Harsh Jain

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SUMMARY

Results-driven third-year AI & Data Science student at Savitribai Phule Pune University with a strong foundation in Python, C++, and backend engineering. Experienced in architecting scalable ML pipelines, deep learning models, and production-grade REST APIs across collaborative team projects. Skilled in reinforcement learning, RAG, and data engineering — focused on model optimization, system performance, and clean API design — with a passion for applying cutting-edge AI to high-impact real-world problems.

EDUCATION

Savitribai Phule Pune University   Pune, India
B.E. in Artificial Intelligence and Data Science | GPA: 8.75/10   *Aug 2023 – May 2027*

TECHNICAL SKILLS

Languages: Python, C++, SQL   **Databases & Tools**: MongoDB, PostgreSQL, MySQL, Supabase, Docker, Git
Frameworks & Libraries: FastAPI, Flask, NumPy, Pandas, Scikit-learn, XGBoost, Optuna, TensorFlow, PyTorch
AI/ML: Machine Learning, Deep Learning, Reinforcement Learning (PPO), NLP, RAG Pipelines, Hyperparameter Tuning

PROJECT EXPERIENCE

Self-Evolving Multi-Agent Governance | *Python, Ray RLlib, gRPC, FastAPI, Dash, PostgreSQL*   Sep 2024 – Dec 2024
- Engineered a decentralized multi-agent simulation for autonomous decision-making using PPO-based RL and distributed computing across a cross-functional team of 4 developers
- Designed scalable backend microservices using FastAPI with gRPC for inter-agent communication, enabling high-throughput real-time data exchange across distributed agent nodes
- Achieved 30% higher convergence rate over baseline via reward function redesign, policy adaptation, and systematic hyperparameter optimization; built real-time Dash dashboards with PostgreSQL for live agent tracking

ClimateX – India Climate Intelligence Platform | *Python, FastAPI, PostgreSQL, MongoDB, ETL*   Jan 2025 – Feb 2025
- Served as Data Engineer on a hackathon team building a real-time India-first climate platform integrating geospatial monitoring, causal AI (DoWhy), BERT sentiment analysis, and RAG-powered policy recommendations
- Designed a dual-database architecture (PostgreSQL for structured climate/policy records, MongoDB for unstructured news and social streams) supporting 100,000+ ingested data points
- Built cron-based ETL pipelines integrating IMD Weather, CPCB Air Quality, and Twitter APIs with deduplication, regional tagging, and GeoJSON processing for state-level map overlays

FloatChat – AI Oceanographic Data Explorer | *Python, FastAPI, RAG, Supabase, Leaflet.js*   Jun 2024 – Aug 2024
- Architected the backend AI API enabling natural-language exploration of 10,000+ ARGO oceanographic records spanning depth, temperature, and salinity metrics across global datasets
- Integrated a RAG pipeline using vector search for context-aware, semantically grounded responses to complex oceanographic queries
- Reduced average API response time by 35% through query restructuring, database indexing, and connection pooling on Supabase; designed RESTful endpoints with structured error handling

SO_2 Emission Prediction System | *Python, FastAPI, XGBoost, Optuna, Docker*   Mar 2024 – May 2024
- Architected an end-to-end ML pipeline predicting SO_2 emissions from Indian coal power plants, achieving 85% accuracy on held-out test data via cross-validation and feature selection
- Applied Optuna-based hyperparameter tuning on XGBoost and deployed the model as a containerized FastAPI microservice on Docker for reproducible, scalable cloud deployment
- Boosted prediction efficiency by 20% through feature engineering and pipeline automation; authored comprehensive REST API documentation with structured error handling and input validation

CERTIFICATIONS & TRAINING

Deep Learning Specialization | *Andrew Ng, DeepLearning.AI, Coursera*   Dec 2024
- 5-course specialization: neural networks, CNNs, sequence models, hyperparameter tuning, regularization, and optimization

Machine Learning Specialization | *Andrew Ng, Coursera*   Jan 2024
- 3-course specialization: supervised/unsupervised learning, deep learning, model evaluation, and real-world ML applications

Python Zero to Hero | *Udemy*   Nov 2023
- Advanced Python: OOP principles, automation, decorators, and professional development practices

EXTRACURRICULAR ACTIVITIES

Robotics Club, Savitribai Phule Pune University   Pune, India
Affiliate Member   *Aug 2023 – Present*
- Active member of the college robotics club, collaborating with peers on robotics projects and participating in technical workshops and competitions