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**PROFESSIONAL EXPERIENCE**

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**Machine Learning Engineering Lead, Abingdon Health****Jan 22-Present****Machine Learning Engineer, Abingdon Health****Feb 21-Jan 22**

- Designed/implemented a multi-stage deep learning system for detecting/reading rapid diagnostic tests.
- Achieved 0.99 test AUROC on a blood antibody test used to prove-out the algorithm ([announcement](#)).
- Set up Linux Nvidia GPU workstations using a containers strategy and the Nvidia Container Toolkit.
- Upgraded the TensorFlow 1 object detection production training pipeline to support TensorFlow 2.
- Annotated object detection datasets for training custom models with the TF Object Detection API.
- Designed a workflow for curating image classification datasets using open-source annotation tools.
- Developed a Python codebase for productionizing CNN image classifiers, using TensorFlow for model building/training, Weights & Biases for experiment management, and Flask for prediction serving.
- Deployed the end-to-end system via a Python REST API for internal validation by the QA engineer.
- Compressed prediction models for deployment to an iOS/Android mobile platform and use on-device.
- Evaluated algorithm performance on real-world clinical study data to assess model generalizability.
- Collaborated with the CEO to ship the deep learning project and patented AppDx<sup>®</sup> algorithm/SDK.

**Equity Research Analyst, Product Management, Exane BNP Paribas****Feb 17-Aug 19**

- Managed the Exane BNPP research pipeline, collaborating with 100 analysts and a global salesforce.
- Curated and chaired the European Morning Meeting; co-chaired the Investment Review Committee.
- Collaborated with equity strategists and sector teams in the production of department-wide reports.
- Monetised Exane's flagship investor conference in Paris (attended by 100 corporates/700 investors).
- Published independent analysis on European earnings season trends in strategy-themed reports.
- Updated financial models for the Real Estate equity research team during annual reporting season.

**Product Management Associate, Exane BNP Paribas****Sep 16-Feb 17**

- Supported the Product Management team and Quality Control analysts in daily research activities.

**Equity Analytics Analyst, Libra Investment Services****Sep 13-Sep 16**

- Established a distinguished track record of Apollo<sup>®</sup> trading views as part of a best ideas portfolio.
- Won Man Group's top broker award for Europe trade idea performance in 2015 (£400k cash prize).
- Delivered portfolio advisory services and provided education on the Apollo<sup>®</sup> valuation methodology.
- Won research commissions from senior Portfolio Managers and expanded the Apollo<sup>®</sup> user base.

**Apollo<sup>®</sup> Intern, Libra Investment Services****Jun 13-Aug 16**

- Completed a rotational internship in Apollo<sup>®</sup> analytics and sales, receiving a full-time analyst offer.

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**EDUCATION**

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**MSc Artificial Intelligence, Imperial College London (Merit)****Oct 19-Oct 20**

- Core studies: symbolic AI; foundational ML; Python programming; software engineering; AI ethics.
- Electives: mathematics for ML: deep learning; ML for imaging; computational optimization; NLP.
- Project highlight: collaboratively developed an RL software product for medical imaging experts using industrial software engineering techniques (awarded 81%).
- Coursework highlight: implemented/evaluated modern deep learning architectures (CNN, RNN, GRU, LSTM, VAE, GAN) on problems in vision and language using PyTorch (88% average grade).

**BSc Physics, University of York (First Class Honours)****Oct 10-Jul 13**

- Course content: fundamental and theoretical physics; mathematics; experimental labs; computing.
- Top scoring electives: Intro. to Quantum Computing (88%); Special & General Relativity (85%).
- Research achievements: final-year dissertation awarded 80% and nominated for best BSc/Msc project.

## RESEARCH PROJECTS

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### Neural Network Verification, MSc AI Individual Project

2020

- Developed a MILP optimization algorithm for verifying high-dimensional neural networks ([paper](#)) using domain splitting techniques to reduce the search space (achieved a x3 certification speedup on MNIST).
- Designed/built a distributed system for sharing verification subproblems over a network of CPUs.
- Lab: Verification of Autonomous Systems (supervisor: Alessio Lomuscio).
- Tools: Python, Gurobi optimizer, Python multiprocessing.

### RL for Medical Imaging, MSc AI Group Project & Software Engineering Practice

2020

- Designed/built a UI for performing 3D landmark detection with reinforcement learning agents ([demo](#)).
- Implemented a variation of the Deep-Q-Network algorithm using UI-collected demonstration data.
- Lab: Biomedical Image Analysis (BioMedIA).
- Tools: Python, PyQT, TensorFlow 1.

### Plasma Diagnostics, BSc Physics Individual Project

2013

- Used plasma spectroscopy to model electron conditions during laser-driven fusion experiments.

## PROFESSIONAL & ACADEMIC PRIZES

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### Top Europe Contributor, Man AHL Ideas Platform (£400k prize)

2016

### Winner, Instructus Markets Student Finance Competition

2013

### Runner-Up, Goodwin Project Prize, York Physics Dept.

2013

## PROFESSIONAL QUALIFICATIONS

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### CFA Program, Level I

2018

### CFA Program, Level II

2015

### CISI Capital Markets Programme

2014

## VOLUNTEERING

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### A-Level Mathematics Tutor, The Access Project

2021

### Financial Education Analyst, Cedro Alto Coffee Collective

2019

## COMPUTING SKILLS

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- Python, TensorFlow, TensorFlow Lite, PyTorch, Docker, Git, Linux, LaTeX, Azure DevOps.