Ira Shokar

ira.shokar.uk ira.shokar@pem.cam.ac.uk github.ira.shokar.uk Text in blue are links

Postgraduate Research Student at the University of Cambridge's Centre for Doctoral Training in the Application of Artificial Intelligence for Environmental Risk, having previously completed a BSc in Theoretical Physics.

Technical Skills: *Languages*: `Python` (experianced), Julia (beginner), `C++` (beginner) & MATLAB(intermediate).
Machine Learning: `Tensorflow & Keras [Python]`, `PyTorch`, `Scikit-Learn`.
Unix-like OS: `Linux` user on both my PC [`Debian`] and iPad [`Alphine Linux`]. `Git`, LaTeX and basic `HTML` & `CSS`.

Education

Pembroke College, University of Cambridge — **Cambridge, UK**
PhD. Application of Artificial Intelligence — *Oct 2020 – Present*

- Awarded UKRI EPSRC funding to study at the CDT in the Application of Artificial Intelligence for Environmental Risks.
- Research Topic- 'Deep learning to predict dynamics on an inertial manifold of mid-latitude jet systems'.
  - Co-Supervised by Professors Peter Haynes & Rich Kerswell at DAMTP.

University College, University of London — **Bloomsbury, London**
BSc. Theoretical Physics** with **1st Class Honours (*ref: Prof David Bowler*) — *Sept 2017 – July 2020*

Tiffin School — **Kingston-Upon-Thames, Surrey**

- **4 A-Levels** : **A*** in Mathematics and Further Mathematics; **A** in Economics and Physics.
- **2 AS-Levels**: **A** in History and Physical Education and **10 GCSEs**: 6**A*** & 4**A** grades.

Projects

Group Project: Assessing Temporal Change In The Exposure Of Informal Settlements Through Repeat Satellite Observation.
Project to investigate the change in exposure to natural hazards for those living in unregistered informal settlements using satellite imagery where no ground truth data is available [`Python:Pytorch`](*ref: Dr Anita Faul*).

Group Project: Quantifying the effectiveness of natural hazard preventions by using an LSTM to predict rainfall runoff in flood risk mitigation.
Project to investigate the effectiveness of natural flood management interventions undertaken in the town of Shipston-on-Stour during 2017 to 2020 using an LSTM model [`Python:Pytorch`](*ref: Dr Oscar Branson*).

Thesis: Deep Learning Classifier Robustness for Neutrino Event Detection using Domain Adversarial Neural Networks.
Applied a Domain-Adversarial Neural Network to improve the robustness of a CNN to classify neutrino interactions, for the analysis of neutrino oscillations [`Python:Keras, Tensorflow; C++:Root, NOvAsoft; Scientific Linux`] (*ref: Dr Chris Backhouse*).

Group Project: HPGe Detector Gamma Ray Spectroscopy simulation of nuclear emission and detector interactions [`C++:GEANT4; Cent OS`](*ref: Prof Ruben Saakyan*).

Developer Circles from Facebook Hackaton - UCL Tech Soc Team.
We created a chatbot that returned the translated text from an image containing text in a different language using `Node.js` for the messenger front end, with `Flask` connecting to the `Pytorch` models, which comprised of a CNN to determine the locations of the words, an OCR CNN to recognise the text and a translation neural network (*ref: president@ucltechsoc.com*).

UCL Data Science Society Hackathon hosted by Microsoft and American Express- Winning Team.
Given credit card customer datasets we proposed a solution which concluded that that product personalisation for customer subsets could increase credit card growth while assessing potential credit default and delinquency risk, using k-means clustering and random forest models with `Scikit-Learn` and the `Azure API` (*ref: su-datascience@ucl.ac.uk*).

Cellular Automata Model to Simulate Motorway Traffic Flow (*ref: Prof David Bowler*).
Simulated motorway traffic flows to compare the similarities with granular flow when traffic shockwaves arise [`Python`].

Work Experience

FTI Consulting — **Aldersgate St, City of London**
Data Science & Analytics Summer Intern (*ref: kyle.johnson@fticonsulting.com*) — *July 2019 – August 2019*

- My main task involved creating a relationship and transaction graph network using `Python` and `Neo4j` and querying large datasets using `SQL` determine key players and clusters. This was used in conjunction with bank records in implementing fuzzy token matching to search for anomalous activity, fraud and money-laundering..

Non-Technical Roles

Pembroke College Graduate Parlour — **Pembroke College, Cambridge**
Events Officer (*ref: gp@pem.cam.ac.uk*) — *October 2020 – Present*

- I was elected to organise events, large and small, that will appeal to all aspects of the college community. This includes online events as well as following COVID protocols to ensure all in-person events are run safely and within guidelines.

University of London Halls — **Lillian-Penson Hall, Tyburnia & International Hall, Bloomsbury**
Resident Advisor (*ref: Dr Derrick Chong*) — *August 2019 – August 2020*

- Responsibilities included promoting and monitoring residents' personal, mental and social welfare, other pastoral care both throughout the academic year as well as the COVID pandemic, dealing with disciplinary issues & conflict resolution as well as being in charge of organising the social life of the Hall & managing the Lillian-Penson JCR.
- Part of the **Nutford House JCR**, UoL (Sept 2017 - June 2018) and organised events using a budget of £6,000 including a boat ball.

Department of Physics and Astronomy — **University College London, Bloomsbury**
Academic Mentor (*ref: a.owusu@ucl.ac.uk*) — *Sept 2018 – Dec 2018*

- I provided support and guidance to a group of 10 first year students, by meeting weekly and preparing sessions to aid in their adaptation to university life and the physics course.