Ekansh Khanulia

LinkedIn| Mail| GitHub | Leetcode | Codeforces | Phone: +31683848085

Education

Leiden University — **Leiden, Netherlands**
- **Master of Science** | Computer Science (specialization in Data Science) — Feb 2025 - *Present*
- Relevant coursework: Information Retrieval, Text & Data Mining, Reinforcement Learning

Graphic Era Hill University — **Dehradun, India**
- **Bachelor of Technology** | Computer Science (CGPA: 8) — June 2019 - June 2023
- Relevant coursework: Engineering Mathematics, Data Structures, Design Algorithms and Analysis, DBMS

Experience

Summer Trainee — **June 2023 – Aug 2023**

Defence Research and Development Organization, DEAL | (Link) — Dehradun, India

- Built a real-time facial recognition and drowsiness detection system for monitoring staff alertness at the DRDO facility.
- Engineered an integrated pipeline using OpenCV, dlib, and Haar cascades for face, eye, and gaze tracking; implemented EAR-based alert triggers and trained a local LBPH classifier on collected data for identity recognition.
- Monitored 150+ hours of internal checkpoint activity using a real-time AI pipeline, identifying 35+ attention loss events with 88% accuracy, reducing manual supervision and improving response time.

Projects

Cartpole-Deep RL-Benchmark-Suite | (Link) — **March 2025 – May 2025**
- Built a PyTorch RL pipeline to benchmark REINFORCE, AC, A2C, and PPO on CartPole-v1, using shared hyperparameters and naïve baseline.
- Applied PPO optimizations (GAE, entropy bonus, ε clipping, mini batches), boosting training speed and reward stability by 2.5× over A2C.
- Achieved maximum episodic reward (500) within 200K steps, outperforming baseline PPO by 2x and A2C by 3x; reduced training variance by 50%, improving policy robustness and generalization.

Flappy-RL-Benchmarks | (Link) — **May 2025 – June 2025**
- Built a Pygame Flappy Bird environment with varying difficulty to test RL agents.
- Implemented DQN, DDQN, SAC, and PPO in the environment using prioritized replay, GAE, entropy regularization, and naive baselines, with tuned rewards and adjusted pipe speed to simulate difficulty levels (–6 to –13 pixles/frame).
- PPO outperformed all agents, achieving a max score of 1200, highest average reward (892), and converging 2 times faster than SAC, demonstrating stable and efficient learning across difficulty settings.

Pacman-rangers | (Link) — **March 2025 – April 2025**
- Built an advanced MCTS agent with heuristic rollouts and biasing multi-agent Pacman Capture the Flag.
- Implemented ablation study on hyperparameters (rollout depth, Cp, ε), heuristic state evaluations, untried action sorting, and weighted simulations; integrated findings into a "Rainbow" MCTS for optimized end-to-end performance.
- Achieved a TrueSkill score of 35.6 with the best-performing agent, outperforming baseline MCTS (score: 7.1) and heuristic agents (score: 25.9) in a 700-match tournament, with a 65%+ win rate, demonstrating robust generalization.

Awards & Achievements

- Secured a coveted Internship at DRDO, a prestigious Indian government facility under the Ministry of Defence.
- Chosen as one of the 100 students nationwide for the Prosus AI University Games Hackathon on real-world agentic AI challenges.

Certifications

- **Mathematical Biostatistics Boot Camp 1 & 2** by Johns Hopkins University. (Link)
- **Advanced Linear Models for Data Science 1: Least Squares** by Johns Hopkins University. (Link)

Volunteer Experience

Hamari Pahchan NGO, New Delhi, India
- Matched NGO projects with CSR goals by analyzing partner reports and aligning initiatives for strategic outreach.
- Improved campaign impact by analyzing influencer data and local incidents to refine targeting and engagement

Skills

- **Technical Skills:** ***Python, C++ ,SQL***, ***Pandas, NumPy, Scikit-learn, TensorFlow***, Microsoft Excel , Databricks, ***PyTorch***, Git, Bash***,*** Matplotlib***,*** ***Power BI***, OpenCV, ***Machine Learning*** ,Supervised and Unsupervised learning, **Reinforcement Learning** (AC,A2C,PPO),Q-learning , Deep Learning, ***Model Evaluation*** , **Autoecoders**, Feature Engineering, Data Cleaning, ***NLP*** (SpaCy, Transformers),Data Scraping (Selenium, BeautifulSoup), Data Modeling, Genetic Algorithm, Hypothesis- testing, ***LLM***, Fine-tuning, **Agentic AI & orchestration**, ***GenAI*** , ***RAG***, **GAN, VAE** ,Data Governance, TensorFlow, KPI tracking, Predictive modelling.
- **Soft & Collaboration Skills:** Analytical Thinking, Communication, Team Collaboration, Documentation, Version Control (Git), Problem Solving, Adaptability, Creative thinking.