Matthaios Markatis

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Personal Statement

Recent BSc Physics graduate from the University of Sheffield with a strong foundation in **theoretical physics**, **advanced programming**, and **data analysis**. Demonstrated expertise in applying **computational methods** and **machine learning** techniques to complex problems in physics and beyond. Proficient in **Python**, **MATLAB**, **Excel**, and various data analysis tools. Recently completed the **IBM Data Science Professional Certificate** and the **IBM AI Engineering Professional Certificate** enhancing skills in **data science methodologies**, **machine learning**, and **big data technologies**. Seeking to leverage diverse skill set in **software development**, **data science**, or **simulation** roles to drive innovation and solve challenging real-world problems.

Education

University of Sheffield September 2020 – July 2024
BSc Physics *2:1 Classification*

Key Modules

Module	Grade
Advanced Programming in Python	82%
Programming in Python	78%
Physics with LabView	67%
Physical Computing	70%
Particle Physics	67%
Solid State Physics	66%
Classical and Quantum Physics	64%
Physics of Materials	75%
Problem-Solving in Physics	59.1%
Nuclear Physics	66%
Atomic and Laser Physics	69%

Eckington Sixth Form September 2018 – June 2020
A-Levels: Physics (A), Chemistry (B), Biology (A)

Professional Certifications

IBM AI Engineering Professional Certificate Coursera — August 2024
Verification

- Completed comprehensive 6-course program covering **Machine Learning**, **Deep Learning**, and **AI Engineering**
- Developed proficiency in **TensorFlow**, **Keras**, **PyTorch**, and **scikit-learn** for implementing ML and DL models
- Gained hands-on experience with **Computer Vision**, **Image Processing**, and **Neural Networks**
- Applied various ML algorithms including **Classification**, **Regression**, **Clustering**, and **Dimensional Reduction**
- Completed AI capstone project demonstrating end-to-end deep learning skills

IBM Data Science Professional Certificate Coursera — July 2024
Verification

- Completed comprehensive 12-course program covering **data science methodology**, tools, and techniques
- Developed proficiency in **Python**, **SQL**, **R**, **data analysis**, **machine learning**, and **data visualization**
- Gained hands-on experience with **Jupyter Notebooks**, **GitHub**, **IBM Watson Studio**, **IBM Cloud Pak**

for Data

- Applied machine learning algorithms including **regression**, **classification**, **clustering**, and **recommender systems** and explored Generative AI to enchance data science workflow.
- Completed capstone project demonstrating end-to-end data science skills

Key Skills

Programming: Advanced proficiency in **Python**. Experience with **TensorFlow**, **Keras**, and **PyTorch** for deep learning. Intermediate skills in **MATLAB**, **C++**, and **C** for hardware control. Experience with **VHDL** for hardware description, **R** for statistical computing.

Machine Learning & Deep Learning: Experienced with **scikit-learn**, **TensorFlow**, **Keras**, **PyTorch** for implementing various ML and DL models including **LSTM**, **DQN**, **Random Forest**, **Convolutional Neural Networks (CNNs)**, and various regression models. Proficient in **data preprocessing**, **feature engineering**, and **model deployment**.

Computer Vision & Image Processing: Understanding and implementation of **image processing techniques** using **OpenCV**. Experience with **image classification**, **object detection**, and **image segmentation** using deep learning models. Familiar with **transfer learning** techniques for computer vision tasks.

Data Science: Proficient in **NumPy**, **SciPy**, **Pandas** for data manipulation, **data sourcing**, **exploratory data analysis**, and **data visualization** using **Matplotlib**, **Seaborn**, **Plotly**, and **Dash**.

Databases: Proficient in **SQL** for data manipulation and querying. Experience with **MongoDB** for NoSQL databases. Familiarity with **Apache Spark** for big data processing, **Hadoop** ecosystem, and **big data** concepts through IBM certifications.

IoT & Hardware: Experience with **Arduino**, sensor integration, and **The Things Network (TTN)**. Proficient with **Labview** for hardware control and reading.

Version Control & Collaboration: Proficient with **Git** and **GitHub** for collaborative development.

Development Environments: Experienced with **Jupyter Notebooks**, **Google Colab**, **RStudio**, **VS Code**.

Key Projects

Falcon 9 Launch Outcome Modelling Project IBM Data Science Professional Certificate

- Applied **CRISP-DM methodology** to use models successfully predicting Falcon 9 launch outcomes based on initial variables.
- Implemented **data collection** via API and Scraping, **data wrangling** via Pandas and SQL, **exploratory data analysis** via Dash and Plotly, and **statistical analysis**
- Developed models using **scikit-learn**, including **support vector machines**, **decision trees**, and **k-nearest neighbors**
- Created interactive dashboards using **Plotly** and **Dash**
- Presented comprehensive report with data-driven insights using **data storytelling** techniques

Wildfire Detection System 2023 – 2024

- Developed **IoT-based** early detection system for wildfires using environmental sensors and machine learning
- Integrated temperature, humidity, and CO2 sensors with **LoRaWAN** modules for long-range data transmission
- Implemented data processing via **The Things Network (TTN)**
- Applied **Random Forest** and **Decision Tree** algorithms to analyze historical wildfire data acquired via NASA FIRMS and MODIS satellites, achieving 85% accuracy in predicting wildfire probability

Traffic Sign Classification using Deep Learning IBM AI Engineering Capstone Project

- Developed and implemented a deep learning model for classifying traffic light stop signs using **web-scraped data**
- Utilized pre-trained models **ResNet50** and **VGG16** for transfer learning, comparing their performance on the classification task
- Implemented the image classification pipeline using both **PyTorch** and **Keras** frameworks
- Deployed the model on the **IBM Watson**, analysing performance metrics for optimisation and allowing for real-time traffic sign recognition
- Achieved high accuracy in identifying stop signs, contributing to potential applications in autonomous driving systems

Work Experience

Team Leader/Supervisor, Meltdown-Wetherspoons February 2022 – November 2023

- Managed bar operations and staff in 2 high-volume city venues
- Improved workflow efficiency and led the team through peak service periods
- Conducted training for new staff, specializing in cocktail service
- Developed crisis management and leadership skills in high-pressure environments

Bartender/Front of House, Various Establishments September 2018 – October 2021

- Ensured exceptional customer service in multiple high-end dining environments
- Mastered extensive wine and spirits knowledge, enhancing dining experiences
- Coordinated seamless communication between kitchen and front-of-house staff
- Recognized for attention to detail, leading to training for managerial positions

Assistant Work Experience, Royal Hallamshire Hospital NHS February 2019

- Managed confidential information and supported patient care coordination
- Implemented efficient organizational systems for medical staff
- Gained experience in adapting to sensitive, diverse work environments

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