Farid Khan

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Education

University of Birmingham — Birmingham, UK

B.Sc. Artificial Intelligence & Computer Science with a Year in Industry (Honours) — *Sep 2020 – Jun 2026*

- Project: *"Temporal Emotion Detection in Text Messaging via Dual RoBERTa Models"* – graded **First-Class level**, submitted to AIES 2025.

Industry Experience

Innovation Engineer/ Data Scientist — September 2022 – August 2023

ALTEN LTD — *Derby, UK*

- Built a satellite imagery detection pipeline using CNNs, image-translation GANs, and radar fusion, achieving 95% accuracy in identifying palm oil plantations to support sustainable land-use monitoring.
- Developed a privacy-first grammar correction tool with PyTorch and Transformers, improving performance by 5% over Grammarly on domain-specific text while ensuring on-device data protection.
- Applied YOLOv8 and transfer learning to create a real-time (20ms inference) object detection system for Android/iOS apps, capable of identifying essential items in car boots with 98% accuracy under varied conditions.

Research Experience

ML/AI Researcher — June 2025 – August 2025

Center for Brain-Like Computing and Machine Intelligence, Shanghai Jiao Tong University — *Shanghai, China*

- Conducted EEG and eye-tracking experiments on 11 participants for cross-cultural emotion recognition.
- Designed multimodal machine learning pipelines: early fusion (SVM), late fusion (Max/Sum/Choquet integrals), & deep representation learning (Bimodal Deep Autoencoder, Deep Canonical Correlation Analysis).
- Achieved 20% F1 improvement over baselines using DCCA embeddings, showing advantages of correlated multimodal feature learning.
- Performed ablation studies on temporal context & multimodal fusion strategies; identified key limitations (artifact noise, calibration variance, cross-subject generalisation).
- Authored a 20-page research report under Prof. Bao-Liang Lu.

Final Year Project (EmoSMS) — September 2024 – May 2025

University of Birmingham — *Birmingham, UK*

- Developed a context-aware dual-stage RoBERTa pipeline for temporal emotion detection in text messaging.
- Achieved 91% binary classification F1 and 88% multi-class F1 on DailyDialog, IEMOCAP, & MELD datasets.
- Integrated system into the Signal messaging app, recoloring message bubbles by detected emotion.
- Conducted a user study: 80% of participants reported improved emotional clarity, though perceived accuracy (3.3/5) revealed trust gaps between model performance & user perception.

Publications & Outputs

- *Temporal Emotion Detection in Text Messaging via Dual RoBERTa Models.* Submitted to AAAI/ACM Conference on AI, Ethics, & Society (AIES 2025); under revision. (2025)
- *Cross-Culture Emotion Recognition from EEG and Eye Tracking.* Research Report, Center for Brain-Like Computing & Machine Intelligence, Shanghai Jiao Tong University. Planned workshop submission in progress. (2025)
- *Transformers for Grammar Correction: Why Context Matters.* Medium. (2023)
- *From Satellite Imagery to Palm Oil Detection: AI for Sustainability.* Medium. (2023)

Technical Skills

- **Languages:** Python, Java, C/C++, SQL (Postgres, SQLite, MySQL), R, JavaScript, Haskell
- **Frameworks & Tools:** React, Node.js, Flask, Django, Docker, Git, Azure, Google Cloud Platform, VPS, ONNX, TFLite, VS code, Visual Studio, IntelliJ, PyCharm
- **Machine Learning/Deep Learning:** PyTorch, TensorFlow, HuggingFace Transformers, Scikit-Learn, NLP (Transformers), Computer Vision (YOLOv8, CNNs, GANs, OpenCV, VGG16)
- **Systems & Concepts:** Data Structures & Algorithms, Object-Oriented Programming, Operating Systems, Databases, Networking, Parallelisation, Multithreading, CI/CD, Socket Programming, Functional Programming