Yuvraj Chauhan

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About

About Me — I'm Yuvraj, a GATE CSE 2025 qualified pre-final year Computer Science student at the Indian Institute of Information Technology, Vadodara. I have a strong interest in Security & Privacy, AI/ML, Full Stack Web Development and IoT. I'm also keen on exploring interdisciplinary areas including Metaverse and AR/VR, Cryptography, Reinforcement Learning, and Embedded Systems.

Skills

Languages	C/C++, Python, JavaScript, TypeScript, HTML/CSS
Frameworks & Libraries	React.js, Next.js, Flask, Node.js, Express.js, Auth.js, Tailwind CSS
Databases	MySQL, PostgreSQL, MongoDB, CockroachDB, CosmosDB
Machine Learning	PyTorch, Scikit-learn, Unity ML-Agents Toolkit
AR/VR	Unity, Blender
Embedded Systems	Arduino Uno, ESP32, ESP8266, Raspberry Pi Pico W, Raspberry Pi 4
Tools & DevOps	Git, Linux, Postman, Thunder Client

Education

2022 – 2026 — **B.Tech. in Computer Science and Engineering**, IIIT, Vadodara
Current CGPA: 8.14 / 10
Qualified GATE CSE 2025 – with AIR 6277, 45.33 Marks and a GATE Score of 514

Experience

May– Aug. 2025 — **Research Intern**, National Institute of Technology, Karnataka
Studied and implemented schemes in Python for Secret Image Sharing.
Developed a scheme that improved the precursor scheme by 11% in storage optimization. *Technologies:* MATLAB, Simulink

Jan.–May 2025 — **Teaching Assistant**, Basics of Electrical Engineering – IIIT Vadodara
Taught 100+ Semester 2 students and supervised lab sessions.
Technologies: Python, Google Colab

Sept.–Dec. 2024 — **Teaching Assistant**, Physics – IIIT Vadodara
Guided 100+ Semester 1 students through weekly MATLAB-based lab sessions.
Technologies: MATLAB, ode45

Projects

Cryptography and Security & Privacy

2024 **Electronic Elections: Secure Two-Party Voting System (Delfs & Knebl)**
Developed a cryptographic voting protocol using ElGamal encryption and Shamir's Secret Sharing. Deployed a secure web interface with SSL/TLS and three Dockerized servers.
Technologies: Python, Flask, Docker, OpenSSL, HTML, CSS, JavaScript, Node.js, EJS,

Secret Image Sharing: Multi-Secret Sharing Scheme (Patil et al.)
Implemented an MSS protocol for secure image distribution with constant-size shares and histogram normalization. Achieved lossless reconstruction, evaluated on grayscale images.
Technologies: MATLAB

Metaverse & AR/VR

Virtual Electrical Lab: IoT–Virtual World Integration
Created a Unity-based virtual lab with Blender 3D models, syncing IoT hardware (Arduino, ESP32) for real-time electrical experiments. Validated usability with a 60-participant study.
Technologies: Blender, Unity, C#, Node.js, Arduino, ESP32

AI/ML and Reinforcement Learning

Adaptive Enemy AI: Proximal Policy Optimization (PPO)
Created a Street Fighter-style game in Unity with PPO-based RL agents, varying AI difficulty via neural network architectures. Confirmed performance gains in a 40-participant study.
Technologies: Unity, C#, Python, PyTorch, Unity ML-Agents, PPO

Awards and Achievements

2025 **First Position** – Battlebots X Sentience, Horizon 2025 @ IIIT Vadodara, ICD.

2024 **Volunteering Awards** – For developing official websites for Stavya 2024 and Horizon 2024.

Research Publications

Conference Proceedings

1 S. Sharma, T. Patel, Y. Chauhan, T. Patel, G. Pareek, and P. B. R, "On (k, n) threshold secret image sharing based on pixel coordinates for simple images," in *Proceedings of the 16th IEEE International Conference on Computing, Communication and Networking Technologies (ICCCNT)*, Presented at the conference; to appear in proceedings, IEEE, IIT Indore, Madhya Pradesh, India, Jul. 2025.