APURVA PATEL

1062 62nd St, New York, NY 11219

347-863-6221 | amp2365@columbia.edu | www.patelapurva.com | linkedin.com/in/patelapurva | github.com/Apurva3509

Education

Columbia University **Sept 2023 – Dec 2024**
Master of Science in Electrical Engineering (GPA: 3.97/4.00) *New York, NY*
- Coursework: Applied ML(A+), Deep Learning(A+), Big Data Analytics(A), Statistics(A+), Generative AI(A), NLP(A)
- Graduate Research Assistant: Research on use of VAEs to control autonomous vehicles, also achieved a 32% reduction in data volume through data distillation.
- Graduate Teaching Assistant: Conducted classes and tutorials for 100+ students for Big Data Analytics & Data Visualization

Vellore Institute of Technology **Jul 2019 – May 2023**
Bachelor of Technology in Electronics and Instrumentation Engineering (GPA: 3.97/4.00) *Vellore, India*
- Dean's list merit scholarship holder for 4 consecutive years, ranked 4/155 students.

Professional Experience

Nokia (Nokia Bell Labs) **Jun 2024 – Aug 2024**
Artificial Intelligence/Machine Learning Intern *New Providence, NJ*
- Designed and developed an **Autoencoder** for 6G Channel data compression, and integrated **MLOps** practices & enhancing model performance with a **20% improvement** in regeneration over ViTs.
- Led the end-to-end model lifecycle using **SDLC** and **JIRA**, reduced model deployment time by 85% on edge devices.
- Contributed to NokiaGPT, leveraging **LLM fine-tuning** to develop a **text summarization model** for 3GPP standards documents **reducing 25+ person hours** for the task.

Indian Space Research Organization (SAC) **Dec 2022 – May 2023**
AI Researcher *Ahmedabad, India*
- Developed a **FPGA** based high-throughput image data acquisition system, enabling faster and accurate space packet **data verification** at a capacity of 1.7 GB/s via **custom python scripts** in LabVIEW.
- Engineered a **CNN** based image processing architecture, achieving 95.73% accuracy while **reducing computation by 45%**, optimizing data processing workflows in mission-critical applications.

Indian Oil Corporation Ltd. **May 2022 – Jul 2022**
Network Intern *Vadodara, India*
- Analyzed network security of MPLS & SD-WAN and **performed A/B testing** and **reduced data losses by 10% and processing time by 25%**.

Projects

Suspect Recommendation System | *Python, Scikit-Learn, MLOps, R* **May 2024**
- Implemented **Random Forest** and **XGBoost** models, improving predictive accuracy by 20%, and delivering actionable insights for NYPD.
- Enhanced crime data analysis performance using **hyperparamter tuning**, resulting in a 15% boost in model performance over vanilla models.

LLM Finetuning for Medical Chatbot | *Llama-3, Hugging face, LangChain* **September 2024**
- **Finetuned Llama-3, Llama-2, Gemma 1.1, Mistral-7B, DistilGPT2** on PubMedQA for Medical chatbot application deployed using **LangChain** and Streamlit.
- Achieved a **precision value of 88.3%** and a **BERT score** of **0.87** using 4.1GB memory, suitable for **low cost compute**.

SqueezeNet - CNN Design Strategies for Efficient Low-cost Computing | *Python, Scikit-Learn, GCP* **May 2024**
- **Optimized SqueezeNet** for mobile and edge devices, achieving 62x computational efficiency, offering a scalable solution for deep learning in low-power environments.
- Used **GCP** and **VertexAI** to deploy and make predictions and **achieved 76% test accuracy with ≤ 450K paramters.**

Time-Series Forecasting of Climate Change Data | *Python, TensorFlow, Apache Airflow, Spark* **December 2023**
- Developed predictive models using **MLP** and **LSTM** using **Apache Airflow**, achieving a MAE of 4.3%, enhancing and decision-making by 25%.
- Utilized **Hadoop, BigQuery** and **PySpark** for large-scale data processing, attaining an 88% success rate, demonstrating expertise in **distributed computing** for **big data**.

Technical Skills

Programming: Python, R, SQL, MATLAB, LabVIEW
Technologies: Machine Learning (TensorFlow, PyTorch, Scikit-Learn, NumPy, MLFlow, Flyte), A/B testing, Data Visualization (matplotlib, seaborn, plotly, ggplot, Tableau, PowerBI), Big Data (Hadoop, PySpark, BigQuery), Apache Airflow, Apache Spark, MLOps, NLP, LLM(Hugging Face, LangChain, Transformers)
Tools and DevOps: Jupyter Notebook, Google Cloud Platform(GCP), Databricks, Git/Gitlab, CI/CD, Kubernetes, Docker, ETL, MS Office

Publications

1. **Apurva Patel**, Anuj Patel, Dhruva Uplap. "Intelligent Road Illumination Network using IoT" (2022). International Journal for Research in Applied Science & Engineering Technology (IJRASET) (ISSN: 2321-9653). [link](#)
2. **Patel, A.** (2022) "Photo-Voltaic Solar Panel Monitoring with Safety Control using NodeRED and Arduino," International Journal for Research in Applied Science and Engineering Technology. International Journal for Research in Applied Science and Engineering Technology (IJRASET) (ISSN: 2321-9653). [link](#)

Leadership & Extracurriculars

1. **Professional Development & Leadership (PDL) Fellow**: Selected as 1 of 25 out of 3,000+ students at Columbia Engineering for outstanding leadership.
2. **Department Representative(EGSC)**: Led initiatives for 300+ students to solve academic and professional challenges.
3. **Volunteer(Blind People's Association)**: Led a team of 174 volunteers to teach math and economics in 45 tribal villages for 3000 students combined