Mohammad Ayaan Khan

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Education

University of Southern California August 2025 – Present
Master of Science, Computer Science *Los Angeles, California*

Manipal University Jaipur July 2020 – October 2024
B.Tech Electronics and Communication Engineering , CGPA:3.54/4.0 *Jaipur, Rajasthan*

- Honoured Dean's List recognition twice.
- Coursework : Computer Organization and Architecture, Machine Learning, Problem solving using C/C++, Internet of Thing, Data Structures and Algorithms, Embedded Systems and RTOS, Microprocessors and Microcontrollers, Digital Signal Processing

Professional Experience

Central Research Laboratory (Bharat Electronics Limited) March 2024 – July 2024
Research Trainee, Department of Artificial Intelligence *Ghaziabad, Uttar Pradesh, India*

- Developed a **90%** accurate AI model to classify vessel-type by trajectory, supporting maritime domain awareness.
- Established an **ML analytic** framework to profile movement patterns and preprocess noisy sensor data, enhancing model stability by **15%**.
- Built a scalable MongoDB infrastructure for massive spatiotemporal data, achieving **20%** faster queries for rapid model retraining.
- Automated data ingestion pipelines, accelerating RD and cutting manual data handling by **40%**.

Indian Institute of Information Technology June 2023 – January 2024
Research Intern, Department of Computer Science *Remote*

- Improved sentiment analysis research with a new neural network, achieving **87% accuracy** (an **18%** gain) on large-scale opinion data.
- Expanded lab capabilities with an **81%** accurate OCR model, unlocking a **40%** larger dataset from previously unusable scanned/handwritten archives.
- Accelerated the team's publication timeline by implementing a hybrid evaluation workflow, cutting **30+ hours** of manual annotation monthly.
- Increased experimental velocity by engineering robust data pipelines (preprocessing, logging), improving model stability by **25%** and reducing data-prep time by **50%**.

SmartInternz May 2023 – July 2023
Salesforce Developer *Jaipur, Rajasthan*

- Assisted in developing custom Salesforce features using **Apex**, **Visualforce**, and Lightning components to improve internal workflows.
- Supported optimization of SOQL queries and built workflow validations, contributing to faster data retrieval and better data accuracy.
- Helped debug common Salesforce automation issues, improving system reliability for daily operations.
- Documented code changes, bug fixes, and component behavior to support team knowledge sharing and future onboarding.

Academic Projects

Skin Disease Classification

- Engineered a lesion-analysis pipeline using **K-means segmentation**, improving ROI clarity by **35%** for feature extraction.
- Achieved **91%** classification accuracy with a novel Fuzzy-CNN meta-learner after boosting feature accuracy **28%** via ResNet + Inception.
- Validated model on real-world images (varied lighting/skin tones), proving **consistent performance (±4% variance)** and suitability for screening tools.

Tire Wear Prediction using Telemetry Data

- Developed a tire-degradation pipeline with **32%** signal improvement via feature engineering on F1/Formula Student telemetry.
- Reduced error rates by **27%** (vs. baseline) and achieved **88%** prediction accuracy using a hybrid XGBoost-LSTM.
- Generated real-time tire-wear alerts up to **12 laps** in advance, supporting safer ADAS/performance-driving decisions.

Driver Behavior Analysis

- Collected and processed a novel dataset from real-world gyroscope/accelerometer samples from on-road smartphone sensors.
- Achieved **92% accuracy** in detecting risky driving patterns (harsh braking, aggressive turning) using custom-built ML models.
- Reduced false detections by **18%** by refining temporal/statistical feature thresholds, proving **consistent performance (±5% variation)** across diverse drivers.

Skills

- **Programming Languages:** Python, C++, Java, C, Javascript, HTML/CSS
- **Database Tools:** MongoDB, SQL, Power BI
- **Cloud Computing platforms:** AWS, Google cloud
- **Machine Learning & AI:** Supervised Learning, Unsupervised Learning, Deep Learning, Neural Networks
- **Tools & Libraries:** TensorFlow, Keras, Scikit-learn, Pandas, NumPy, Pytorch, Docker, Git, Github, Flask