Saad Khan

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EDUCATION

Ghulam Ishaq Khan Institute of Engineering Sciences and Technology (GIKI) Topi, Pakistan

Bachelor of Science in Computer Engineering Sep 2020 – Jun 2024

- CGPA: 3.15 / 4.00
- Academic **High Distinction** in **7th & 8th** Semester with **3.81 & 3.79** SGPA Respectfully.

PROFESSIONAL EXPERIENCE

Musketeers Tech Lahore, Pakistan

Artificial Intelligence Intern Jun 2023 - Aug 2023

Applied diverse technologies such as LLM to Diffusers, Fast AI, Transformers, etc., and accomplished 8 projects, including Urdu TTS, Racial Classifier, UNI CHATBOT, demonstrating versatility and project delivery expertise.

Chip – DV, GIK **GIK,** Pakistan

Research Assistant Jun 2023 – Jun 2024

Led the development of single-cycle, pipelined, and custom **RISC-V** processors, along with **ASIC** projects including **UART**, high-speed multipliers, **FPGA prototyping**, testing, and fabrication using Open Lane.

LEADERSHIP EXPERIENCE

Robotics Head, Team Technobolt Jan 2022 - May 2024

Worked as a member of a robotics-based team, contributing to the design, construction, and programming of robots.

Testing & Design Head – GIKI Team Invictus Nov 2021 - May 2023

Testing aircraft components & modules to ensure performance and safety. Directed design team, fabricated multiple compact streamline UAVs with speeds over 100km/h.

FINAL YEAR PROJECT

INTELLERA: A Hardware Based Accelerated Matrix MAC Processor

- Designed "INTELLERA," a RISC-V processor featuring custom hardware accelerators on **FPGA** for efficient matrix operations.
- Implemented 18 default instructions of **RISC-V ISA** and developed **11 custom** instructions for the **MATRIX MAC Module**.
- Conducted benchmark evaluations with focus on enhancing overall efficiency and investigating integration into System-on-Chip.

COURSES & CERTIFICATIONS

- UC Berkeley, **CS61C**: Great Ideas in Computer Architecture

ACADEMIC PROJECTS

VGA-Based Pong Game Implementation on Nexys4 FPGA

Developed a captivating **VGA-Based** Pong Game on **Nexys4 FPGA**, highlighting expertise in digital design, FPGA programming, and creative game development.

UART FABRICATION

Designed and implemented a UART communication protocol, with an 8bit data frame and oversampling. Submitted the project for fabrication through tinytapeout.com, Making it our **institutes First ever fabricated Chip**.

18 DOF Hexapod

Constructed an 18 DOF Hexapod using **Raspberry Pi** & inverse kinematics in a 3d printed chassis. Developed a custom **Multithreading** python code and a GUI as well as TCP server to control the robot.

FPV Drone

Engineered an FPV drone utilizing an F4 processor and a radio control system. Implementing **PIDs** to achieve smooth flight with zero noise and multiple flight modes. Excellent video quality with minimal lag.

Balancing Robot

Led the successful conception and implementation of a sophisticated balancing robot project, showcasing advanced skills in robotics, control systems, **Feedback (PID)** Systems and project management.

3d Printer using STM32 Discovery Board and Arduino

Created a 220x220 mm bed size working 3d printer using Raspberry pi Microprocessor and Arduino

4 DOF Robotic Arm

A fully controllable Robotic arm, with 4 degrees of freedom working remotely from a TCP server-client Connection.

SKILLS

Programming Languages: C/C++, Python, JavaScript, CSS3/HTML5, Assembly, Verilog, RISC-V

Frameworks: Django, Node.js, React.js, React-Native, SQLite, PostgreSQL., Open Lane

Tools: Solid Works, Proteus, MATLAB, Keil, GitHub/Actions, Jira, Docker, AWS, Terraform, Linux, Vivado, Cadince, VS Code, Jupyter/Collab, Canva, Visual Paradigm.

Microcontrollers: 8051, PIC18F, Arduino, Raspberry Pi, FPGA Boards, Nexus 4 DDR FPGA.

Soft Skills: Excellent Critical Thinking & Adaptability, Communication, Leadership, Teamwork, Academic Technical Report Writing