

Isabelle LORGE

PERSONAL INFORMATION

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EXPERIENCE

- Apr. 2023-current **Research Scientist: Neural Networks and Natural Language Processing, University of Oxford (Department of Psychiatry)**
Using NLP to extract information from electronic health records (EHRs)
- Leveraging generative models to annotate synthetic clinical notes, building and training Pytorch span extraction models for downstream explainable clinical decision guidance, summarisation and knowledge graph construction
- Apr. 2022-Apr. 2023 **Postdoctoral Research Assistant, University of Oxford (Department of Engineering)**
Researching social media polarisation and semantic composition.
- Building model for disagreement prediction in pairs of social media (Reddit) posts using unsupervised stance detection with sentence-BERT and weighted Signed Graph Convolutional Network (adapted from Pytorch geometric implementation) which achieved state-of-the art results on benchmark disagreement dataset
 - Conducting probing study on pretrained language models (BERT, RoBERTa, GPT-3)'s ability to correctly represent scalar adverbs in ways which allow scalar vector operations and to perform entailment in a zero-shot setting
- 2019-2022 **AI Researcher, Arabesque AI**
Creating novel NLP models analysing news and social media data (Twitter, Reddit) for stock market prediction.
- Transformer architectures: transfer and one-shot learning, open information extraction from syntactic parsing, supervised and unsupervised relation extraction, knowledge graph construction, Neural Tensor Networks for event embeddings
 - Building fully productionised daily pipeline with BigQuery (processing millions of records of GDELT data), MySQL, Elasticsearch, Docker, GCP, Kubernetes and Argo
- May.-July. 2019 **Intelligence intern, ThoughtRiver**
Anomaly detection in legal documents (Faculty Data Science fellowship 14th).
- Building model successfully detecting and ranking contextual anomalies in contracts
- Nov.-Jan. 2019 **Computational Linguist, Mind.ai**
Building engine for symbolic natural language understanding.
- Creating algorithm for feature extraction and ontology making
- Apr.-Jul. 2017 **Research Intern, Microsoft Research**
Improving identification and understanding of context-specific features in visually grounded dialogue using deep learning networks.
- Building referring expressions generator

EDUCATION

- 2015-2019 **Ph.D in Theoretical and Applied Linguistics, University of Cambridge**
Investigating pragmatic (context-driven) inferences for word learning in bilingual and monolingual children using Bayesian models and human data.
- 2014-2015 **MPhil in Theoretical and Applied Linguistics, University of Cambridge**
Thesis: 'Exploring the communicative skills of bilinguals: a study of listener-directed speech features'.
- 2012-2014 **Masters in Linguistics, Université Libre de Bruxelles**
(focus on NLP and corpora/annotations in first year , psycholinguistics in second year)
Thesis: 'Metaphor comprehension in bilingual and monolingual children.'

TOOLS

- **Languages:** Python, R
- **Deep learning frameworks, libraries and models:** Pytorch, Pytorch geometric (PyG), TensorFlow, Keras, transformers, numpy, pandas, BERT, GPT-3.5, Falcon, LLaMA
- **Operating systems and version control:** Linux/Mac OS X, git
- **Containers, search and cloud:** Docker, Elasticsearch, BigQuery, GCP, Kubernetes, Argo,
- **Miscellaneous:** SQL, Dgraph, Gephi, Superlab, MATLAB, LaTeX

SELECTED PUBLICATIONS

- 2023 I. Lorge, L. Zhang, X. Dong and J. Pierrehumbert. STEntConv: Predicting Disagreement with Stance Detection and Signed Graph Convolutional Network. *Submitted to LREC/COLING 2024*
- 2023 L. Zhang, I. Lorge, X. Dong. Predicting polarisation of dynamic social networks via graph auto-encoders. *IC2S2 2023*
- 2023 I. Lorge and J. Pierrehumbert. Not wacky vs. definitely wacky: a study of scalar adverbs in pretrained language models. *BlackBoxNLP EMNLP2023*. <https://arxiv.org/abs/2305.16426>)
- 2023 I. Lorge and N. Katsos. Bilingual children display comparative strength using prosodic cues for pragmatic word learning. *International Journal of Bilingualism*
- 2023 I. Lorge and N. Katsos. Monolingual and bilingual children's performance learning words from ostensive teaching. *Journal of Pragmatics and Cognition*

LANGUAGES

FRENCH: Native ENGLISH: Fluent SPANISH: Proficient DUTCH: Elementary proficiency

INVITED TALKS, MENTORING AND SERVICE

- Jun. 2023 Co-organiser **Conference on Natural Language Processing for Social Data Science (SoDas)**
- Feb. 2023 Invited talk *Polarisation in social media: linguistic and network approaches* for **Oxford Global Leadership Initiative**
- Jan. 2023 Reviewer for **ACL 2023**
- 2020-2022 Mentoring NLP interns on social media projects
- Dec. 2021 Participated to **Women in Tech** panel organised by **The Linacre Institute**
- Nov. 2021 Participated to **codebar's** panel 'Ask an Artificial Intelligence Researcher Anything'
- June 2021 Talk on knowledge graphs for **Women Who Code** webinar <https://vimeo.com/578128637>

SCHOLARSHIPS AND FELLOWSHIPS

- 2023-2024 **Junior Research Fellowship** (*Kellog College, University of Oxford*)
- 2015-2019 **St John's College Scholarship** (*full scholarship for three years of PhD research at the University of Cambridge*)
- 2014-2015 **Wiener-Anspach Scholarship** (*full scholarship for an Mphil degree at the University of Cambridge*)