

Yixiao Song

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Ph.D student at UMass Amherst. Experienced in multilinguality, automatic evaluation of LLMs and agents, human evaluation, and grammar error correction/explanation.

Education

Ph.D Student (Computer Science/Linguistics)

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

University of Massachusetts Amherst

3.94/4.0

2019-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

BEARCUBS: A benchmark for computer-using web agents

arXiv

Yixiao Song, Katherine Thai, Chau Minh Pham, Yapei Chang, Mazin Nadaf, Mohit Iyyer

- A “small but mighty” benchmark of 111 information-seeking questions
- Evaluates web agents’ ability to search, browse, and identify factual information from the web
- BEARCUBS questions are solvable but non-trivial (84.7% human accuracy)
- Best-performing computer use agent, OpenAI’s Operator, fall far behind (24.3% accuracy)

Enhancing Human Evaluation in Machine Translation with Comparative Judgment

arXiv

Yixiao Song, Parker Riley, Daniel Deutsch, Markus Freitag

- Systematically compared pointwise and pairwise evaluation in machine learning human evaluation
- Pairwise MQM improves inter-annotator agreement
- Pairwise MQM boosts inter-translation error marking consistency
- Pairwise MQM proved more reliable in identifying equal quality translations

VERISCORE: Evaluating the factuality of verifiable claims in long-form text generation

Yixiao Song, Yekyung Kim, and Mohit Iyyer

EMNLP 2024 Findings

- Proposed an automatic metric for factuality evaluation of long-form model generations
- The metric effectively distinguishes verifiable and unverifiable claims which earlier metrics are not able to.
- The metric is effectively implemented with either closed or fine-tuned open-weight language models.

GEE! Grammar Error Explanation with Large Language Models

NAACL 2024 Findings

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

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

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

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 interpolation-based retrieval-augmented LMs do not improve open-ended generation quality

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

DEMETER: 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

- **Google**
 Google Translate Team June - September 2024
 Research Intern (mentored by Parker Riley, Dan Deutsch, and Markus Freitag)
 Implemented in JavaScript a new template in [Anthea](#) for human evaluation
 Integrated comparative judgment into the fine-grained human evaluation MQM and analyzed strengths and weaknesses of different annotation settings
 Paper in progress
- **Quillbot, Learneo, Inc.**
 Platform for grammar correction, translation and text rewriting June - September 2023
 Research Engineer Intern (mentored by Kevin Gimpel and George Wang)
 Improved German grammar error correction product
 (+5% copy rate & +1.7% 1-day retention compared to previous product)
 Published the [GEE!](#) paper
- **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 (Outstanding Reviewer), NAACL 2024/2025, ACL 2024, BEA 2024, ESSLLI 2024, EMNLP 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. [Paper published in ACL](#)
- **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:** Shanghai Wu, Mandarin Chinese, English, German
- **Programming:** Python (PyTorch, Hugging Face), R, JavaScript, Linux
- **Others:** L^AT_EX, GitHub