WILLIAM DENNIS

+44 (0) 7887360418 | wwdennis.home@gmail.com | LinkedIn | GitHub

Researcher in machine learning and computational modelling
Passionate about building systems using ML/AI with 3 years of industry experience

EXPERIENCE

Energy Modeller @ AURORA ENERGY RESEARCH **Oxford, UK *Oct 2024 –Present***

- Applied convex optimisation and maximum likelihood estimation methods to forecasting energy markets.
- Presented and developed a use case for reinforcement learning to improve the energy pricing methodology.
- Lead modeller of the Polish, Czech and Slovak energy market model, building features and debugging user errors.
- Developed a range of tooling in Python using Streamlit for clear data analysis and SQL queries.
- Applied best software engineering practises with test driven development, git control and agile/scrum team planning.

Data Scientist @ JP MORGAN **Bristol University, UK *Feb 2024 – Jul 2024***

- Lead a team of 4 data scientists to produce in-house quant level research into the development of trading signals derived from millisecond level limit-order-book data.
- Built tooling for my team to parse millions of rows of raw text data on local machines using JIT.

Signal Processing Engineer @ MILBOTIX **Bristol Robotics Lab, UK *Feb 2024 – Oct 2024***

- Developed a two-stage machine learning pipeline optimised for use on embedded devices using accelerometer filtering and novel Fourier features.
- Internship extended twice to aid the development of SmartSocks© into a medical grade device.

Intern Hedging Analyst (Risk Team) @ OCEAN PARTNERS **Maidenhead, UK *Jul 2021 – Jul 2022***

- Mitigated £250m of physical commodity transactions via the London Metal Exchange.
- Maintained a strong relationship with banks and brokers using responsive and professional communication.
- Automated a data analysis task for clearing transactions, saving 60 minutes of manual labour daily.

EDUCATION

UNIVERSITY OF BRISTOL, MSc Data Science – Distinction (Top 3 of cohort) ***Sep 2023 – Sep 2024***

- Deployed distributed cloud architectures on AWS using DynamoDB, SQS, SNS, S3 and EC2 services.
- Studied technology ethics, legal awareness (GDPR), NLP and the history of technological innovation.
- Produced a report on the migration patterns of people aged 20-25 in the UK, utilising clear data visualisation.
- Member of Google Developer Student Club and Quantitative Analyst as part of the Bristol Trading Society.

UNIVERSITY OF BATH, BSc (Hons) Mathematical Sciences ***Sep 2019 – July 2023***

- Built a strong quantitative foundation with a focus on Scientific Computing (84%) and Machine Learning (91%).
- Built websites in Python to support startups in Setsquared using Django and 2019/2020 poker society winner.

RESEARCH PROJECTS

University of Bristol - A Framework for Developing Robust Machine Learning Models in Harsh Environments: A Review of CNN Design Choices

- Published and presented research at the International Conference on Agents and Artificial Intelligence 2025.
- Researched the field of robust machine learning, exploring computer vision models in harsh environments.
- Built a novel framework in Python with PyTorch for evaluating neural networks in harsh environments.
- Proposed two novel activation functions that proved to be more robust to SEE related errors.

University of Bristol (pending publication) - *Robust Machine Learning for Harsh Environments: A Framework and Evaluation of Key Architectural Choices.* *GitHub*

- Developed a public framework to assess the impact of SEUs on model weights during inference.
- Explored vision transformers using the seu-injection-framework on imagenet-5000.

Milbotix (pending publication) *- Classification of signal quality from ankle-based photoplethysmographic signals using machine learning*

- Tested a range of machine learning architectures and hyperparameters using the AUC+ROC metrics.
- Developed novel time-series features for classification of photoplethysmography signal segments.
- Achieved an error rate of <3bpm, allowing the device to be medical grade.

JPMorgan *- Data Analytics for Level-2 Financial-Market Data*

- Created baseline models using ARIMA, RNNs and LSTMs on level-1 data.
- Engineered 50+ features derived from cleaned up level-2 limit order book data for use as trading signals.
- Proposed decision tree based trading strategies using the best performing indicators, showing promise during backtesting as viable strategies.

PERSONAL PROJECTS

- Built an evolutionary learning algorithm from scratch to play snake at a human like level using neural networks. (2017-2021) **LINK**
- Wrote 3 guides to help people build their own chess bots (2022). **LINK**
- App for assisting patient-doctor communication as part of GSDC challenge (2024). **LINK**
- Raspberry Pi temperature sensor with dashboard (2024-2025). **LINK**
- Financial Times web scraper to extract live prices from indices of interest (2024).
- Produced my own PyPi package learntools for basic model-free learning (2023). **LINK**
- Partook in Tiny Chess Bots competition in C#, ranked 220/624 (2023). **LINK**
- Developed a bot to play on chess online using OpenCV image recognition (2021-2024). **LINK**
- Built a reinforcement learning based AI trader using learntools on linear features. (2023) **LINK**
- Averaged 366% yearly ROI trading on the Steam marketplace web scraping data. (2020-2023)
- Automated and tested martingale betting strategy online using OpenCV image recognition. (2021)

These projects are built upon 10 years of Python experience and a testament to the wide range of skills I have built following my passion for AI, ML and data science.

LANGUAGES & CERTIFICATIONS

- Python experience (10 years) in NumPy, Matplotlib, TensorFlow, Sklearn, Pandas, OpenCV, SciPy and more.
- Hackkerank certificates for Python, SQL, C# and experience in R, FORTRAN, Haskell, MATLAB, GAMS.
- AWS Cloud Practitioner Certification and Google Cloud Experience in Flutter, Firebase, Firestore.
- Gold Level DofE in addition to Grade 8 Piano and Grade 8 LAMDA Verse and Prose.

PUBLICATIONS

[1] William Dennis and James Pope. A Framework for Developing Robust Machine Learning Models in Harsh Environments: A Review of CNN Design Choices. *Proceedings of the 17th International Conference on Agents and Artificial Intelligence, ICAART, SciTePress, 322-333, 25th February* 2025.

[2] William Dennis and James Pope. Robust Machine Learning for Harsh Environments: A Framework and Evaluation of Key Architectural Choices. *Publication due in December in Lecture Notes in AI, LNAI.*

[3] William Dennis. Classification of signal quality from ankle-based photoplethysmographic signals using machine learning. *Publication Pending.*

ACTIVITIES

- Presented at the 17th International Conference on Agents and Artificial Intelligence, ICAART, 25th February 2025.
- Attended Pre-ICML@London 2025 at the UCL Bloomsbury Campus, 3rd July 2025.
- Attended AE Global Summit on Open Problems for AI at the Friends House, London, 23rd October 2025.