

Hongao ZHU

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Education

Shanghai Jiao Tong University (SJTU), Shanghai, China

2021.09 – Present

B.A., English (Linguistics), Expected 2025

- **Relevant Courses:** Introduction to Semantics, Introduction to Syntax, Introduction to Corpus Linguistics, Phonetics and Phonology, Research Methods in Linguistics, Language and Cognition, Language Acquisition, Statistics for Language and Linguistic Research, Language Data and Python Techniques, Introduction to Calculus, Hearing Science, Data Structure, Reinforcement Learning, French, Latin

University of Oxford, Oxford, The United Kingdom

2023.08 – 2023.09

Attendee, Oxford Prospects Program affiliated with Regent Park's College, 2023

- Discussed the latent negativity of texts and the question of topic segmentation with Dr Samantha-Kaye Johnston on cross-platform topic modelling and web-based discourse sentiment analysis. Encouraged by Dr Jose Elias-Ulloa to develop adaptable pipelines for endangered language documentation on ethnologue.com.

Hong Kong University, Hong Kong, China

2023.05 – 2023.06

Attendee, New Horizons in Digital Humanities & Cultural Data Science Workshop, 2023

- Conversated with David Mimno about the applications of LDA in Gensim, Scikit-learn, and MALLET, and discussed the feasibility of LLM-assisted automated essay scoring for foreign language learners, such as in TOFEL and IELTS. Practiced “portable deep-learning” with Dr Wayne De Fremery and contributed to the later development of democratizing AI for humanities.

Shanghai International Studies University, Shanghai, China

2023.01 – 2023.02

Attendee, Workshop on Discourse and Multimodal Analysis, 2023

- Received lectures from the most prominent professors concerning multimodal and discourse analysis, including David Machin. Refreshed about Critical Discourse Analysis (CDA) and realized the gap between the coding and the literature.

Research Experience

Multilingual Syntax Acquisition for LLMs: The case of binding and reflexives

2023.10 – Present

Research assistant, SJTU Computational Linguistics lab

Supervisor: Hai HU, SJTU

- Encoded the binding principles into Python script, randomly generated minimal pairs in respect of finiteness, gender, anaphor, and language, and tested the data on models such as Qwen1.5-72B, LLaMA-2 (70B) from either together.ai or the lab's local server.
- Read intensively into LLM's syntactic and pragmatic performance, as well as their contrasts with humans, and improved significantly through weekly discussions with doctors from other fields, including language acquisition, language pathology, and computer science.

Detecting Authorship Between Generative AI Models and Humans: A Burrows's Delta Approach

2023.10 – Present

Team leader

Supervisor: Lei LEI, Shanghai International Studies University

- Unprecedentedly appropriated Burrows's Delta, a classic stylometric algorithm, into AI detection and proved its robustness on the well-balanced ArguGPT Corpus built by Yikang LIU (2023).
- Implemented and tested the Delta algorithm, the SVM, and the RNN with Python, not only importing from existing NLP packages such as Scikit-Learn, SciPy, NumPy, but also overriding new functions for efficiency according to the peculiar structures of data presented.

Turning Enemies into Friends: Assessing the Communication Effect of Chinese Image in Australian Public Discourse in the New Era and Its Implications for the Construction of International Discourse of Chinese Modernization

2022.05 – 2023.09

Team leader, SJTU Challenge Cup Team (School of Foreign Languages)

Supervisor: Changpeng HUAN, SJTU

- Conducted multimodal discourse analysis, source analysis, and strategy analysis on the self-built *Corpus of Chinese News* in the assessing China's new image in Australia's civil and official discourse.
- Employed UCREL Semantic Analysis System (USAS) to automatically assign semantic tags, and applied Corpus linguistics toolkits such as

Antconc, WordSmith, and KHCode into critical discourse analysis.

Eternal themes and changing sentiments: An NLP-based diachronic study of classical literary works across 700 years 2021.10 – 2023.09

Data Analyst, University Students' Innovative Program

Supervisor: Lei LEI, SJTU

- Explored NLP techniques, the topic-modeling and sentiment analysis, on the Corpus of Canon of Western Literature (Green, 2017), as an instrument to probe into the eternal themes and changing sentiments across 700 years.
- Invented new stop-words lists for different periods in historical text analysis, optimized LDA model with Perplexity calculations, and visualized data in the form of heat-map, co-occurrence graph, and interactive webpages with the assistance of NLTK, Gensim, Matplotlib, pyLDAvis from Jupyter Notebook and Syuzhet, sentimentr from RStudio.

Skills

Languages: Southwestern Mandarin (Native), Mandarin (Native), English (Advanced), French (Intermediate), Latin (Preliminary)

Programming Languages: Python (Scikit-learn, Scipy, PyTorch, NLTK, Numpy, Pandas, ...), R, C/C++, C#

Softwares: Visual Studio Code, Visual Studio, Anaconda, Praat, Antconc, WordSmith, KHCode, CLAN, SPSS, OverLeaf, PS, PR

Awards and Honors

- Excellent, Test for English Majors – Band 4 (TEM-4) 2023
- Level-3, China Accreditation Test for Translators and Interpreters (CATTI) 2023
- Level-3, National Computer Rank Examination (NCRE) 2022
- First Prize, The 7th National Academic English Vocabulary Competition (NAEV) 2022
- Second Runner-up and First Prize, The 2022 China International Law of the Sea Moot Court Competition 2022
- First Prize, The 2022 China Odyssey of the Mind 2022
- Champion, RoboCup Small Group in Shanghai Jiao Tong University 2021

Course Projects

Acquisition of English Plural Marking by a Cantonese-English Bilingual Child: A Corpus-based study, SJTU, Shanghai, China 2023.09

- Presented a CHILDES-based study of simultaneous bilingual children in support of the interdependent development hypothesis.

A Localized Research of We Are How We Eat, University of Oxford, Oxford, The United Kingdom

2023.08

- Submitted a report concerning indigenous dietary habits, table manners, and euphemisms to Wolfson College, winning the best presentation.

Leadership Experience

“Building Dreams” Returning High School Publicity Team, SJTU, Shanghai, China 2022.11 – 2023.03

- **Team leader** of the Chongqing municipality, China

Yiyou Newspaper, SJTU, Shanghai, China

2022.09 – 2023.09

- **Editor and Journalist**

School history drama for the 127th anniversary, SJTU, Shanghai, China

2022.02 – 2023.04

- **Playwright**

English Debate Club, SJTU, Shanghai, China

2021.09 – 2023.06

- **Director** of the Academic Division

Volunteer Experience

TransOn Language Project Public Emergency Language Volunteers

2022

Nucleic acid sampling volunteers at SJTU

2022

Shanghai International Marathon 2022

2022

Long-term volunteer at Shanghai West Coast Museum of Art

2022

National university students 2022 winter vacation "back home" social practice special activity volunteers

2021