Aaditya Bhatia

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Education

Delhi Technological University — Delhi, IN
Bachelor of Technology in Computer Science Engineering — *Aug 2023 – May 2027*

The Heritage School — Delhi, IN
High School Diploma in Science and Computer Science — *April 2019 – April 2023*

Achievements

DARPA Triage Challenge (Systems) 2024

- Secured **2nd place in Phase 1** ($60,000) and **2nd place in Phase 2** ($150,000) in the DARPA Triage Challenge (Hosted By US DOD)(Non-Funded Category) as a core contributor to UAS-DTU. Outperformed multiple university and industry teams across perception, autonomy, and triage decision-making benchmarks.

International Conference on Unmanned Aerial Systems (ICUAS) 2024 2024

- Achieved **2nd place** in the indoor simulation phase and **3rd place overall** in the ICUAS 2024 competition as part of team UAS-DTU.

Smart India Hackathon 2022

- Winner in the **Drones and Robotics** Jr category, leading Team Falken.

Experience

Software Head — Sept 2023 – Present
UAS-DTU — *Delhi, IN*

- Spearheaded the complete lifecycle design, development, and optimization of advanced computer vision pipelines—including Semantic Segmentation, ODLC, and Remote Physiological Signature Estimation—utilizing CNNs and autoencoders, which enhanced detection and classification accuracy by more than 20%.
- Architected and deployed a robust full-stack web application leveraging Flask, React, DroneKit (Python), Socket.IO, and Docker for real-time image analytics and telemetry visualization.
- Pioneered research and implementation of state-of-the-art vision architectures, including ViTs, CLIP-based zero-shot models, and advanced CNN backbones, to support rapid medical triage within the DARPA Triage Challenge. Integrated reinforcement learning-driven decision modules and multi-modal perception pipelines to enable casualty prioritization, context-aware scene understanding, and remote patient monitoring under real-world operational constraints.

Research Intern in Wirocomm Lab — Jun 2025 – Oct 2025
Indraprastha Institute of Information Technology, Delhi — *Delhi, IN*

- Developing a Deep Q-Learning agent to optimize traffic signal control using SUMO simulations, improving traffic flow through Deep reinforcement learning.
- Implementing neural networks with Keras and integrates with SUMO via TraCI to train agents in realistic urban traffic scenarios.

Projects

DARPA Triage Challenge — Real-Time GCS & GUI Platform — *Jan 2024 – Present*
React, TypeScript, Flask, Socket.IO, Docker, Linux

- Designed and implemented a scalable, real-time Ground Control System (GCS) for autonomous medical triage missions, enabling monitoring and control of 5+ heterogeneous UAV/UGV subsystems.
- Built a React + TypeScript frontend with live telemetry, image streams, casualty state visualization, and mission-level decision dashboards.
- Architected a Flask + Socket.IO backend for low-latency communication between perception pipelines, autonomy modules, and distributed edge devices.
- Containerized the full-stack system using Docker and deployed across high-performance Linux servers and edge platforms including Nvidia Jetson Orin NX.

DARPA Triage Challenge — Reinforcement Learning–Based Triage Decision System *Jan 2024 – Present*
Python, PyTorch, Reinforcement Learning, Multi-Modal AI

- Developed reinforcement learning–driven decision modules for autonomous casualty prioritization under uncertain, partially observable disaster environments.
- Integrated multi-modal perception inputs—including vision-based injury detection (CLIP, ViTs, CNNs) and physiological signal estimates—into RL state representations.
- Designed reward functions to balance survival probability, response time, and limited resource allocation constraints.
- Evaluated policies in simulated and real-world mission scenarios to enable context-aware triage recommendations with minimal human intervention.

ICUAS 2024 — Autonomous Indoor Drone Navigation *Feb 2024 – Sept 2024*
Python, ROS 2, Docker, NumPy, PyTorch

- Developed a ROS 2-based autonomous navigation stack for indoor UAVs with real-time perception, localization, and control.
- Implemented object detection and collision avoidance pipelines using NumPy and PyTorch.
- Containerized the complete simulation and development environment using Docker for reproducible builds and rapid deployment.

Technical Skills

Languages: Python, C/C++, SQL (Postgres), Java/TypeScript, HTML/CSS, Bash
Frameworks: React, Node.js, Flask, ROS, CUDA, Material-UI, FastAPI
Developer Tools: Git, Docker, TravisCI, Google Cloud Platform, VS Code, Visual Studio, Jetpack, Ubuntu, Debian-based OS, Arch Linux, Linux, etc
Libraries: Pandas, NumPy, Matplotlib, PyTorch, OpenCV, TensorFlow
Hardware: NVIDIA Jetson Nano, NVIDIA Jetson Orin, Raspberry Pi, Intel Realsense Tracking Cameras, LiDARs, Pixhawk Cube Orange/Black