

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 : 3.8/4.0

Tempe, Arizona

Activities & Leadership : GCSP Student Rep for ASU, former Technical Director at ACM@ASU, DevilQuant, Hacker Devils, Venture Devils, EPICS@ASU Project Leader, Engineering Futures Mentor, Section Leader for ASU 101 F24

Academic Awards & Scholarships : Dean's List F23-F25; NAmU Scholarship \$13500/yr; SP25 Go-Global Scholarship \$3000

Experience

Collective Design (CoDe) lab

May 2024 – Present

Machine Learning Developer & Researcher

Tempe, Arizona

- Developing **Reinforcement Learning** techniques to optimize Earth science missions to autonomously determine priority observations, under **Dr. Paul Grogan**. Co-authoring a review paper on intersection of **OSSEs & Mission Engineering**.
- Trained **DQN & QRDQN** models using **PyTorch**, GeoPandas, TAT-C on **NASA's G5NR dataset**, achieving **67.00% precision & 87.00% recall**. Receiving total **\$6200.00** through FURI & GCSP Research funding.

MentorU

July 2025 – August 2025

Product Development Manager

Los Angeles, California

- Led **5-10** developers building a **full-stack** admissions counseling platform; translated counselor workflows into **API** requirements, data models, & **frontend** userflows for **scholarship matching** & student story-building.
- Shipped **3 MVP modules** and increased completed UX research sessions by **150%** through structured **prototype** testing.

WoofCare Solutions Pvt. Ltd.

May 2025 – Present

Founder

New Delhi, India

- Building a **Flutter + Firebase** app connecting common dog lovers with NGOs, vets, shelters, and adopters for stray dog care.
- Designed **Firestore** schemas, NGO profiles, donation workflows, and **location-based discovery**; secured **EPICS@ASU funding** and partnerships with **60+ NGOs** undergoing massive **beta testing** in Pune, India.

Projects

AI Privacy Firewall | *FastAPI, React, TypeScript, Gemma 4, Supabase, Transformers, D3.js, DistilBert*

[GitHub](#)

- Asclepius is a clinical **AI privacy platform** that uses **neural-guided semantic proxy** to let pharma & clinical teams safely query latest remote **LLMs** like **Anthropic Claude Opus & OpenAI GPT5.5** without exposing **sensitive data**.
- It strips **18 HIPAA identifiers**, enforces a ($\epsilon=3.0, \delta=1e-5$) **DP budget**, & rehydrates answers locally so **zero raw PHI** reaches the cloud; tested **5 adversarial attack classes** on **50 synthetic clinical documents** with **86% task utility**, & won **HackPrinceton S26 Best Overall** with \$1150.00 in prizes.

Game Engine on FPGA | *SystemVerilog, Vivado, Xilinx, Synchronous Design, Hardware Synthesis, FSM*

[GitHub](#)

- Implemented Dr. Robotnik's Mean Bean Machine on a **Nexys A7100T**, driving **640x480 VGA** at **60 Hz** with a **25 MHz pixel clock** & **RGB444** graphics, a **6x12 realtime grid**, **BFS-based group clearing**, **LFSR random generation**, & 6-digit 7-segment score output.

Kubernetes Cost Analyzer CLI | *kubectl, Go / GoLang, Bash, Cobra, Viper, clientcmd*

[GitHub](#)

- KCAVO is a **kubectl plugin** that inspects live cluster state via **client-go**, projects monthly CPU, memory, GPU, & storage spend using a **730-hour billing model**, supports **JSON/YAML/table exports**, & flags waste patterns such as pods over **4 vCPU**, memory requests over **16GB**, GPUs above **70% of pod cost**, & **30-50% downscaling** savings opportunities in SRE workflows.

F1 Algorithmic Strategy Game | *Next.js, Compiler Design, Pixi.js, PyDantic, Uvicorn, Docker, WebSockets*

[GitHub](#)

- A multiplayer game where players write **Python pit-stop algorithms** competing in a **physics based F1 simulation**. Built a race engine, modeling tyre degradation cliffs, **Markov-chain weather**, safety cars, DRS, **sandboxed code execution**, **ELO matchmaking**, **6 adaptive AI bots**, & **real-time** race visualization using **8,500+ LOC** & **21 API** endpoints.

Other Projects & Publications listed on [GitHub profile](#), [LinkedIn](#) & [Portfolio Website](#)

Technical Skills & Other Interests

Languages: Python, Java, C/C++, TypeScript, JavaScript, Go, Rust, SQL, Bash, Verilog

Frameworks: React, Next.js, FastAPI, Flask, Node.js, Flutter, Tailwind, Firebase, Supabase

ML/Data: PyTorch, TensorFlow, scikit-learn, pandas, NumPy, Hugging Face Transformers, spaCy, mlx

Systems/Cloud: Docker, Kubernetes, Linux, AWS, MongoDB, Git, GitHub, Redis

Hardware/Embedded: SystemVerilog, Vivado, Xilinx FPGA, KiCad, Arduino, Embedded C

Open-Source Contributions: Mocha JS, Electron JS, Pixi JS, Keras, Kubernetes, Supabase, OMI AI hardware

Side Interests: Competitive Programming, Hackathons, Algorithmic Trading, Datathons, Chess, Idea Pitching, Battlebots, Pololu Micromouse