Adam Thomas-Mitchell

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SUMMARY

Artificial intelligence MSc graduate and engineer seeking to develop advanced AI solutions for real world problems. Proficient in Python, including packages such as SciKit Learn, PyTorch, and TensorFlow. Experience with data engineering, Bayesian methods, reinforcement learning, and deep learning.

EDUCATION

Master of Science in Artificial Intelligence

Ulster University • Belfast • September 2021 - January 2023 • Distinction (83%)

Bachelor of Science with Honours in Mathematical Physics

University of Edinburgh • Edinburgh • September 2016 - June 2021 • 2:1

PUBLICATIONS

Calibration of Uncertainty in the Active Learning of Machine Learning Force Fields

• Adam Thomas-Mitchell, Glenn Hawe, and Paul Popelier
• Machine Learning: Science and Technology

A Comparative Study of Deterministic and Stochastic Policies for Q-learning

• Yaxin Bi, Adam Thomas-Mitchell, Wei Zhai, and Naveed Khan
• 2023 4th International Conference on Artificial Intelligence, Robotics and Control (AIRC)

RESEARCH EXPERIENCE

MSc Research Project

- Worked with the Quantum Chemical Topology group at Manchester University to improve the efficiency of their state-of-the-art Machine Learning Force Field used for molecular dynamics simulations.
- Investigated post-hoc calibration for regression and Student-T Processes as alternatives to Gaussian Processes to improve uncertainty quantification and active learning.
- Showed that Student-T Process can outperform Gaussian Processes when trained to predict atomic energies in a water dimer system.
- Extended research and published in the journal Machine Learning: Science and Technology.

Reinforcement Learning Model

- Developed a reinforcement learning model using an Epsilon-Greedy Q-Learning algorithm to solve a GridWorld problem.
- The model learned how to solve the problem in the fastest possible way in less than 100 training episodes.
- Wrote a detailed report describing the theory behind the algorithm in the framework of Markov Decision Processes, and the implementation in Python.
- This work was incorporated into a paper accepted at the Artificial Intelligence, Robotics, and Control 2023 conference.

Cancer Classifier

- Developed machine learning models to classify cancer as being Acute Myeloid Leukaemia or Acute Lymphoblastic Leukaemia.
- Performed feature selection and dimensionality reduction on dataset initially consisting of more than 6,000 features.
- Supervised models developed using KNN and SVM algorithms, and achieved accuracy greater than 90%.

- Unsupervised models created using K means clustering and hierarchical clustering algorithms, and achieved accuracy greater than 70%.

INDUSTRY EXPERIENCE

Algorithms Engineer (similar to Data Engineer/Machine Learning Engineer)

Thales **August 2023 - Present, Glasgow**

- Main engineer responsible for developing data capabilities in a small research team focused on computer vision applications for defence technologies.
- Designed and implemented new data management system to process, annotate, and curate datasets for object detection algorithms.
- Communicated with stakeholders and other teams to implement a DataOps approach to machine learning development.

Software Developer

Version 1 **September 2022 - July 2023, Belfast**

- Completed intensive 12 week training course and obtained four industry recognised certifications for cloud computing, software development, and cyber security.
- Leveraged Java skills to write production-ready code for a Civil Service web application following test driven development principles.
- Experience with Agile and scrum project management methods and Git version control.

TECHNICAL SKILLS

Programming Languages: Python (including SciKit Learn, TensorFlow, PyTorch), R, Java, HTML, CSS

Database Management Systems: MySQL, MongoDB, InfluxDB, Neo4J

AWARDS

Economic Recovery Masters Scholarship

Department of the Economy • 2021

Certificate of Merit for Physics

University of Edinburgh • 2017

Margaret Campbell Scott Scholarship

University of Edinburgh • 2016