Aryan Patodiya

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EDUCATION

California State University Fresno, CA
Master of Science in Computer Science *Jan 2024 - Jan 2026*
Coursework: Data Structures and Algorithms, Advanced Software Engineering, Artificial Intelligence, Computer Architecture, Reinforcement Learning, Combinatorial Algorithms, Deep Learning, Applied Biometrics Security

Charotar University of Science and Technology Anand,India
Bachelor of Technology in Computer Engineering *Jul 2019 - Apr 2023*
GPA: 3.82/4.0
Coursework: Data Structures and Algorithms, Artificial Intelligence, Information Security, Cloud Computing, Big Data Analytics, Service Oriented Computing, Cryptography and Network Security, Design of Language Processor, Theory of Computation

TECHNICAL SKILLS

- **Programming:** Python, Java, C++, SQL, JavaScript, TypeScript
- **Machine Learning & Deep Learning:** PyTorch, TensorFlow, OpenCV, Transformers, GPT, CNNs, RNNs, LLMs, RL, CUDA
- **Model Serving & Optimization:** Triton Inference Server, vLLM, ONNX, TensorRT, TorchScript
- **Cloud & MLOps:** AWS (EC2, Lambda, S3, DynamoDB), Azure, Docker, Kubernetes, Terraform, CI/CD (GitHub Actions, Jenkins), MLflow
- **Data Engineering & Big Data:** Apache Kafka, Hadoop, MongoDB, Redis, MySQL, PostgreSQL
- **Software Development:** OOP, Design Patterns, REST & GraphQL APIs, Multi-threading, Agile methodologies
- **Testing & Tools:** Unit Testing (JUnit, Google Test), Git, JIRA, Automation Testing

WORK EXPERIENCE

SAC-Indian Space Research Organization Ahmedabad, India
Machine Learning Intern – Hydrological Modeling & Forecasting *Dec 2022 - Apr 2023*
- Built a forecasting pipeline using **HMMs, Markov Chains**, and LDA to model rainfall patterns; improved prediction accuracy by **~20%**.
- Processed and cleaned **hundreds of GBs** of satellite data using **Pandas** and **AWS S3**, reducing prep time by **~30%**.
- Integrated results into flood risk tools, helping improve **early warning reliability** across pilot regions.

Raven Technolabs *Rajkot, India*
Machine Learning Engineering Intern – Cloud Infrastructure & Model Deployment *May 2022 - July 2022*
- Developed backend microservices in **Spring Boot** and **Node.js** for real-time ML model deployment.
- Created REST/GraphQL APIs to support model inference; improved latency by **~25%**.
- Automated CI/CD pipelines using **GitHub Actions** and **AWS CodeDeploy**, reducing manual deployments by **50%**..

Nanotech Technologies *Ahmedabad,India*
Cofounder & Lead Software Engineer – Scalable Systems & Data Engineering *Mar 2019 - Nov 2021*
- Led a **14-member** team to build scalable edge-to-cloud data pipelines for industrial automation.
- Optimized backend systems via low-level code refactoring and DB tuning, improving performance by **~20%**.
- Built infrastructure for **real-time monitoring** and enabled future ML use cases like predictive maintenance.

California State University *Fresno, California*
Research Assistant - Brain Computer Interfaces *May 2025 - Aug 2025*
- Engineered EEG preprocessing pipeline in **MATLAB** with **bandpass filtering**, **ICA-based artifact rejection, and epoch segmentation**, processing **64k+ multi-channel trials** for ERP classification.
- Developed and optimized **2D/3D CNN architectures** with **temporal–spatial convolutions, GELU activations, SE blocks, focal loss, and global average pooling**, achieving **AUC 0.9997 / 98.7%** balanced accuracy.
- Implemented **temporal shift augmentation (±2 samples) with confidence-based test-time voting** and **5-fold stratified cross-validation**, improving robustness by **25%+** and leading to acceptance at a **well-reputed international conference**.

PROJECT EXPERIENCE

MarketPulse: Real-Time Stock Trend Predictor Github
- Built and trained **LSTM/GRU models** on OHLCV data; achieved **~80% directional accuracy** across selected stocks.
- Developed a **Streamlit-based dashboard** for real-time trend prediction; reduced update latency by **~25%**.
- Compared **MAE** and **RMSE** with baselines, demonstrating consistent gains through model tuning.

DocuQuery: Fullstack Semantic Search Engine
- Developed a **context-aware document query system** using **LLaMA 2, LangChain, and FAISS**.
- Integrated **OpenAI embeddings** to improve retrieval; increased relevance of top results by **~30%**.
- Reduced average query latency through prompt and vector optimization.

TimeNet: Sequence Forecasting with RNNs
- Designed RNN models for **rainfall and energy consumption forecasting** using historical data.
- Streamlined data pipelines with **TensorFlow**, reducing training time by **~20%.**
- Validated performance against ARIMA models, achieving **~15–20% higher precision**.

Optimizing Retrieval-Augmented Generation (RAG) with Reinforcement Learning *(Ongoing Research)*
- Building a custom **PPO-based framework** to enhance document retrieval in RAG systems.
- Evaluating retrieval relevance using **BLEU** and **Exact Match** on **SQuAD/NQ datasets**.
- Early tests show potential to reduce hallucination rates by **~20–25%**.