

Yixiao Song

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5th-year linguistics Ph.D and computer science master's student at UMass Amherst. Experienced in grammar error correction, multilinguality, automatic and human evaluation of LLMs, and theoretical semantics.

Education

Ph.D Student in Linguistics

(Advised by Prof. Mohit Iyyer & Prof. Rajesh Bhatt)

University of Massachusetts Amherst

3.93/4.0

2019-current

M.S. in Computer Science

University of Massachusetts Amherst

2023-current

M.A. in Germanic Linguistics

University of Konstanz

1.1/6.0 (excellent)

2016-2018

B.A. in German

University of Shanghai for Science and Technology

3.71/4.0

2011-2015

Publications

GEE! Grammar Error Explanation with Large Language Models

arXiv

Yixiao Song, Kalpesh Krishna, Rajesh Bhatt, Kevin Gimpel, and Mohit Iyyer

- Proposed a two-step pipeline for generating grammar error explanation in natural language
- Utilized atomic edit extraction to guide the GEE generation to increase recall and precision
- Showed the high performance of the pipeline in German and Chinese GEE

kNN-LM Does Not Improve Open-ended Text Generation

EMNLP 2023

Shufan Wang, Yixiao Song, Andrew Drozdov, Aparna Garimella, Varun Manjunatha, and Mohit Iyyer

- Revealed that retrieval-augmented language models do not improve open-ended generation quality

Paraphrasing evades detectors of AI-generated text, but retrieval is an effective defense

NeurIPS 2023

Kalpesh Krishna, Yixiao Song, Marzena Karpinska, John Wieting, and Mohit Iyyer

- Introduced a paraphrase generation model DIPPER which leverages context and offers diversity control
- Stress-tested and successfully evaded major AI-generated text detectors (e.g., watermarking, GPTZero)
- Proposed a simple but effective defense that relies on retrieving semantically-similar generations

A Critical Evaluation of Evaluations for Long-form Question Answering

ACL 2023

Fangyuan Xu*, Yixiao Song*, Mohit Iyyer, and Eunsol Choi (*Equal contribution)

- Comprehensively evaluated text generation metrics on long-form open-ended question answering generation
- First expert-annotated long-form question answering dataset

SLING: Sino Linguistic Evaluation of Large Language Models

EMNLP 2022

Yixiao Song, Kalpesh Krishna, Rajesh Bhatt, and Mohit Iyyer

- A benchmark with 38K minimal sentence pairs in Mandarin Chinese
- Tested 18 publicly available pretrained monolingual and multi-lingual language models
- Showed that the average accuracy for LMs is far below human performance (69.7% vs. 97.1%)
- Revealed the strengths and weaknesses of large language models

DEMETR: Diagnosing Evaluation Metrics for Translation

EMNLP 2022

Marzena Karpinska, Nishant Raj, Katherine Thai, Yixiao Song, Ankita Gupta, and Mohit Iyyer

- A diagnostic dataset with 31K English sentences (translated from 10 source languages)
- Evaluated the sensitivity of MT evaluation metrics to 35 different linguistic perturbations
- Found that learned metrics perform substantially better than string-based ones
- Revealed the strengths and weaknesses of learned metrics

Internships

Quillbot, Learneo, Inc.

Platform for grammar correction, translation and text rewriting

June - September 2023

Research Engineer Intern

Improved German grammar error correct product

(+5% copy rate & +1.7% 1-day retention compared to previous product)

- **Cultural Institute of the Federal Republic of Germany (Goethe Institut)**
Non-profit German cultural association, promoting the German language study abroad August 2014 - February 2016
Translator, interpreter, project assistant
- **Friedrich Ebert Stiftung Shanghai Office**
Non-profit German foundation funded by the Government of the Federal Republic of Germany April-July 2014
Translator, project assistant

Positions of Responsibility

- **Reviewer** for NeurIPS 2023 R0-FoMo Workshop, EACL 2024
- **Instructor** of LING201 at UMass Amherst: How Language Works—Introduction to Linguistic Theory (R2)
- **Research Assistant** advised by Prof. Mohit Iyyer (Summer 2022): Human evaluation of model performance of long-form question answering.
- **Teaching Assistant** for courses at master level (University of Konstanz) and (under)graduate level (UMass Amherst)
- **Proceeding Editor** of NELS50 and SULA11
- **Student Research Assistant** in Deutsche Forschungsgemeinschaft Project—Questions at the Interfaces (P3 Alternative Questions)

Works and Presentations

Mandarin Chinese Alternative Questions are not Disjoined Polar Questions

Yixiao Song 2021

- First qualification paper supervised by Prof. Rajesh Bhatt and Prof. Seth Cable

Early Cue Effects of Chinese Relative Clause Comprehension in Pre-trained Language Model

Yixiao Song 2021

- Breadth Paper for satisfying Ph.D. requirements

A Comparative Study of German and Chinese Alternative Questions

Yixiao Song 2018

- Poster presentation at Semantics and Philosophy in Europe
- Talk at the 17th China International Conference on Contemporary Linguistics

Skills

- **Natural Languages:** German, Shanghai Wu, Mandarin Chinese, English
- **Programming:** Python (PyTorch, Hugging Face), R, Linux, Perl
- **Others:** L^AT_EX, GitHub