Guy Alexander Reading
MSc, BSc (Hons)

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Summary

A Data Scientist with 5+ years of experience specializing in Computer Vision and Reinforcement Learning. Strong background in mathematics and physics with extensive experience in testing and deploying machine learning models into larger systems. Proven track record in leading technical projects and implementing cutting-edge AI solutions to answer research questions for customers.

Experience

July 2022- PRESENT

Faculty AI, Data Scientist, London – AI Consultant

- Technical Lead and Individual Contributor for a Computer Vision project involving multi-object tracking (*using YOLO & BoT-SORT*), specific target identification (*using GroundingDINO and visual/IR image fusion*), re-identification (*using a bespoke fingerprinting method*) and long-term tracking for a Defence customer. This work is now being integrated to a larger project and proved the technology readiness of the solution: resulting in the government re-assessing the feasibility for rolling out this technology fully, changing their target from 2030 to 2026.
- Technical Lead for a £1.9M Reinforcement Learning research project that spanned multiple collaboration partners within Defence to discover and exploit specific game strategies; directly affecting & informing the UK Defence AI roadmap. *Technologies/packages/techniques used: AWS EC2 & S3, Git, DVC, Unity + ML-Agents toolkit, Stable Baselines PPO, OpenAI Gym, Policy Blending, Grounded Reinforcement Learning, among many others. Trained multiple PPO agents.*
- Helped win >£1M in new contracts for Computer Vision & Reinforcement Learning projects as a main technical contributor & domain expert for RL/CV tenders (technical vision & planning).

NOVEMBER 2020 – July 2022

Raytheon SRG, Data Science and Machine Learning Research Engineer – AI Consultant

- Trained and applied GANs to computer generated images to make them more realistic, to aid in synthetic data generation for computer vision model training, increasing mAP50 on real dataset from an object detector (*YOLO*) trained on synthetic dataset by 6%. *Used: bespoke GAN*
- Used XAI techniques to understand the models we created to understand precision/recall failure cases for computer vision models across multiple projects. *Used: SHAP, MACEst*
- Applied image processing & graph ML techniques to graph road networks in satellite images to find how roads have changed in warzone areas. *Used: Scikit-image, NetworkX*
- Technical Lead for team of five that worked on a solution to the CAGE Challenge, achieving 2nd place using Hierarchical Reinforcement Learning (HRL). The project was used for marketing: demonstrating capability & raising awareness of group. *Used: PPO, A2C, Rainbow DQN, using many different frameworks, reward shaping, bespoke model analysis tools with tensorboard/other visualisations*.
- Mentored MSc Data Science students on industrial placement projects.

JUNE 2018 – APRIL 2020

Informatics Scientist, Ilika, Southampton

Built a multitude of software tools in MATLAB to help the battery research scientists, who developed different solid-state batteries, interpret their data. This includes:

- Automating parts of QA for the manufacturing process using computer vision techniques, notably, I developed a lump detector (finding lumps in images of thin films) to automate QA of Ilika's screen printing processes. This was done using transfer learning on a pre-trained semantic segmentation model, *Deeplab-V3+*
- Undertook research analysing patterns between manufacturing input controls and output material quality to optimize the manufacturing process. *Used: XGBoost, LightGBM*
- Developed data storage solutions with many different technologies: *SQL, MongoDB, JSON, XML*
- Tools for: Image processing, data processing (automatic background subtraction in charts for Raman & XRD equipment data), to analyse/visualise battery data and tools to simulate/model different battery architectures using *COMSOL*.
- Statistical/Design of Experiments tools for optimal experiment design & analyzing results.

Personal Projects

- Kaggle: using computer vision models, ensemble models, and SAT solvers.
- NumerAI: competed in the on-going crowd-sourced hedge fund DS competition.
- TerraBot: developed a model to help play the board game Terra Mystica: calculating the best starting faction (1 of 12) given an initial board state. *Used: xgboost, lightgbm, SHAP*
- For more see my projects page.

Other Experience

JANUARY 2017 – FEBUARY 2018
CTO, NeevesTECH, Glasgow (Start-up working with founder)
Built the company website and managed marketing, including organising & representing at marketing events (Vacuum Expo). Implemented wireless communications software for our products. Managed and printed 3D printed mechanical models/prototypes.

SEPTEMBER 2013 – JANUARY 2017
Development (Electronic) Engineer, Teledyne e2v, Chelmsford
Owner of two core pieces of equipment: 1. Quantum Efficiency measurement equipment and 2. Reflectivity measurement equipment. Responsible for equipment maintenance & verification, measurement, analysis & reporting. Developed scripts to automate all data processing for Quantum Efficiency and Reflectivity measurement equipment *using excel & VBA.* Built statistical process control (SPC) tools to automate chart updating within the department *using excel and VBA.*

Education

Merit in MSc in Nanoelectronics and Nanomechanics from University of Leeds and University of Sheffield, preceded by BSc in Nanotechnology from University of Leeds.

Awards/Qualifications

AWS Certified Developer Associate • APM Project Management Fundamentals • Six Sigma Yellow Belt • Machine Learning -Harvard University Online • Deep Learning Specialization - DeepLearning.ai • IET Present Around the World Essex Local Network Runner-Up 2014