Zeqiu (Ellen) **Wu**

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Research Interests

My current research focuses on training language models to understand and respond to the needs of information-seeking users and to learn from them. I'm broadly interested in building trustworthy AI agents to interact with a complex environment and optimize human-centered objectives via feedback from such interactions.

Education

University of Washington *Seattle, WA*

PhD candidate, Electrical & Computer Engineering Department *2018 - PRESENT*

- Advisors: Mari Ostendorf & Hannaneh Hajishirzi (NLP Research Group)

University of Illinois *Urbana, IL*

M.S. in Computer Science *2016 - 2018*

- Advisor: Jiawei Han (Data Mining Research Group)

University of Illinois *Urbana, IL*

B.S. in Electrical Engineering, with Minors in Computer Science, Math and Business *2010 - 2014*

Publications

Fine-Grained Human Feedback Gives Better Rewards for Language Model Training

Z. Wu*, Y. Hu*, W. Shi, N. Dziri, A. Suhr, P. Ammanabrolu, N. A. Smith, M. Ostendorf, H. Hajishirzi. *NeurIPS (spotlight), 2023.*

INSCIT: Information-Seeking Conversations with Mixed-Initiative Interactions

Z. Wu, R. Parish, H. Cheng, S. Min, P. Ammanabrolu, M. Ostendorf, H. Hajishirzi. *TACL, 2023.*

CONQRR: Conversational Query Rewriting for Retrieval with Reinforcement Learning

Z. Wu, Y. Luan, H. Rashkin, D. Reitter, H. Hajishirzi, M. Ostendorf, G. S. Tomar. *EMNLP, 2022.*

DIALKI: Knowledge Identification in Conversational Systems through Dialogue-Document Contextualization

Z. Wu*, B. Lu*, H. Hajishirzi and M. Ostendorf. *EMNLP, 2021.*

A Multi-Passage Knowledge Selector for Information-Seeking Dialogues

Z. Wu*, B. Lu*, H. Hajishirzi and M. Ostendorf. (non-archival system description) *DialDoc@ACL, 2021.*

Automatic Document Sketching: Generating Drafts from Analogous Texts

Z. Wu, M. Galley, C. Brockett, Y. Zhang, B. Dolan. *ACL Findings, 2021.*

A Controllable Model of Grounded Response Generation

Z. Wu, M. Galley, C. Brockett, Y. Zhang, X. Gao, C. Quirk, R. K. Kedziorski, J. Gao, H. Hajishirzi, M. Ostendorf, B. Dolan. *AAAI, 2021.*

HiExpan: Task-Guided Taxonomy Construction by Hierarchical Tree Expansion

J. Shen, Z. Wu, D. Lei, C. Zhang, X. Ren, M. T. Vanni, B. M. Sadler and J. Han. *KDD, 2018.*

Indirect Supervision for Relation Extraction Using Question-Answer Pairs

Z. Wu, X. Ren, F. F. Xu, J. Li, J. Han. *WSDM, 2018.*

SetExpan: Corpus-Based Set Expansion via Context Feature Selection and Rank Ensemble

J. Shen*, Z. Wu*, D. Lei, J. Shang, X. Ren, J. Han. *ECML-PKDD, 2017.*

CoType: Joint Extraction of Typed Entities and Relations with Knowledge Bases

X. Ren, Z. Wu, W. He, M. Qu, C. R. Voss, H. Ji,T. F. Abdelzaher, J. Han. *WWW, 2017.*

Life-iNet: A Structured Network-Based Knowledge Exploration and Analytics System for Life Sciences

X. Ren, J. Shen, M. Qu, X. Wang, Z. Wu, Q. Zhu, M. Jiang, F. Tao, S. Sinha, D. Liem, P. Ping, R. Weinshilboum, J. Han. (system demo) *ACL, 2017.*

Preprint Papers

Self-RAG: Learning to Retrieve, Generate, and Critique through Self-Reflection

A. Asai, Z. Wu, Y. Wang, A. Sil, H. Hajishirzi. *Preprint, 2023.*

DIALGEN: Collaborative Human-LM Generated Dialogues for Improved Understanding of Human-Human Conversations

