Qingcheng Zeng

Ph.D. Student at Northwestern University

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Education

2022– **Ph.D. in Computational Linguistics**
Department of Linguistics, Northwestern University, Evanston, IL

○ Advisor: Professor Rob Voigt

2019–2021 **B.A. in Linguistics**
University of Manchester, Manchester, UK

○ B.A. Dissertation: "*Automatic Sociophonetics: Investigating Language Variation in General Northern English with Machine Learning Based Classification Methods,*" supervised by Dr. Patrycja Strycharczuk.

2017–2021 **B.A. in Linguistics**
Zhejiang University, Hangzhou, China

Research Interests

○ **NLP for Social Applications**
My goal is to leverage large language models (LLMs) for gaining insights into global affairs and contributing to societal welfare.
RQ1: In what ways can LLMs enhance our comprehension of global political and economic trends?
RQ2: Is it feasible to apply LLMs to improve biomedical applications? (Refer to our *preprint* on the biomedical NLP toolkit for further information)

○ **Understanding LLMs from Cognitive Science**
My aim is to critically assess and enhance our comprehension of LLMs through the lens of cognitive science.
RQ: In what manner do LLMs process and interpret discourse and pragmatic objectives? How do speech models encode cognitive information? Additionally, how can these assessments reveal the limitations of LLMs? (For more details, see our *Findings of ACL 2023*)

○ **Multilingual NLP**
My objective is to refine multilingual LLMs for more efficient cross-lingual adaptation while exploring how they encapsulate cross-lingual and cross-cultural information.
RQ1: In what ways can LLMs be deployed to improve NLP in low-resource languages? (For additional insights, refer to our *IJCAI 2023* paper.)
RQ2: To what extent are multilingual LLMs effective in cross-lingual reasoning? Furthermore, how can we advance their capabilities in high-stakes domains and enhance their interpretability?

Publications

Findings of ACL 2023 Suet-Ying Lam*, **Qingcheng Zeng*#**, Kexun Zhang*, Chenyu You, and Rob Voigt, *2023*, Large Language Models Are Partially Primed in Pronoun Interpretation, In *Findings of the Association for Computational Linguistics: ACL 2023*, pages 9493–9506, Toronto, Canada. Association for Computational Linguistics.

IJCAI 2023 **Qingcheng Zeng***, Lucas Garay*, Peilin Zhou*, Dading Chong, Yining Hua, Jiageng Wu, Yikang Pan, Han Zhou, Rob Voigt, Jie Yang#, *2023*, GreenPLM: Cross-Lingual Transfer of Monolingual Pre-Trained Language Models at Almost No Cost, In *Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence*, pages 6290–6298, Macau, China. International Joint Conferences on Artificial Intelligence.

ICASSP 2023 Dading Chong, Helin Wang, Peilin Zhou, **Qingcheng Zeng**, *2023*, Masked Spectrogram Prediction for Self-Supervised Audio Pre-Training, In *ICASSP 2023 - 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 1-5, Rhodes Island, Greece. IEEE.

COLING 2022 **Qingcheng Zeng** and An-Ran Li, *2022*, A Survey in Automatic Irony Processing: Linguistic, Cognitive, and Multi-X Perspectives, In *Proceedings of the 29th International Conference on Computational Linguistics*, pages 824-836, Gyeongju, Republic of Korea. International Committee on Computational Linguistics.

IS 2022 **Qingcheng Zeng**, Dading Chong, Peilin Zhou, Jie Yang#, *2022*, Low-resource Accent Classification in Geographically-proximate Settings: A Forensic and Sociophonetics Perspective, In *Proceedings of Interspeech 2022*, pages 5308-5312, Incheon, Korea. International Speech Communication Association.

IS 2022 Peilin Zhou, Dading Chong, Helin Wang, **Qingcheng Zeng**, *2022*, Calibrate and Refine! A Novel and Agile Framework for ASR Error Robust Intent Detection, In *Proceedings of Interspeech 2022*, pages 1096-1100, Incheon, Korea. International Speech Communication Association.

W-NUT 2020 **Qingcheng Zeng**, Xiaoyang Fang, Zhexin Liang, Haoding Meng, *2020*, Fancy Man Launches Zippo at WNUT 2020 Shared Task-1: A Bert Case Model for Wet Lab Entity Extraction, In *Proceedings of the Sixth Workshop on Noisy User-generated Text (W-NUT 2020)*, pages 299-304, Online. Association for Computational Linguistics.

LabPhon 19 Seung-Eun Kim, **Qingcheng Zeng**, Bronya R. Chernyak, Joseph Keshet, Matthew Goldrick, Ann R. Bradlow, *2024*, Quantifying perceptual similarity of connected speech, In *the 19th Conference on Laboratory Phonology (LabPhon 19)*, Hanyang University, June 2024

NWAV 49   Fenqi Wang, Delin Deng, **Qingcheng Zeng**, Ratree Wayland, Kevin Tang, *2021*, A corpus study of the production of syllable-initial /l/ and /n/ in Gan-accented Mandarin: Random forest classification, In *New Ways of Analyzing Variation*, University of Texas at Austin, October 2021

UKLVC 13   **Qingcheng Zeng**, *2021*, Machine learning in sociophonetics: Comparison of different approaches to accent classification and feature extraction, In *UK Language Variation and Change 13*, University of Glasgow, September 2021

Preprints

* denotes authors of equal contribution; # denotes corresponding author

arXiv 2023   Rui Yang*, **Qingcheng Zeng***, Keen You*, Yujie Qiao*, Lucas Huang, Chia-Chun Hsieh, Benjamin Rosand, Jeremy Goldwasser, Amisha D Dave, Tiarnan D.L. Keenan, Emily Y Chew, Dragomir Radev, Zhiyong Lu, Hua Xu, Qingyu Chen, Irene Li#, *2023*, Ascle: A Python Natural Language Processing Toolkit for Medical Text Generation, In arXiv.

arXiv 2022   Zezhong Jin, Dading Chong, Xiao Song, Zhaoyi Liu, Naipeng Ye, **Qingcheng Zeng**, *2022*, Filter and evolve: progressive pseudo label refining for semi-supervised automatic speech recognition, In arXiv.

Honors & Awards

- ○ Q-Step Center Best Dissertation Award (£100)   University of Manchester
- ○ The Dean Award for Achievement   University of Manchester
- ○ Graduate Fellowship   Northwestern University

Work Experience

2021–2022   **Research Assistant in Natural Language Processing**
Zhejiang University, Hangzhou, China

- ○ Conducted research in multilingual NLP and biomedical NLP, supervised by Professor Jie Yang.
- ○ Research Output: effective language model adaptation at *IJCAI 2023*.

Teaching Experiences

2023 Fall   **Teaching Assistant**, *COGSCI 110*, Introduction to Cognitive Science, Northwestern University

Service

Conferences Reviewer   **ICTAI 2022, AACL 2022, ICASSP 2024, ACL ARR 2024**

Journal Reviewer   **Computer Speech and Language**

Departmental Service   **Colloquium Committee Member 2023-2024**

Skills

- **NLP and LLMs**
  Huggingface Transformers, Deepspeed
- **Machine Learning and Deep Learning**
  PyTorch, TensorFlow, Sclkit-learn
- **Statistics**
  Python, R

References

- **Rob Voigt**
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  Assistant Professor of Linguistics and Computer Science (by courtesy)
  Northwestern University
  Evanston, IL
  robvoigt@northwestern.edu

- **Matt Goldrick**
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