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EDUCATION

Qualifications

2021- present — **PhD in Speech and Language Technology (Computer Science)**
University of Sheffield, United Kingdom (Supervised by Dr. Nafise Sadat Moosavi)
Research title: Numerical Reasoning for General-Purpose Language Models

2020- 2021 — **Master of Arts in Computational Linguistics - Distinction**
University of Wolverhampton, United Kingdom

2012- 2016 — **Master of Mathematics with Study Year in Europe (MMath) – First Class**
University of Warwick, United Kingdom

Skills — **Programming**: Python (PyTorch, Huggingface, scikit-learn, NLTK), MATLAB, Latex, git
Languages: Native (French, Tamil, English) Fluent (Spanish) Conversational (German)

RESEARCH ACTIVITIES

Sep 2021 – present — **Speech and Language Technology Project for Palenquero**
▹ Collect and digitalised text data using OCR for Palenquero, language of an afro community from Colombia. Developing speech and language technology (SLT) for pedagogy.

Jun 2023 — **3rd Annual Speech and Language Technology Centre for Doctoral Training Conference**
▹ Presented work from my most recent numerical reasoning research at the conference, explain motivation, methodology, results and analysis,

Mar 2023 – May 2023 — **Supervise undergraduate student with final year research project**
▹ "How much does the number representation help matter in downstream applications?", supported with HuggingFace trainer, explain encoder-decoder vs decoder only language models, directed the research and data processing,

Jul 2022 — **12th Lisbon Machine Learning Summer School**
▹Learn about linear classifiers, use of PyTorch, sequence to sequence models, neural networks

Jun 2022 — **2nd Annual Speech and Language Technology Centre for Doctoral Training Conference**
▹ Presented a poster on areas of numerical reasoning, motivate the importance of the field

Sep 2020 – Sep 2021 — **Dissertation in Computational Linguistics** (Supervised by Dr. Burcu Can)
▹ "Improved Sentence Embeddings Using GAT with Siamese Neural Networks on UCCA Semantic Parse Trees", trained BERT embedding on Graph Neural Network over Parse trees to generate better sentence embeddings for a NLI task

Sep 2015 – May 2016 — **Dissertation in Mathematics** (Supervised by Dr. Hugo Van den Berg)
▹ "A Mathematical Approach at Analysing the Influence of English in the French Language", collected news article to generate diachronic dataset and model the evolution of the use of English in French, use stochastic and differential equation models similar to disease infections

PUBLICATIONS

1. FERMAT: An Alternative to Accuracy for Numerical Reasoning (**Sivakumar** & Moosavi, ACL 2023)
   ▹ Create a more mathematical informative test set for numerical reasoning, perform zero-shot evaluation of existing maths models, provide method for automatic data-augmentation of maths worded problem data, show that diversity in language and maths improves performance on FLAN, BART and T5 type models
2. A GRU-based Pipeline Approach for Word-Sentence Segmentation and Punctuation Restoration in English (**Sivakumar**, Muga, Spadavecchia, White & Can, IALP 2021)
   ▹ Train a seq2seq GRU architecture to retrieve spaces and punctuation for text, generated synthetic data, perform grid search for hyperparameters and pipeline ordering for best model, investigate different evaluation measures

WORK EXPERIENCE

Jan 22 – Present — **Computer Science Teaching Assistant** (University of Sheffield, United Kingdom)
Sep 18 – Aug 21 — **Mathematics teacher/ KS5 Coordinator (**Abbey College, United Kingdom)
Aug 17 – Jun 18 — **French and English Teacher** (Universidad de Sucre via AIESEC, Colombia)
Oct 15 – Jun 16 — **Maths Supervisor** (University of Warwick, United Kingdom)