

Harsh Jain

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SUMMARY

Applied Machine Learning and AI student with strong experience building end-to-end ML systems, including data pipelines, model training, optimization, and deployment using FastAPI and Docker. Hands-on with real-world projects in climate analytics, emissions prediction, and intelligent data exploration, with a focus on scalable APIs, clean system design, and measurable performance improvements..

EDUCATION

Savitribai Phule Pune University

B.E. in Artificial Intelligence and Data Science | GPA: 8.75/10

Pune, India

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

SO₂ Emission Prediction System | *Python, FastAPI, XGBoost, Optuna, Docker* Mar 2024 – May 2024

- Architected an end-to-end ML pipeline predicting SO₂ 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