

Sajjad Ahmed Shaaz

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EDUCATION

Jadavpur University

B.E. Computer Science **CGPA: 8.95**

- Mechatronics Club (JUMTC) – Software Team, IEEE Tech Team

Kolkata, India

Aug 2024 – Present

EXPERIENCE

CMATER Lab, Jadavpur University

Undergraduate Research Assistant

- **Paper submitted** (under review): *Wilson-Prime Channel Attention and Gini-Adaptive Dual-Backbone Fusion of Deep Models for Medical Image Classification* – dual-backbone (MobileNetV2 + DenseNet121) architecture with novel attention and fusion mechanisms, evaluated on LC25000, BreakHis, and PneumoniaMNIST.
- Ongoing research in multimodal deepfake detection: audio-visual causal divergence modelling, cross-modal synchrony via WhisperX phoneme alignment and CLIP vision features, and Riemannian manifold-based causal reasoning.

Kolkata, India

Oct 2025 – Present

Jadavpur University Mechatronics Club (JUMTC)

Software Team Member – Computer Vision & Autonomy

- Built the onboard CV pipeline for **NIDAR** (autonomous precision agriculture UAV system) – YOLOv8-based crop health detection and fertilization target localisation running on the scan drone, geo-tagging detections and relaying to a spray drone over real-time telemetry for closed-loop autonomous spraying.
- Developed computer vision and autonomy stack for **Obseract** (IRC Mars Rover) – YOLO-based terrain and obstacle detection pipeline, and an RL-based arm controller using Stable-Baselines3 PPO with a custom Gymnasium environment and shaped reward function for manipulation tasks.

Kolkata, India

Aug 2024 – Present

Aarish Technologies

AI & Android Systems Intern

- Leading development of **HawkEye** – designed a CNN-based anti-jamming positioning system: takes raw IMU inputs (gyroscope, accelerometer, barometer), predicts velocity vectors (v_x, v_y, v_z), and dead-reckons GPS coordinates for navigation continuity under GPS denial.
- Built the full Android software stack (MAVLink over USB-OTG, dual-SIM health monitoring, adaptive video streaming, background sensor fusion) and a browser-based real-time ground control dashboard.

Kolkata, India

Jan 2026 – Present

Websoft IOT

IoT Developer Intern

- Built an IoT system for the Govt. of West Bengal (Dept. of Fisheries) to capture and wirelessly transmit real-time fish weight data from field machines to a central server.

Kolkata, India

Feb 2025 – May 2025

PROJECTS

CNN Model Compression – Srijan OpenAimer (3rd Place) | PyTorch, pruning, quantization, knowledge distillation

- Compressed a 42 MB image classification CNN to 0.4 MB (105× size reduction) using structured pruning, INT8 quantization, and knowledge distillation – reducing inference latency from 68 ms to 8.9 ms (7.6× speedup) with only a 3–5% accuracy drop.

ArDine – AI Restaurant Platform | Next.js, Django, PostgreSQL, ChromaDB, Groq API, RAG

- Technical co-founder. Per-restaurant AI chatbot for personalised dish recommendations – open-source LLM (via Groq) interprets user query and intent, ranks dishes via cosine similarity over per-dish ChromaDB vector embeddings. Live at ardine.food.

Face Recognition under Distorted Conditions – Comsys Hackathon 2025 (2nd Place)

- Contrastive learning-based face recognition robust to noise, blur, and lighting variation via CNN embeddings, metric learning, and targeted augmentation strategies.

SKILLS

Languages: Python, C, C++, Java, Kotlin/Android

AI / ML: PyTorch, TensorFlow, HuggingFace Transformers, PEFT/LoRA, Stable-Baselines3, scikit-learn, OpenCV

NLP / Multimodal: WhisperX, CLIP, ChromaDB, RAG, knowledge distillation, model quantization/pruning

Robotics: MAVLink, ArduPilot/Pixhawk, ROS, YOLOv8, Gymnasium, Arduino, Raspberry Pi

Full Stack & Cloud: React.js, Next.js, Django, Firebase, AWS, Docker, Git

ACHIEVEMENTS

- **NIDAR, Smart India Hackathon 2024:** 5th place nationally – autonomous multi-UAV precision agriculture system.
- **Comsys Hackathon 2025:** 2nd prize among 200+ teams – deep Face Recognition Challenge.
- **Pravega 2025, IISc Bangalore:** 2nd place in national-level PID robot competition.
- **Srijan OpenAimer 2025:** 3rd place – CNN model compression (105× size reduction, 7.6× latency speedup).
- **IRC (International Rover Challenge):** Finalist – Obseract Mars Rover, JUMTC.
- **XavSpark 2025:** 5th among 800+ teams in national business hackathon.