

Shayan Shafquat

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AI specialist with two years of expertise in fine-grained pattern recognition, proficient in scaling LLM security solutions and deploying ML models in transportation and e-commerce industries. Backed by a solid foundation in Applied Mathematics and Decision Neuroscience, I am currently developing and contributing to LLM-based applications.

Education

MSc. Computational Neuroscience, Cognition and AI
UNIVERSITY OF NOTTINGHAM

Sep 2024 | Nottingham, UK
TENTATIVE GRADE: DISTINCTION

Integrated MSc. Mathematics and Computing
INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR

Jun 2020 | Kharagpur, IN
CGPA: 7.2 / 10.0

Work Experience

Enkrypt AI, Inc | AI RESEARCH CONSULTANT

Boston, US (Remote) | Jun 2023 – Sep 2023

- Developed a **malicious file scanner** for python scripts and jupyter notebooks, focusing on securing the ML lifecycle
- Surveyed LLM security, emphasizing **prompt injection**, **backdoor attacks** and strategies for adversarial robustness
- Explored and worked with tools like **RAGAS**, **NeMo GuardRails** and **rebuff** to build package enhancing LLM security

ANI Technologies Private Limited (OLA) | DATA SCIENTIST

Bangalore, IN | Sep 2020 – Jan 2022

- **Pay after ride user identification:** Impact: Increased cashless ride by **5%** with no change in default rate (**2.5%**)
 - Enhanced the **feature store** API to analyze the behaviour of **15M+** users to establish trusted user base of 0.5M
 - Trained an **ensemble model** (balanced bagging classifier) on trusted users, achieving an **AUC score** of 0.91
 - Predicted default probabilities on **non-trusted** base, whitelisting **8.7M** users while maintaining the default rate
- **Improvements in peak pricing module:** Impact: Reduced conversion prediction error by **2.2%**
 - Developed a recency-weighted heuristic **fallback** model for peak pricing during outages, minimizing **loss**
 - Built and **deployed** a bike peak pricing module for bikes using spatiotemporal cab data and **regression** model
 - Maintained modules for **hotspot pricing** and in-trip cab inclusion in **supply signal**, with automated reporting
- **User level pricing:** Impact: **+1.5%** GMV/bookings and improved net completion during COVID-19
 - Automated user-specific coefficients from conversion rates via **cron jobs**, enhancing **demand signal** accuracy
 - Validated the hypothesis that abrupt fare changes cause regular **user churn** through a **control-test** study
- **Collaborative key involvements:**
 - **Traffic Lights Optimization:** Trained a Deep Q-learning RL agent in the SUMO environment using a reward function focusing on minimizing wait times and congestion, achieving an 18.3% reduction in wait times
 - **System:** Enhanced the in-house **utility package** for data preprocessing, streamlining retrieval from **AWS S3**
 - **Ola Foods (Grocery):** Developed a baseline model using item-based kNN, predicting next basket items
 - **Tech Interviews:** Conducted coding, probability, and ML-based initial round of the hiring process in the team

ANI Technologies Private Limited (OLA) | RESEARCH ENGINEER- INTERN Bangalore, IN | May 2019 - Jul 2019

- **Feature-engineered** partner's ride data, using **decision trees** to predict login hours and form homogenous cohorts
- **Optimized** incentives for each cohort independently, minimizing **burn** while considering constraints on login hour
- Conducted **A/B testing** in Pune and Kochi to validate and ensure the effectiveness of the incentive optimization

Technical Skills

Experience with: Python, Azure, AWS, Docker, Apache Spark, Streamlit, Git, Bash, SQL, HuggingFace, Unity, C++, Linux, R, NEURON

Python Packages: Tensorflow, LangChain, LlamaIndex, CrewAI, Numpy, Pandas, Scipy, Sklearn, Scikit-learn, Seaborn, PyTorch, NLTK

Modelling: DQN, Dyna-Q, RAG, Transformers, RNN/LSTM/GRU, VAE, GANs, CNN, Gradient Boosting, Linear/Logistic Regression, SVM

Projects

Stochastic models of exploration in patch foraging tasks

PRESENT

Master's Dissertation | Guide: Prof. Mark Humphries | University of Nottingham

- Simulated foraging behaviours with resource depletion models and compared leave time predictions to **MVT**
- Evaluating **stochastic action selection** algorithms like epsilon-greedy, mellowmax using human patch-foraging data

Machine Learning in Science | COURSEWORK

University of Nottingham | Oct 2023 - May 2024

- **Developing 2D drone navigation with reinforcement learning**
 - Tuned heuristic approaches and created a **discretized action space** for rapid movement and stable landing
 - Trained and evaluated **DQN, Q-learning** models on average steps taken, fuel consumption and average thrust
- **Optimizing CNNs for real-time autonomous driving on AutoPicar**
 - Developed **CNN** models using **transfer learning** for speed and angle prediction, addressing class imbalance
 - Enhanced model performance through data augmentation, **architectural modifications** and data collection
 - Deployed the **tensorflow lite** models on toy car with **TPU** and camera, testing on three tracks and 12 scenarios

Conversion of large-scale cortical models - INCF

GOOGLE SUMMER OF CODE 2022

Mentor: Prof. Pdraig Gleeson, Ankur Sinha | UCL London

- Converted the channels, morphological and biophysical properties in L5 pyramidal cell from **NEURON** to **NeuroML**
- Used **github actions** ensuring the integrity of the multi-compartmental cell model's behaviour during development

iFair - AI and Ethics

FEBRUARY 2020

- Developed a **fairness-aware data representation** preserving individual similarity, focusing on gender and age
- Minimized the combined **utility** and **fairness loss**, applying the approach to Census and German credit datasets, resulting in a 3% and 9% increase in fairness with a corresponding 7% and 1% decrease in accuracy, respectively

NLP-Focused Research Projects | SELF-MOTIVATED

IIT Kharagpur | Dec 2018 - May 2019

- **Rumour detection in tweets:** Guide: Prof. Pawan Goyal | Department of Computer Science
 - Transformed tweets and comments using **one-hot encoding** on each character to feed as input for the **CNN**
 - Trained a CNN with label as named entities using **entity tagger tool**, finally obtaining the pre-final learned layer
 - Classified tweets by sequentially parsing the pre-final layer of the tweet and comments onto the **GRU** model
- **Hyperpartisan News Detection** | Competition: SemEval 2019
 - Implemented **Hierarchical Convolutional Attention Networks** for classifying articles on 5 classes of biasness
 - Implemented **Empath** model which analyzes articles on **lexical categories** using them for feature engineering

Relevant Coursework

- **Offline:**
 - Regression and Time series model
 - Data Structure and Algorithm
 - Neural Computation
- **Online:**
 - Linear Algebra by Prof. Gilbert Strang
 - Practical Biomedical Modelling
 - Object Oriented Systems Design
 - Stochastic Process
 - Statistics for Applications by Prof. Philippe Rigollet

Achievements

- Eligible to receive the **INSPIRE** scholarship by the Ministry of Science and Technology for the undergraduate study
- Gold winning LSTM model comparing India's top mutual fund houses in the Inter Hall **Data Analytics** 2018
- Achieved **99.5** percentile score among 0.2M students who appeared in the **JEE Advance** examination
- Part of the Gold winning **Football** team in the Inter Hall Sports Championship for the year 2017 and 2019