

CILLIAN BERRAGAN

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EDUCATION

University of Liverpool

Doctor of Philosophy in Natural Language Processing & Geography

Liverpool, UK

Sep 2019 – Dec 2023

- **Thesis:** Exploring Place from the Perspective of Informal Social Media Text
- Published peer-reviewed research in reputable journals and presented at international conferences.
- Expanded research focussing on geographic knowledge extracted through natural language processing.
- Extensively used Python for deep learning through PyTorch (Lightning) and Hugging Face Transformers.

University of Liverpool

Master's of Science in Geographic Data Science

Liverpool, UK

Sep 2018 – Sep 2019

- **Dissertation:** Utilising Supervised Parametric Classification to Assess the Quality of the UK Rural Road Network using Aerial LiDAR Data
- Completed modules in both Computer Science and Applied Social Science covering Machine Learning, statistics and geographical analysis.
- Highest mark in the cohort.

WORK EXPERIENCE

Consumer Data Research Centre

Machine Learning Engineer

Liverpool, UK

Dec 2023 – May 2024

- Developed a Retrieval Augmented Generation (RAG) Search System for the CDRC Data Catalogue, powered by Llama Index and OpenAI, to enhance data discovery and access.
- Generated data schemas for data products to enable automated checks on ingestion of new data products; using Pydantic, Pandera (pandas/polars dataframes) and Prefect for monitoring.
- Automated the generation of a large-scale geographically aligned dataset from the common crawl using Prefect for monitoring, and Hugging Face transformers for named entity recognition.

University of Liverpool

PhD Researcher

Liverpool, UK

Sep 2019 – Dec 2023

- Funded CDT position contributing to research through the Geographic Data Science Lab.
- Engaged with lab activities; hosting and contributing to weekly meetings. Showcasing research or technical demonstrations.
- Collaborated on peer-reviewed research external to PhD thesis.

Consumer Data Research Centre

Data Scientist (Part Time)

Liverpool, UK

Feb 2021 – May 2022

- Developed a system to calculate access to amenities using the road network across each postcode in Great Britain.
- Improved calculation times from previous implementations using GPU accelerated (cugraph) graphs, reducing time from 8 hours per calculation, to 10 minutes.

TEP - The Environment Partnership

Graduate Ecologist

Warrington, UK

May 2018 – Sep 2018

- Led projects to support planning and development across the country
- Wrote professional reports and collaborated as part of a large team
- Travelled to sites to engage in-person with clients and site managers

SKILLS

- **Soft Skills:** Public Speaking, Communication, Critical Thinking, Leadership, Academic Writing, Technical Writing
- **Tools:** Python, Git, Docker/Podman, Neovim, Linux (Bash, Zsh, Arch Linux)
- **Machine Learning & Data Science:** Natural Language Processing, Deep Learning, Data Analysis, PyTorch (Lightning), Polars, (Geo) Pandas, Hugging Face (transformers, datasets), spaCy, SciKit Learn
- **MLOps:** Prefect, Pytest, FastAPI, Dask, DVC, DagsHub, GitHub Actions

RESEARCH & PUBLICATIONS

Mapping cognitive place associations within the United Kingdom through online discussion on Reddit

Published on *Transactions of the Institute of British Geographers*

Jan 2024

Transformer based named entity recognition for place name extraction from unstructured text

Published on *International Journal of Geographical Information Science*

Oct 2022