Shahzad Khan

Philadelphia, PA 19149

US Citizen | +1 484-656-8830 | shahzad.khan34022@gmail.com |

EDUCATION

Temple University College of Engineering — Philadelphia, Pennsylvania

Bachelor of Science in Electrical Engineering, Concentration in Computer Engineering — **Graduation: May 2027**

Selected Courses: Signals and Systems, Processor Systems, Robotics Systems Using ROS, Technical Communication, Engineering Computation 4 (GPU Programming)

RELEVANT EXPERIENCE

Teaching Assistant - Electrical and Computer Engineering Department — **January 2025 - Present**

Temple University, Philadelphia PA

- Teaching undergraduate courses in programming and computational methods (C, C++, Python)
- Evaluate and grade each student's assignments and projects based on code accuracy, efficiency and ability to explain their solution in depth.

PROJECTS

Musical Light Show — **February 2025**

Temple University

- Designed and built a circuit that takes in music from 0-16kHz from 2 audio channels, combining both signals using a Non-Inverting Summing Op-Amp. Sending the signal through 2 separate high pass and low pass filter
- Then pass both signals through peak detectors and tying the LEDS activation with MOSFETs to control brightness

Quadruped Line Follower Robot — **June 2025**

Temple University

- Using ROS 2 to program a robot dog to follow a line using a camera to detect a black light on the ground and a PID loop allowing for accurate tracking along the line.
- Programmed a quadruped robot that autonomously follows a line using real-time image processing.
- Integrated an onboard RGB camera to detect the line and processed the video feed using OpenCV to determine the robot's deviation from the path.
- Implemented a PID control loop to adjust the robot's trajectory dynamically, ensuring smooth and accurate line tracking even through curves and intersections.

4-Bit Arithmetic Logic Unit on DE10-Lite FPGA — **October 2024**

Temple University

- Designed 4-bit ALU capable of operations, including addition with carry, in System Verilog VHDL via VSCode
- Simulated the design with Intel Quartus and loaded onto hardware through VirtualBox for validation against simulation results. Inputs and outputs were managed through switches, buttons, and a seven-segment display.

Optimized Matrix Multiplication using Multi-core CUDA Programming — **September 2025**

Temple University

- Reduced 1000x1000 matrix multiplication runtime from 0.832s - 0.012s (98.6% improvement)
- Accelerated autocorrelation from O(NK) - O(N log N) using Fast Fourier Transforms for large signal datasets.
- Now planning on fully optimizing using multi-core GPU programming with CUDA

LEADERSHIP

Institute Of Electrical and Electronic Engineering (IEEE) — Temple University

President — **January 2025 - Present**

- Lead a 6-member executive board, increasing membership and engagement by 70% through hackathons, workshops, and networking events with other university IEEE chapters.

Secretary — **August 2024 – January 2025**

Sustainable Temple Energy and Power Scholars (STEPS)

STEPS Ambassador — **August 2024 – Present**

- Launched a high school outreach program, guiding students in building microcontroller-based systems to collect environmental data and assess habitat suitability for bats
- Mentor 4 electrical engineering undergraduates and host workshops to increase interest in electrical engineering

SKILLS

Programming: C/C++, Python, , Bash, FPGA, Verilog, Unix, ROS 2, Microsoft Office Suite,

Tools: Cuda, PyTorch,, MATLAB, KiCad, Multisim, GitHub, CAD, Oscilloscope, Multi-Meter, Function Generator