Devansh Mishra

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES — Los Angeles, CA
Bachelor of Science, Mathematics & Computer Science – GPA: 3.75/4.00 — Sept 2023 – Expected June 2027
Coursework: Probability & Statistics, Machine Learning, Computer Vision, Linear Algebra (Honors), Data Structures & Algorithms
Research Interests: Large Language Models, Model Evaluation & Benchmarking, Representation Learning, Time-Series Modelling

PROJECTS

Time Series Forecasting and Signal Evaluation (QuantChallenge 2025) — Sept 2025 – Oct 2025

- Designed dual-target forecasting pipelines over 16k-tick sequences using XGBoost + LSTM ensembles and transformer encoder models for distinct prediction objectives and horizon lengths
- Engineered momentum- and volatility-derived indicators, constructed rolling-window splits with fixed lookback and stride, and evaluated models under constant hyperparameter settings to isolate architectural effects
- Benchmarked against AR/MA crossover baselines using out-of-sample R^2, MAE, and correlation, achieving ~16% improvement in R^2 and strongest gains from momentum-family signals

sEMG Keystroke Classification – Data Augmentation Study — Oct 2025 – Nov 2025

- Evaluated advanced augmentation techniques (magnitude warping, wavelet decomposition, Gaussian noise) on emg2qwerty sEMG data (30 sessions, 32 channels, 2kHz) containing sensor noise and inter-session variability
- Trained LSTM, CNN-RNN, and GPT-style sequence models and measured character error rate (CER), holding architecture and training protocol constant across augmentation conditions
- Demonstrated additional real data outperformed heavy augmentation (≈22–24% CER vs ≈96–100%), with errors dominated by neighboring-key confusions and limited-subject generalization

NBA Defensive Impact Modelling — Jan 2025 – June 2025

- Modeled defender impact as expected points allowed per possession using PCA → Lasso feature weighting followed by XGBoost to compress stats before sparse weighting of match-up level interactions
- Engineered contextual features for role, matchup difficulty, and interaction effects and compared PCA + Lasso weighting against raw-feature baselines for stability
- Validated learned defender rankings against a curated Top 50 expert DPOY list, finding ranking sensitivity to regularization strength but stable top-tier defenders

PROFESSIONAL/RESEARCH EXPERIENCE

UCLA Scalable Analytics Institute (ScAI Lab) — Los Angeles, CA
Software Research Engineer — June 2025 – Present

- Designed paired-prompt experiments comparing thinking vs non-thinking inference across GSM8K, MMLU, and BIG-Bench Hard over 1000+ model runs with controlled temperature, seed, and prompt structure to isolate reasoning-induced verbosity
- Built verification gates enforcing correctness, concision, and response stability, filtering ~75% of evaluated samples before selection of ~500 seed question.
- Formulated and iterated on the Relative Token Efficiency (RTE) metric via cross-model analysis (GPT-4o-mini vs Gemini-2.5-Flash), discovering bias toward verbose baselines and proposing per-model median-length normalization

TATA Electronics — Hosur, India
Machine Learning Engineering Intern — Aug 2024 – Sept 2024

- Designed a 5-class defect classification evaluation system via transfer learning on ResNet50V2 with custom convolutional heads over ~600 labeled images with moderate class imbalance and visually similar surface-defect categories
- Performed controlled 60/20/20 evaluation with structured augmentation (rotation, flip, intensity scaling) and backbone fine-tuning ablations, achieving 94% test accuracy and AUC 0.91
- Benchmarked against baseline CNN and VGG architectures and analyzed confusion matrices revealing dominant scratch–contamination confusions, guiding targeted augmentation and threshold tuning

TECHNICAL SKILLS

Languages: Python, C++, SQL, R
ML & Modelling: Transformers, Neural Networks, XGBoost, Time-Series Forecasting, Feature Engineering
Data & Statistics: Experimental Design, Ablation Studies, Model Evaluation, Statistical Analysis, Pandas, NumPy
Systems & Scale: Data Pipelines, BigQuery, Anomaly Detection
Frameworks & Tools: Pytorch, TensorFlow, Docker, GCP, Experimentation Frameworks