Mohamad Khalil, Ph.D.
Data Scientist with a flair for multidisciplinary problem solving
Newcastle upon Tyne, UK

Employment

Artificial Intelligence Researcher *HSBC, London - Mar 2023 – Present*

- Develop an artificial intelligence literacy skill plan and establish a data science ambassador network across global business and functions.
- Oversee the planning and development of product roadmaps for AI cards and data asset projects to ensure compliance with regulatory requirements.
- Contribute to the development of the AI Center of Excellence, delivering best practice guidelines and support for AI initiatives across HSBC, and serving stakeholders throughout the bank.
- Deliver group-wide AI ethics workbook and artifacts to support the operationalization of HSBC's ethical principles for AI and big data.
- Manage Project MindForge, focusing on the development of AI ethics framework and delivering a technical report on AI governance in financial services.

Artificial Intelligence Researcher *Alan Turing Institute, London - Sep 2022 – Mar 2023*

- Developed a data quality python script for the AI Cards product to support data remediation efforts and comply with regulatory requirements. Additionally, gathered requirements to define user stories for BI dashboards, facilitating reporting to senior management.
- Engaged with the engineering team to deploy the data quality tool into production.
- Contributed to the writing of two consultation papers: one addressing AI strategy and the other on ethics and governance of AI in financial services.

Research Assistant *Newcastle University, Newcastle upon Tyne - Mar 2022- Sep 2022*

- Project: "Net Zero Geothermal Research for District Infrastructure Engineering".
- Applied a long short-term memory model for time-series forecasting to predict the impact of climate change on building energy demand, achieving a 12% improvement in forecast accuracy compared to the benchmark.
- Project: "CRITiCaL - Combatting cRiminals In the Cloud".
- Predicting and classifying cyber-crime in the cloud using logistic regression based on user log data from servers.

Graduate Teaching Assistant *Newcastle University – Feb 2022 – Jun 2022*

- Led weekly practical sessions for postgraduate-level machine learning and deep learning modules.

Application Analyst *Fenwick, Newcastle upon Tyne - Sep 2020 - Mar 2021*

- Identified and rectified inconsistencies in basket sales, leading to a savings of £55,000.
- Automated the generation of reports to stakeholders, leading to an improvement in business processes.
- Led the analysis of business and commercial trends, providing recommendations to the management team.

Data Support Analyst *Fenwick, Newcastle upon Tyne - Dec 2018 to April 2020*

- Streamlined routine tasks through automation, reducing manual efforts by 65%.
- Leveraged Python to clean and transform raw data, enhancing overall data quality.
- Conducted data quality assessments on various Management Information (MI) reports to ensure data consistency.
- Analysed sales data and organized it into report formats to streamline business processes.

Education

Ph.D. in Machine Learning Newcastle University - April 2020 – Sep 2024

- Thesis: "Machine learning applications for energy demand forecasting".
- Developed machine learning and statistical models to forecast building energy consumption. Explored time-series forecasting, time-series analysis, machine learning, deep learning, statistical analysis.

Visiting research scholar KU Leuven - November 2023 – December 2023

- Received the global Turing fellowship for conducting research abroad at KU Leuven, Belgium.
- Contributed to the development of data-driven energy forecast benchmark toolkit, part of IEA annex 82 activities.

MSc in Big Data University of Stirling - Sep 2017 – Sep 2018

- Masters dissertation: "performed data analysis to assess the impact of smoking point-of-sale legislation among adolescent".

BSc. in Information Technology Ebla Private University - Sep 2009 – Mar 2015

- Bachelors dissertation: "utilized machine learning models for imputing missing data".

Skills

Data Science	Programming	Tools	Personal Strength
• Machine learning • Statistics • Scientific research	• Python	• Pandas • NumPy • Excel	• Project management • Flexibility • Self-motivation
• Deep learning • Forecasting	• SQL	• Scikit-Learn • Tensorflow	• Science communication • Consulting
• Feature engineering • Data analysis • Data visualisation	• Git	• Keras • Statsmodel • Darts	• Stakeholder management • Problem-solving

SELECT PUBLICATIONS

- **M. Khalil**, S. McGough, Z. Pourmirza, M. Pazhoohesh, S. Walker, "Machine Learning, Deep Learning and Statistical Analysis for forecasting building energy consumption — A systematic review", Engineering Applications of Artificial Intelligence.

- **M. Khalil**, S. McGough, Z. Pourmirza, M. Pazhoohesh and S. Walker, "Transfer Learning Approach for Occupancy Prediction in Smart Buildings," 2021 12th International Renewable Engineering Conference (IREC),

- **M. Khalil**, A. S. McGough, H. Kazmi and S. Walker, "A Global Data-driven Forecasting Approach for Buildings Energy Demand Prediction," 2023 IEEE 6th International Conference on Big Data and Artificial Intelligence (BDAI).

- A. Canaydin, C. Fu , A. Balint, **M. Khalil**, C. Miller, H. Kazmi, "Interpretable domain-informed and domain-agnostic features for supervised and unsupervised learning on building energy demand data", Applied Energy.