Anuranan Bharadwaj

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EXPERIENCE

Reinforcement Learning Research Assistant — July 2025 - Present

Embry-Riddle Aeronautical University — *Daytona Beach, FL*

- Contributing to an AI research project focused on developing and evaluating **Reinforcement Learning agents (SAC & DDPG)** to autonomously control a vehicle in a custom driving simulator (CARLoS).
- Integrating **prebuilt RL algorithms (Stable-Baselines3)** into a **Python-based, low-fidelity simulation environment** by adapting agent-environment interactions and implementing Gym-style interfaces for training and evaluation.
- Project outcomes will support early-stage safety analysis in AV and form the basis for future high-fidelity integration.

Software Developer — April 2025 - Present

Project COMET – Embry-Riddle Aeronautical University — *Daytona Beach, FL*

- Designing and developing real-time flight software in **C** for a **12U CubeSat** featuring **mmWave inter-satellite communication**, contributing to a **scalable, low-latency space network architecture.**
- Building **modular applications** within **NASA's Core Flight System (cFS)** on **Ubuntu Linux** to control **satellite subsystem operations**, implement automated **fault-recovery algorithms**, and manage various **spacecraft modes**.
- Contributing to the design of a high-throughput (**500+ Mbps**) autonomous satellite communication system as part of **NASA's University Nanosatellite Program (UNP)** launch competition.

Software Engineer Intern — July – Aug 2024

ABH Software — *Assam, India*

- Ideated the development of a **Local Business Management Platform** for inventory control, customer management, and sales tracking, delivering scalable software solutions.
- Optimized SQL queries, **enhancing data accuracy by 20%** and **reducing report processing time by 30%**.
- Collaborated with cross-functional teams to implement **Java-based features** using **Agile methodologies**.

PROJECTS

ClassConnect| *HTML, CSS, Firebase, JS, Cloud Functions, QR Code API* — **July 2025**

- Built a **startup-focused full-stack attendance tracking system** that allows professors to generate **dynamic QR** codes for real-time student check-ins, preventing proxy submissions using **time-expiring tokens.**
- Designed the frontend with **JavaScript**, **HTML, and CSS**, and developed the backend using **Firebase Cloud Functions** and **Firestore**, enabling real-time session validation and robust database management.
- Enabled attendance logging in **under 30 seconds** per session with **100% submission accuracy** and a live **professor dashboard**; improved attendance visibility and reduced manual entry time by **90%.**

HFT Backtesting Engine| *Python, Pandas, NumPy, Matplotlib, Financial Modeling* — **May 2025**

- Developed a high-frequency trading (HFT) **backtesting engine** in **Python** to simulate intraday trading strategies using **tick-level financial data**, focusing on **RSI** and **Bollinger Band** indicators.
- Integrated parameter tuning, **Sharpe Ratio optimization algorithms**, and **risk management logic** (stop-loss and take-profit) to validate strategy robustness.
- Achieved a **15.6% return** with a **Sharpe Ratio of 0.82**, visualized key metrics and trades via interactive UI elements.

EDUCATION

Embry-Riddle Aeronautical University — Daytona Beach, FL

Bachelor of Science in Aerospace Engineering – Jet Propulsion — **May 2026**

Minor in Computer Science — ***GPA: 3.9***

Relevant Courses: Data Structures & Algorithms| Object-Oriented Programming| Software Engineering Practices| UI/UX

SKILLS

Languages: Java| C#| HTML| CSS| JS| Python| MATLAB| C

Developer Tools: VS Code| Visual Studio| Git| PyCharm| Jupyter| Figma

Frameworks & Technologies: MERN| .NET| WPF| SQL| Pandas| Matplotlib| NumPy| Excel| NASA cFS| Ubuntu| Agile