CPI.
- Tested the functionality at the subsystem and system level through directed testing.

PROCESSOR DESIGN AND OPTIMIZATION 01/2023 – 02/2023

- Optimized a RISC-V processor in VHDL for better critical path delay and energy consumption.
- Improved the ALU by implementing a radix-4 multiplier with Booth's recoding and 4-to-2 reduction tree.
- Reduced memory access time by implementing write-back cache and improving the timing of AXI interconnection.

TECHNICAL SKILLS

- **Programming Languages:** C, C++, MATLAB, Python **Scripting**- TCL
- **Hardware description language:** Verilog, System Verilog **Methodologies**- UVM
- **Frameworks/ Toolkits/ Software:** Cadence Virtuoso OrCAD, Altium Designer, LTSpice, LabVIEW, Xilinx Vivado, Sentaurus TCAD and Spectre-RF, hands-on experience in analog/Mixed-Signal testing and Debugging, Synopsys.
- **Communication Protocols / Hardware:** I2C, UART, SPI, BLE, Analog and Digital Circuit Analysis and Oscilloscopes

ADDITIONAL

- Selected for **UG Chanakya Fellowship by IIT Tirupati** and **IIIT Delhi** and Project funded by DST