

OLI HEPWORTH

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EDUCATION

University of Cambridge, Magdalene College – BA (Hons) Linguistics **2021 – 2024**

Final Result: 1st / First Class Honours.

Dissertation: Machine Learning and NLP in Low-Resource Languages, Graded 1* / Distinction.

Awards: 3rd year – Bundy Scholarship, Peskett Prize for Linguistics.
2nd year – College Scholarship, College Prize for Linguistics.
1st year – College Scholarship, College Prize for Linguistics.

Imperial College London via Coursera – Mathematics for Machine Learning Certificate **2023**

King Edward VI Grammar School, Chelmsford **2014 – 2021**

A-Levels: Computer Science (A*), Biology (A*), English (A*), French (A).

GCSEs: 14 subjects grade 9/A* (incl. Maths and English), 1 subject grade 7.

RELEVANT EXPERIENCE

Machine Learning Engineer – TherML, Chelmsford **Jul 2024 – Present**

- Trained Faster R-CNN object detection models to identify and classify thermal defects in buildings, using PyTorch. Achieved a substantial increase in mAP compared to the model previously utilised.
- Developed the company's training and evaluation pipelines, writing scripts, creating Docker containers, and connecting them to SageMaker cloud compute. This facilitated a successful migration to AWS.
- Performed HPO using Hyperband to optimise resource consumption, saving the startup dozens of hours of GPU time.
- Analysed evaluation metrics and performed research to identify further methods of increasing performance. Oversaw the subsequent adoption of a ConvNeXt backbone and the generation of synthetic data for model training.

Dissertation – University of Cambridge **Jul 2023 – Apr 2024**

- *Exploring and Understanding Cross-Lingual Transfer to Catalan and Galician via High-Resource Typological Relatives*. Portfolio available at: github.com/olworth/Dissertation-Portfolio
- Implemented cross-lingual transfer learning by fine-tuning RoBERTa and T5 models for a wide range of NLP tasks, using PyTorch and HuggingFace.
- Achieved strong model performance across two low-resource languages. Potentially set a world record F1 score for Galician NER.
- Utilised an innovative embedding pruning technique to create simulations of multilingual models from MMTs, successfully circumventing the limitations of my small pool of resources.
- Used statistical methods such as Euclidian Distance and MDS to identify the potential implications of language typology on model performance. Identified several such implications.

Secretary – Magdalene College JCR, Cambridge **Jan 2023 – Dec 2023**

- Produced and led a complete redesign of the college's internal newsletter, coordinating and editing regular articles from 12 student writers and artists. Significantly increased readership.
- Managed the JCR's social media accounts, designing written and visual content for the Instagram page and leading small marketing campaigns for college events.
- Contributed to and helped design the committee's website.
- Arranged, presented in and minuted JCR meetings, including meetings with senior staff.

Floor Staff – The Anchor, Danbury **Jul 2022 – Sep 2023**

- Led and motivated a team of junior floor staff through many busy shifts.
- Ensured that front of house operations ran smoothly and in coordination with those of the kitchen.

- Taught a variety of subjects to several students, simplifying complex topics.
 - Pioneered own curricula and learning styles, tailoring materials to each student.
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KEY SKILLS

Programming and Technical Skills

- Strong proficiency with PyTorch through my work for TherML and my dissertation. Capable of training and evaluating models on text and image data, and building a variety of ML/DL architectures from scratch.
- Deep working knowledge of LLMs and the transformer architecture. Full understanding of key architectural concepts, and a solid grasp of the direction of current research.
- Highly experienced with HuggingFace, able to modify models for unsupported NLP tasks such as Dependency Parsing.
- Strong understanding of NLP in general through my degree, hands-on experience with tasks such as NLU, Machine Translation, and Text Summarization.
- Capable with CLI, ran training jobs over GPU clusters using Slurm throughout my dissertation.
- Experience with other back-end languages such as Java and front-end languages such as HTML, CSS, and JavaScript, through my secondary education and personal projects.

Research, Analysis, and Problem Solving

- Degree discipline heavily research-based, requiring adept analytical skills. Examinations assessed the ability to dissect and decode languages, and to recognise underlying patterns in linguistic data.
- Dissertation was 10,000 words, involving several months of experimentation and meticulous research.
- Line of investigation for dissertation encompassed a novel approach to a nontrivial problem.
- Performed research in a corporate setting for TherML, helping to take a model into production.

Ambition and Drive

- Recipient of multiple awards in recognition for dedication to my studies at Cambridge.
- Independently acquired all requisite programming and mathematics skills for my dissertation, including the completion of an online mathematics course offered by Imperial College London.
- Enthusiastic advocate of extracurricular self-improvement, long-term hobbyist language learner.

Communication

- Required as JCR secretary to communicate via many different channels and across many different formats, including formal emails, informal memos, and copywriting.
- Dissertation and assignments throughout degree course have seen me become adept at fluently communicating technical and non-technical information alike, both orally and in writing.
- Degree subject has also involved the study of communication itself, including modules on the psychology and sociology of language.
- Natural tutor and educator, proven ability to digest complex information with simple frameworks.

Leadership and Teamwork

- As JCR Secretary, launched a complete revamp of the college's internal newsletter, which involved liaising with and editing the work of multiple student writers and artists.
 - Supported a team through many extremely busy shifts at The Anchor and frequently acted as a motivator towards the younger floor staff.
 - Helped organise and run several high-profile college events. Responsibilities have included discussing logistics with college staff and acting as security on the door.
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ADDITIONAL SKILLS/INTERESTS

- Languages:** French (A-level – A), Russian (GCSE – 9), many more to an elementary degree.
Sports: Baseball (university team), Badminton (college team), fan of West Ham United.
Writing: Poetry, Shortform Prose.
Other: Full UK Driving License, Level 2 Award in Food Safety in Catering
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REFEREES AVAILABLE UPON REQUEST