James Chapman

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PhD researcher in Machine Learning at UCL with a focus on scalable algorithms and interpretability. Self-taught full-stack developer with extensive experience in teaching, and industry applications.

Skills

Programming Languages (years):
🐍Python (6), ⓡR (2), MATLAB (2), ❯_Bash (4), 🛢SQL (2), ☕Javascript (1)

Machine Learning Tools:
TensorFlow, PyTorch, Lightning, Scikit-Learn, Pandas, NumPy, SciPy, Jax, HuggingFace

Machine Learning Techniques:
Deep Learning, NLP, Computer Vision, Self-Supervised Learning, Reinforcement Learning

Software Development:
gitGit, ⚙CI/CD (CircleCI, ⃝GitHub Actions), 🐞Unit Testing (Pytest) 📖Documentation (Sphinx)

Education & Qualifications

2019 - present	**University College London** *PhD + MRes (Distinction) funded by i4Health CDT* • Researched scalable GPU optimized algorithms for Interpretable Multiview Machine Learning with High-Dimensional Biomedical Data
2013 - 2017	**University of Oxford** *MEng Engineering, Economics & Management, 1st Class*
2008 - 2013	**Wellington College** *5 A-Level A*s (Further) Maths, Physics, Chemistry, Economics*

Key Publications   **Google Scholar Profile** 🔷

- Efficient Algorithms for the CCA Family: Unconstrained Objectives with Unbiased Gradients. Presented at ICLR 2024. *Developed an algorithm for efficiently solving classical ML problems including PCA, addressing large-scale data challenges in computer vision. Implemented in Jax.* [Code]

- CCA with Shared Weights for Self-Supervised Learning. Presented at NeurIPS 2023 Workshop. *Innovated a self-supervised representation learning technique, using PyTorch and Lightning for GPU-optimized computer vision applications.* [Code]

Software Projects   **GitHub Profile** ⃝

- **CCA-Zoo**: A comprehensive collection of multimodal machine learning methods integrated with scikit-learn. Modern CI/CD pipelines, robust testing, ML pipeline integration.⃝ CCA-Zoo ⭐ 170

- **Document-Explorer**: A Large Language Model (LLM) tool to query all of the documents in a project folder. Simple frontend with PySimpleGUI. ⃝ Document-Explorer

Work Experience

2019 - present	**University College London**, *Assistant Lecturer + Teaching Assistant* • Lectured and designed coursework on *Foundations of AI* and taught *Supervised Learning*, *Numerical Optimisation*, and *Machine Learning for Domain Specialists*.
2022	**Bank of England**, *PhD Intern: Advanced Research & Outreach* • Developed new approaches using Reinforcement Learning (PPO, PyTorch) to solve complex DSGE models, enabling more accurate economic forecasting. [Code]
2017 - 2019	**M&G**, *Analyst: Systematic Investment Research Team* • Designed and implemented version 1 of the €209m Global Maxima quantitative fund (Caret in R, Model Ensemble) contributing to its 4-year record of outperformance • Built a proof-of-concept tool to analyze newsflow using NLP (word2vec, NLTK, LDA), enabling faster identification of market-moving events.

Outside of Work

〰 **Rowing** with Vesta Rowing Club, ⊛ **Reading FC** fan for 20 years, and keen follower of 🏎 **Formula 1**