Shashwat Raj

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Education

Arizona State University **2023-2027**

B.S.E. in Computer Systems Engineering + B.S. in Mathematics (Dual Major), ***GPA :*** *3.78/4.0* *Tempe, Arizona*

Activities : GCSP, Venture Devils, ACM@ASU, Hacker Devils, Fulton Undergrad Research Initiative (FURI), LENS lab

Awards : Dean's List Fall'23, Spring'24, Spring'25; NAmU Scholarship $13500/yr; 2024-25 Go-Global Scholarship of $3000

Delhi Public School RK Puram **2009-2022**

High School Diploma, ***CGPA :*** *9.9/10* *New Delhi, India*

Experience

Collective Design (CoDe) lab, Arizona State University **May 2024 – Present**

Machine Learning Developer and Researcher Tempe, Arizona

- Developing Reinforcement Learning techniques to optimize Earth science missions to autonomously determine priority observations in space, under the mentorship of Dr. Paul Grogan of SCAI Faculty at ASU.
- Co-authoring a review paper discussing relation between OSSEs & Mission Engineering.
- Trained DQN and QRDQN models using Pytorch, GeoPandas, TAT-C, Seaborn on NASA's Geos5 dataset, achieving 67% precision and 87% recall resp. Receiving total $4600 through FURI and GCSP Research funding.

MentorU **July 2025 – August 2025**

Product Development Manager Los Angeles, California

- Managed/Led a team of 5 developers developing a full-stack online platform for college admission counseling startup, to automate features like scholarship finder and personal story-building. Increased UX Research success by 150%.

Invincibles Robotics **August 2022 – December 2023**

Hardware Engineer New Delhi, India

- Designed and built power distribution boards, safety mechanisms, TX/RX configurations and ESC modifications for Battlebots, ranging from 15lbs to 60lbs.
- Led the team (sponsored by Roboverse) to 30+ international and national wins, with 100k+ collected over prize money.

Team Inferno, Delhi Technological University (DTU) **December 2022 – February 2023**

Systems Engineer New Delhi, India

- Developed custom PCBs on Allegro for incorporating embedded systems on-board the prototype Mars Rover for University Rover Challenge (URC). Programmed perception and navigation systems using ROS, OpenGL and SLAM on Python, along with various other system simulations on Gazebo.

Projects

Embedded Robotics | Low-level C, Embedded Microprocessor Systems **Present**

- Used the FRDM-KL46Z NXP microprocessor board with C to control a robot, to move in a figure-eight pattern, follow a line, avoid obstacles, and navigate through a colored maze, after configuring GPIO registors, interrupts, encoders and utilizing components' datasheets, PID tuning and I2C communication.

FPGA Alarm Clock and Audio Recorder with Playback | Verilog, Modelsim, Vivado, Quartus Prime **Present**

- Developed a real-time alarm clock using Intel Quartus Lite and deployed the program to the Intel DE10-Lite FPGA board, following verification of functionality for each module using Modelsim.
- Developed an audio recorder that records and plays back up to eight seconds of audio in SystemVerilog in the Nexys A7-100 FPGA board via Xilinx Vivado.
- Wrote SystemVerilog modules for the seven-segment display, microphone integration, mono audio output, BRAM, and buttons to apply full-range FPGA functionality.

Crop Disease Classifier | Keras, Tensorflow, Matplotlib, Numpy, OpenCV | *github.com/darthvader58/garud* **March 2021**

- A CNN based model built using Keras and Tensorflow for crop disease detection from a UAS. The 2D-CNN model uses 4 hidden layers using ReLu activation function with the output layer using Softmax function, achieving 89.23% accuracy.

Coconut CubeSat | Linux, KiCad, CUDA, ROS, Gazebo, GPU | *github.com/darthvader58/whatrobe* **June 2023**

- Part of the team developing a Cubesat for NASA CSLI Launch 2024, establishing communication network between LoRa devices for greater coverage, range and penetration without current orbital store-and-forward methods.

Micromouse | Embedded C, MIT App Inventor, Dijkstra, PID tuning **August 2019**

- Built an autonomous wall-maze and line-maze solving robot using Teensy, TB6612FNG motor driver, Polulu QTR, HCSR04 Ultrasonic Sensors, N20 motors and Power Distribution Circuit, connected via Bluetooth to a mobile app to calibrate PID values and switch between manual-to-autonomous drive as well as line-maze to wall-maze settings.

Other Projects and Publications listed on Github profile, Linkedin and Portfolio Website

Technical Skills and Other Interests

Languages: Python, Java, C, C++, LaTex, Go, CUDA, Lua, R, Matlab, Bash, Verilog, VHDL , MIPS Assembly, Perl, Tcl

Technologies/Frameworks: PyTorch, OpenCV, Keras, Scikit Learn, Pandas, Git, GitHub, Tensorflow, AWS, XGBoost, Numpy, Docker, Kubernetes, Matplotlib, KiCad, IoT, Arduino, ROS, FPGAs, Seaborn, Gazebo, Ansys, OpenGL

Hobbies: Flute, Battlebots, Boxing, Digital Art, Comp. Prog., Cricket, Basketball, Chess, Podcast host of *"Write It Out"*

Other Courses & Certifications listed on Linkedin