


Education

PhD Natural Language Processing, CDT NLP University of Edinburgh 2023-

Currently engaged in doctoral research under the mentorship of Dr. Kobi Gal at the Artificial Intelligence & Data Science Laboratory. My research primarily focuses on exploring how interactions with large language models can be personalized on a local level, specifically in the context of educational settings. This research involves extensive application of LLMs, advanced deep learning techniques, probabilistic modeling, and reinforcement learning (RL) methodologies.

MSc Cognitive Science, University of Edinburgh 2022–2023

I used my masters as a one year rigorous conversion course from my undergraduate. Despite having no formal training in computer science I successfully completed level 10 and 11 courses (typically for final year CS graduates) in Machine Learning and Pattern Recognition, Advanced Database Systems, Information Retrieval Systems, Computational Neuroscience, Computational Cognitive Science and Computational Cognitive Neuroscience. My thesis saw me programme a platform in Typescript (React, Node) using prompt engineering techniques that allowed teachers to automatically generate educational content for their students according to Blooms Taxonomy.

Thesis: Contenti: A pedagogically informed generative educational content creation tool. 

BA Economics & Chinese, School of Oriental and African Studies 2019–2022

First Class Honours. My undergraduate comprised of many quantitative modules (some taken at the London School of Economics) on the economics side such as Econometrics, Linear Algebra, Introduction to Statistics and Introduction to Quantitative Methods. The other half consisted of humanities and language centered classes such as Classical and Modern Mandarin, Cantonese, Introduction to Chinese Literature, Taiwanese Legal Theory and Asian History.

National Taiwan University 2017–2021

Foundation Year - Hanyu Enrichment Scholar; intensive Mandarin classes leading to TOCFL level B2.

Research

PIXEL - Large Language Modelling with Visual Transformers 2023–2024


Explored the challenges of visual language modeling, focusing on the PIXEL model's approach of rendering text as images for processing. Results contribute to understanding the influence of visual elements in language modeling and propose potential *improvements for low-resource languages*.

Selective State Space Models for Large Language Modelling 2023–2024

Led a research team integrating PIXEL transformer architecture with an alternative sequence model, Mamba, known for its impressive performance across various benchmarks. Guided two master's students in adapting the visual language modeling approach of PIXEL to work with Mamba's sequence modeling framework.

Process Augmentation of Knowledge Tracing Algorithms 2024–

Currently researching enhancing Knowledge Tracing algorithms by integrating procedural steps generated by process-supervised Language Models. This approach aims to enrich Intelligent Tutoring

Systems with more detailed question representations, potentially out performing current State of the Art approaches. Collaborating with Eedi .

Experience


STEM Ambassador 2023–

STEM ambassador for high schools in Scotland. Volunteer at local high schools assisting in promoting STEM education.

Kidsloop, Junior Applied Data Scientist (Signal Processing) 2022–2023

Research in spectral analysis of children's voice for educational technologies. Developed specialised children's ASR system.

Revalasce Analytics LLP, Founder & Data Scientist 2021–2022

Incorporated a company  with university colleague. Landed our first client in the short-term office leasing industry and built a customer churn model using data from key card swipes into their office buildings.

PricewaterhouseCoopers, Mentorship Program 2020–2021

Developed a prototype for a WFH scheduling model using a genetic algorithms to allocate desk space.

Xccelerate HK, Hong Kong Youth Technology Scholarship 2020–2021

Awarded scholarship for a 4-month intensive Data Science boot camp.

T2RL , Data Analyst and Translator 2019–2020

Developed a python web scraping tool and data dashboard for tracking airline ancillary services.

World Leading Schools Association, UK Ambassador 2018–2019

Promoted WLSA engagement and mission pillars through workshops in UK secondary schools.

HKSF (Hong Kong Shark Foundation), Hong Kong Youth Ambassador 2016–2017

Advocated against shark finning through educational campaigns in Hong Kong schools.