# Pavan Chauhan

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## Summary

Early-career Machine Learning Engineer with 2 years building CV & NLP models that raised F1-scores 15% and cut

training latency 20%. Proficient in Python, TensorFlow, PyTorch, AWS, Docker/K8s and CI/CD; passionate about translating research into scalable, data-driven products.

## Education

**California State University**, Los Angeles, CA August 2027

Master of Science in Computer Science

**Charotar University of Science & Technology**, Gujarat, IN May 2025

Bachelor of Technology in Computer Engineering

## Skills

**Languages:** C/C++, Python, Java, JavaScript, SQL

**ML / DL:** TensorFlow, PyTorch / Lightning, MediaPipe, Scikit-learn, Hugging Face, Keras

**Data / Visualisation:** Pandas, Spark/PySpark, Parquet, SQL window funcs., Matplotlib, Seaborn, Plotly, Tableau

**Cloud / DevOps & Quality:** AWS (EC2, S3), Docker, FastAPI, Git Actions, CI/CD, Unit-testing (PyTest 85 % cov.)

## Experience

**Charotar University of Science & Technology**, Gujarat, IN

**Research Intern** July 2023 - June 2024

* Engineered a Transformer recogniser for **Google / Kaggle “Isolated SLR”** (100 k videos, 250 signs); attained **81%** top-1 (+10 pp) and **30 FPS** TFLite on-device after tf.data tweaks cut training **6 h** → **4.8 h (-20 %)**.
* Streamlined ETL (**25 min** → **19 min, -24 %**) on 3 M sensor rows; deployed & **load-tested** FastAPI micro-service to **1 k** **req/s @ 110 ms P95**, backed by 40 + PyTests (85 % cov.); co-authored paper accepted at ADCIS 2024 and presented to 220 + researchers.

**Research & Development Intern – Senior Capstone Project** July 2023 - June 2024

* Built a landmark-aware Transformer ASL recogniser hitting **98.3 %** top-1 on a 250-class / 250 k-video corpus; real-time latency **156 ms** **desktop | 476 ms mobile** (4.8 M params).
* Quantised & TFLite-deployed—benchmarked **78 FPS Apple M1** and **112 FPS NVIDIA Orin Nano Dev Kit**.

**Technologies**: Python · TensorFlow/Lite · MediaPipe · CUDA · React/Next · Flask

## Projects

**Spatio-Temporal Representation Learning for Isolated Sign Language Recognition** September 2024

* Architected spatio-temporal Transformer for real-time ASL recognition on Jetson Nano (60 FPS); accuracy **+18%** vs. CNN baseline.
* **Technologies**: Python · TensorFlow · MediaPipe · Parquet.

**Bioacoustic Bird Monitoring for Biodiversity Conservation Recognition** July 2024

* Trained CNN-RNN ensemble on 68h spectrograms; PR-AUC **0.92**, noise-robustness **+30%** via SpecAugment.
* **Technologies**: Python · TensorFlow · Pandas.

**Liquid Neural Network + Nyströmformer for Harmful Brain-Activity EEG**January 2025 - Present

* Used a hybrid **Liquid Neural Network + Nyströmformer** on **80 k** × **50 s, 19-ch** EEG; an MNE→bipolar→sliding-window pipeline with mixed-precision PyTorch & Optuna (5.8 M params < 6 GB) hit **CV AUC 0.25+** and **LB 0.29 (top 5 %)** while cutting inference cost 40 %.
* **Technologies**: Python · PyTorch (MP) · Optuna · MNE · NumPy · CUDA · Pandas

## Leadership and Publications

**Charotar University of Science & Technology**, Gujarat, IN February 2022 – May 2025

* Published **two peer-reviewed papers** (ADCIS 2024, [ICDSNS 2024](https://ieeexplore.ieee.org/document/10691115)); presented research to **500 + attendees** and pitched a Holistic SLR initiative to university officials.
* **Led teams to three hackathon victories**—prototypes adopted by **two NGOs** and user-experience crash rates in partner apps cut by **12 %**.