

# Harsh Jain

+91 7796166590 | [harshjain0621@gmail.com](mailto:harshjain0621@gmail.com) | [LinkedIn](#) | [GitHub](#)

## 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

<b>Savitribai Phule Pune University</b> <i>B.E. in Artificial Intelligence and Data Science</i>   <i>GPA: 8.75/10</i>	Pune, India <i>Aug 2023 – May 2027</i>
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## TECHNICAL SKILLS

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

## PROJECT EXPERIENCE

<b>Self-Evolving Multi-Agent Governance</b>   <i>Python, Ray RLlib, gRPC, FastAPI, Dash, PostgreSQL</i>	Sep 2024 – Dec 2024
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- 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

<b>ClimateX – India Climate Intelligence Platform</b>   <i>Python, FastAPI, PostgreSQL, MongoDB, ETL</i>	Jan 2025 – Feb 2025
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- 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

<b>FloatChat – AI Oceanographic Data Explorer</b>   <i>Python, FastAPI, RAG, Supabase, Leaflet.js</i>	Jun 2024 – Aug 2024
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- 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

<b>SO<sub>2</sub> Emission Prediction System</b>   <i>Python, FastAPI, XGBoost, Optuna, Docker</i>	Mar 2024 – May 2024
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- Architected an end-to-end ML pipeline predicting SO<sub>2</sub> 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

<b>Deep Learning Specialization</b>   <i>Andrew Ng, DeepLearning.AI, Coursera</i>	Dec 2024
• 5-course specialization: neural networks, CNNs, sequence models, hyperparameter tuning, regularization, and optimization	

<b>Machine Learning Specialization</b>   <i>Andrew Ng, Coursera</i>	Jan 2024
• 3-course specialization: supervised/unsupervised learning, deep learning, model evaluation, and real-world ML applications	

<b>Python Zero to Hero</b>   <i>Udemy</i>	Nov 2023
• Advanced Python: OOP principles, automation, decorators, and professional development practices	

## EXTRACURRICULAR ACTIVITIES

<b>Robotics Club, Savitribai Phule Pune University</b>	Pune, India
<i>Affiliate Member</i>	
• Active member of the college robotics club, collaborating with peers on robotics projects and participating in technical workshops and competitions	