JESSICA NICHOLSON

PhD Student
jmn43@bath.ac.uk
+44 7502432344

PROFILE

Proactive, research-oriented PhD student with over 4 years of experience in software & tech industry. Proficient in various platforms, languages, and embedded systems. Experienced with the latest cutting edge development tools and procedures. Able to effectively self-manage during independent projects, as well as collaborate as part of a productive team. Passionate about Reinforcement Learning and its applications in real-time; dedicated to the progression of the field.

EMPLOYMENT HISTORY

Senior Business Analyst & Data Analyst, The Hydrogen Technology Corporation, New York, NY
JUNE 2018 — SEPTEMBER 2019

- Utilized MS SQL, data warehousing programs (AWS), Tableau, and other dashboard/ visualization toolsets for data intelligence and analysis.
- Conducted research and development for building a Python REST API to train and optimize machine learning models.
- Helped implement a CI/CD pipeline with Jenkins and Kubernetes (EKS).
- Prepared functional requirements for several REST API endpoints such as Monte Carlo simulations on hypothetical investment accounts and event study simulations between various portfolios.
- Managed a team of five engineers to develop and maintain platform's core set of 100+ API endpoints as part of the Agile process, including defining short and medium-term roadmap.
- Conducted research and created functional requirement specifications for cross-compatibility of core APIs with Hydrogen's alpha-stage blockchain dashboard.

Senior Implementation Specialist Consultant, Thomson Reuters, New York, NY
MARCH 2015 — JUNE 2018

- Determined operational feasibility by evaluating client requirements, problem definitions, solution development and proposing solutions for Fortune 100 Companies.
- Managed, coordinated and directed a group of Pentaho Kettle Script developers while simultaneously testing and reviewing Python script results for quality assurance.
- Formulated management techniques for quality data collection to ensure adequacy, accuracy and legitimacy of data, with attention to all technical aspects.
- Managed integration of systems with external third party systems such as PeopleSoft, Infosys, Flexmonster, Pentaho and SalesForce.

EDUCATION

B.A. Major in Economics, Minor in Women & Gender Studies, Rutgers University, New Brunswick, NJ
SEPTEMBER 2011 — JUNE 2015

MSc in Data Science, University of Bath, Bath, UK
SEPTEMBER 2020 — SEPTEMBER 2021

MRes in Accountable, Responsible and Transparent AI, University of Bath, Bath, UK
SEPTEMBER 2021 — SEPTEMBER 2022

PhD Student in Accountable, Responsible and Transparent AI, University of Bath, Bath, UK
SEPTEMBER 2022

PROJECTS

MSc Final Dissertation

- Critically analysed, reviewed, and successfully implemented the Laplacian Framework in both discrete and continuous OpenAI environments using Python.
- Implemented both model-based and model-free RL algorithms in order to compare the performance of the option discovery skills acquired in each agent. Proved that although the Laplacian framework is successful in discrete, symmetrical environments, without the use of function approximation there is little progress to be made in continuous, non-symmetrical environments.

Bayesian Machine Learning

- Implemented various Bayesian Machine Learning algorithms including Bayesian Linear Regression, Monte Carlo Methods, Gaussian Process and Hamiltonian Monte Carlo Methods.

Machine Learning

- Successfully implemented Simple Linear Regression, KNN, Random Forest and a Gaussian Process using SARCOS robotics company's dataset of 45k 22- dimensional entries of robot arm measurements to predict a missing 23rd dimension.

Reinforcement Learning

- Implemented a Deep Q-Network to solve OpenAI's Cartpole problem.
- Used various approaches including Epsilon Annealing, Double Deep Q-Networks, Duelling Networks and Prioritised Experience Replay to improve results.
- Trained different agents using various combinations of the aforementioned approaches, and analysed their performances.

Deep Learning

- Implemented various neural network models such as Convolutional Neural Networks, Denoising Autoencoders and Variational Autoencoders.
- Implemented each of these models using MNIST dataset, keras and tensorflow. The different models were then analysed and compared in terms of functionality and their performances.

Applied Data Science

- Using data from the British Government concerning electrical transport, I performed data wrangling, built a suitable linear model for predicting e-vehicle numbers until 2030 and presented my findings on whether electrical generation in the UK will meet the demand for these vehicles through clear infographics.
- Implemented a Movie Recommendation System using the K-Nearest Neighbours machine learning algorithm with Python. The program recommends movies based on 100k entries of movie ratings from different users.

SKILLS

Programming Languages:

- Python, SQL, SQLite

Frameworks:

- NumPy, PANDAS, MatplotLib, TensorFlow, Keras, PyTorch, Scikit- Learn

Machine Learning Techniques:

- Linear Modelling, Time Series, Forecasting, Natural Language Processing, Reinforcement Learning
- Supervised and unsupervised models, Deep Learning, Recursive Neural Networks, Generative Models

Programs:

- CoppeliaSim, Autodesk Fusion 360, Jupyter Notebook, Anaconda, R, MS Office, LaTeX

Languages

- English - *Native*
- Greek - *Native*