Aryan Jain

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Education

Indian Institute of Technology, Madras **2024–2028**

– B.Tech in Chemical Engineering — **CGPA: 9.06/10**

Technical Skills

Languages: Python, C++, JavaScript, SQL
Frameworks: PyTorch, TensorFlow, Scikit-learn, Keras
AI/ML Tools: Hugging Face, LangChain, OpenCV, NLTK, spaCy, W&B
Domains: Large Language Models, Computer Vision, Reinforcement Learning, Multi-Agent Systems, Generative AI
Dev Tools: Git, Docker, Jupyter, NumPy, Pandas, Matplotlib, Linux

Projects & Research

Inter IIT Pathway PS — Real-Time Agentic Generative Systems **Oct 2025 – Present**

– Architecting a **streaming GenAI pipeline** using Pathway for real-time orchestration with sub-second latency and dynamic data retrieval.
– Implementing **multi-agent coordination** with persistent memory, reasoning chains, and adaptive context for long-horizon planning.
– Integrating **LLM-driven decision loops** with structured tool APIs for autonomous problem-solving in dynamic environments.

Project GRASP — Foundation Models for Robotic Control **May 2025 – Present**

– Developing **vision-language-action (VLA) models** combining CLIP-based encoders and transformer policies for visuomotor tasks.
– Researching multimodal alignment and **behavior cloning from demonstrations** for generalizable manipulation.
– Exploring diffusion-based policy generation and sim-to-real transfer for adaptive control in unseen environments.

Project NeuroSpike — Biologically-Inspired Neural Networks **May 2025 – Present**

– Investigating **spiking neural networks (SNNs)** and STDP learning for neuromorphic, low-power computation.
– Designing hybrid architectures combining continuous and event-driven dynamics for adaptive, biologically-plausible learning.
– Studying temporal attention mechanisms for bridging neuroscience and AI in energy-efficient neural models.

AxiomML — Educational ML Framework from Scratch **Aug 2025 – Present**

– Re-implemented foundational ML algorithms (**SVM, PCA, Random Forests, K-Means**) in pure NumPy for full mathematical transparency.
– Built modular API mirroring Scikit-learn; validated 99.9% accuracy parity with improved interpretability.
– Used by 50+ students as a conceptual teaching tool for ML internals.

Pokémon Tactical Strike — Multimodal RL System **2025**

– Developed simulator integrating **Vision Transformers** for visual encoding and GPT-based tactical reasoning.
– Implemented **hierarchical reinforcement learning** using reward-conditioned language primitives for interpretable decisions.
– Achieved 85% win rate vs baseline agents through hybrid vision-text reward shaping.

Leadership & Research Experience

Coordinator — iBot Club, Centre for Innovation (CFI), IIT Madras **2025 – Present**

– Leading **Computer Vision & RL wing** with 30+ members; developing PPO-based SpiderBot locomotion and sim-to-real pipelines.
– Organizing workshops on SLAM, sensor fusion, and model-based RL for robotics applications.

Research Assistant — SenAI Lab, IIT Madras **2025 – Present**

– Conducting research on **neuroscience-inspired AI architectures** focusing on temporal dynamics and hybrid spiking models.
– Exploring biologically plausible learning for continual and few-shot adaptation.

Core Member — Game Development Guild, IIT Madras **2025 – Present**

– Designing **Clash Royale RL simulator** using CTDE paradigm and game-theoretic reward shaping for multi-agent coordination.
– Implementing model-based RL with learned world models for strategic decision-making in RTS games.

Achievements & Impact

Selected for **Inter IIT Tech Meet High-Prep Problem Statement** (2025) — among top teams from 23 IITs.
Created open-source **AxiomML framework**, used as an educational ML toolkit across institutes.
Active contributor to interdisciplinary AI research spanning robotics, neuroscience, and generative systems.