Divanshu Sharma

Machine Learning Engineer

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Skills

Languages:	Python, C++, Bash
Libraries & Frameworks:	PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas, PyTorch Geometric (PyG), SciPy, OpenCV, BeautifulSoup
MLOps & Deployment:	Docker, CI/CD (GitHub Actions), MLflow, Airflow, FastAPI, REST API, Streamlit, Gradio
Cloud Platforms:	AWS (SageMaker, EC2), GCP (AI Platform), Azure (basic)
Data:	PostgreSQL, MySQL, MongoDB

Experience

ML Researcher | Yale University | Oct 2025 - Present

- Engineering a secure, open-source Deep Learning library from first principles (Python/NumPy only) and codon without reliance on external autograd frameworks.
- Implementing a compiler-centric Multi-Party Computation (MPC) architecture to enable privacy-preserving collaborative training on sensitive medical data.
- Designing system protocols that surpass Federated Learning limitations, providing verifiable cryptographic security guarantees while maintaining computational efficiency.

Research Consultant | WorldQuant BRAIN | Nov 2022 - Sept 2025

- Developed and backtested 15+ high-frequency alpha signals using Python and WorldQuant Simulation, achieving an average Sharpe Ratio of 1.8 in simulation.

Projects & Open-Source

ML4SCI Task Solutions Repository (CMS) | GitHub

Technologies: PyTorch, PyTorch Geometric, TensorFlow, CNN, GCN

- Developed a custom ResNet-15 CNN that achieved 80% AUC in distinguishing electrons from photons in raw detector data, improving event reconstruction in high-energy physics simulations.
- Implemented a GCN for particle momentum regression that cut training time by 30% while matching the ROC performance of a more complex GAT baseline.
- Improved quark/gluon jet classification by 7% using custom VGG-style CNNs with targeted regularization.

CNN-based Accident Detection Web-App | GitHub

Technologies: YOLOv8, PyTorch, TensorFlow, Flask, Docker, Roboflow

- Built a real-time YOLOv8 accident-detection model with 83% mAP and 50 ms/frame inference.
- Containerized a Flask REST API for model serving, reaching a 0.87 F1-score on a 1,200-image Roboflow dataset.

Grammar Scoring Engine from Voice Samples

Technologies: Whisper, Transformers, BGE, CatBoost

- Assembled a complete audio analysis workflow combining Whisper transcription, advanced embeddings, and a CatBoost regressor, reaching RMSE 0.6993, MAE 0.5365, and R^2 0.1666.

Education

University of Mumbai | Mumbai, India

Bachelor of Engineering, Computer Science | June 2025 | CGPA: 8.2/10.0

- Relevant Coursework: Machine Learning, Deep Learning, Data Structures & Algorithms, Probability & Statistics

Qiskit Global Summer School | July 2022

- Completed an intensive, two-week program focused on Quantum Simulation and algorithms, earning a final grade of Quantum Excellence for outstanding project work and comprehension.

Achievements & Certifications

- Machine Learning Specialization & Deep Learning Specialization (DeepLearning.AI, 2023)
- TensorFlow Developer Professional Certificate (DeepLearning.AI, 2023)
- Generative Adversarial Networks (GANs) Specialization (DeepLearning.AI, 2024)
- GOLD LEVEL (Top 1 %), STAGE 1 Qualifier, WorldQuant BRAIN Global Alphathon 2022: Achieved a top-tier ranking among thousands of global participants by designing and submitting high-performing quantitative trading models.
- Kaggle 2x Expert