

EDUCATION

University College London (UCL)
MSci, Theoretical Physics
Grade: First Class Honours
Thesis:
BSc: "Smartphone-Based Fundoscopy: Leveraging Machine Learning for Enhanced Retinal Condition Detection"
MSc: "Machine Learning-Driven Identification of Optimal Ligands for Restoring RAS Protein Function in Biocatalysis"

Sep 2020 — May 2024

TECHNICAL SKILLS

Tools and Languages	Wolfram Mathematica, Python, LaTeX, Docker, MLflow, Mage, Langchain
Certifications	Machine Learning with Python (Freecodecamp), MLOps zoomcamp (DataTalksClub)
Communication	English, Spanish, Japanese (A1)

WORK EXPERIENCE

Research Intern
University College London (UCL)
Sep 2023 — May 2024
London, UK

- Conducted data collection, processing, and feature engineering pipelines with Python, creating 85% of the top 20 features and boosting predictive capabilities by 0.2 Pearson correlation. Thesis awarded first class honours (80% grade).
- Developed machine learning models to identify optimal ligands from over 10,000 candidates for reactivating hydrolysis in oncogenic Ras-mutated proteins.
- Produced a reliable predictive model for unseen ligands, achieving a 0.5 increase in Pearson correlation, enhancing the model's accuracy and predictive capability.
- Developed a dataset with 1,018 newly engineered features, integrating insights from prior and original research using RDKit, PyMol, and equilibrium simulations. Accelerated research projects and contributed to a paper under review.

Machine Learning Intern
Encord
May 2023 — July 2023
London, UK

- Analyzed the SAM model and discovered that training its fine-tuned version on a mean average mask improved segmentation accuracy for 20+ specific objects, enhancing detection performance and accelerating project timelines.
- Evaluated Per-SAM and Mask R-CNN on segmentation tasks in the DeepFashion dataset, where Per-SAM achieved a mAP of 0.501, significantly outperforming Mask R-CNN. Published the results in a blog post on the Encord website.
- Designed and built a Python-based chatbot using Langchain and APIs to aid navigation and product understanding on Encord's platform by retrieving information from 3 different Encord sources, demonstrating potential to enhance user satisfaction.

Research Intern
King's College London
May 2021 — June 2021
London, UK

- Modeled Molecular Dynamics (MD) simulations to study the digitization and behavior of small biomolecules and examined the results using the MDAAnalysis package, improving proficiency in Python.

HACKATHONS & AWARDS

Optiver Hackathon (Team Lead)
— Nov 2023

- Led a team to develop a trading algorithm from scratch using machine learning and Python, primarily responsible for designing and implementing core components to optimize stock trades based on liquidity, volatility, and spreads.
- Advanced to the final stage, ranking in the top 5 out of 25 teams in the hackathon.

LLM Challenge (Developer)
— June 2023

- Conceived and designed a chatbot for Encord during a hackathon, quickly developing a tool to guide customers and provide detailed product information, and presented it to the department.

Physics Department BSc Final Project Presentation — 2nd Place
— March 2023