B. Lu*, N. Haduong*, C. Lee, Z. Wu, H. Cheng, P. Koester, J. Utke, T. Yu, N. A. Smith, M. Ostendorf. *Preprint, 2023.*

Extracting Summary Knowledge Graphs from Long Documents

Z. Wu, R. K. Kedziorski, M. Ostendorf, H. Hajishirzi. *Preprint, 2020.*

Research Experience

UW NLP Research Group *Seattle, WA*

Advisors: Mari Ostendorf & Hannaneh Hajishirzi *Fall 2018 – Present*

- Built a RLHF framework for ***LMs to learn from fine-grained human feedback*** and showed its effectiveness on two long-form text generation tasks.
- Collected data for ***information-seeking conversations with mixed-initiative interactions*** and developed strong baselines.
- Built a multi-task model of ***knowledge identification in document-grounded conversations*** and achieved state-of-the-art results in two recent datasets.
- Proposed a new text-to-data task, ***document summarization using structured relational graphs***, together with evaluation metrics for the task. Implemented and assessed strong baselines as well as a new approach based on graph learning.

Google Research Language Team *Seattle, WA*

Mentors: Gaurav Tomar, Yi Luan & Hannah Rashkin *Summer & Fall 2021*

- Worked on ***query rewriting for conversational retrieval*** that rewrites the dialogue context in an information-seeking dialogue into a standalone question, and retrieves the most relevant passage from the text corpus with a fixed retrieval system.

Microsoft Research NLP Team *Redmond, WA*

Mentors: Michel Galley & Bill Dolan *Summer 2019 & Summer 2020*

- Proposed the task and evaluation metrics of ***template generation*** from previously written documents as the first step towards building interactive document writing systems, and built strong baselines with weak supervision.
- Built a ***controllable and knowledge-grounded dialogue response generation model*** and analyzed how adding control and grounding leads to better generated responses.

UIUC Data Mining Research Group *Urbana, IL*

Advisor: Jiawei Han *Fall 2016 – Spring 2018*

- Improved ***distantly supervised information extraction*** by developing noise-robust systems that extract entities and relations.
- Built systems for ***faceted taxonomy construction*** from any given text corpus in scientific domains, with a few seed examples.

UIUC MRI Lab *Urbana, IL*

Advisor: Zhi-Pei Liang *Spring 2012 - Summer 2012*

- Applied signal processing techniques to optimize real-time cardiac image reconstruction and de-noise dynamic MRI.

Industry Experience

IXL Learning *San Mateo, CA*

Software Engineer, Product Team *2015 - 2015*

- Maintained and developed IXL web education application and data analysis reporting systems.

Goldman Sachs *New York, NY*

Software Engineer, Fixed Income Products Team *Summer 2013 & 2014 - 2015*

- Built a market data monitoring system to inform high frequency traders of data trustworthiness.
- Developed the scalable fixed-income trading applications for daily trading, clearing and reporting.

Altera Corporation *San Jose, CA*

Software Engineer Intern, FPGA Compiler Team *Fall 2012*

- Worked on FPGA synthesis optimization and language extraction.

Honors & Awards

2021 **1st Prize of DialDoc Shared Task at ACL 2021**
2018 **University of Washington Top Scholar Recruitment Fellowship**
2017 **SIGIR Student Travel Grant**
2014 **Highest Honor Graduate**
2014 **James Scholar**
2010-2014 **Dean's list**
2014 **Brian & Sophie Leung Scholarship**
2013 **Professor N. Narayana Rao Scholarship**

Teaching Experience

EE 511 (Introduction to Statistical Learning), UW ECE *Seattle, WA*
Teaching Assistant (Instructor: Mari Ostendorf) *Winter 2019*

CS 412 (Introduction to Data Mining), UIUC CS *Urbana, IL*
Teaching Assistant (Instructor: Jiawei Han) *Fall 2016 & Spring 2018*

Invited Talks

USC CSCI 535 (Multimodal Probabilistic Learning of Human Communication) *April 2022*

UW EE 200 (Undergrad Research Seminar) *Feb 2022*

1st DialDoc Workshop at ACL 2021 *July 2021*

Microsoft Research Workshop *Sep 2020*

UW ECE Annual Research Review Day *March 2019, 2021, 2023*

Services

Program Committee (Reviewer) *ARR 2021-Present, EMNLP 2021-2023, ACL 2021-2023, AKBC 2020, AAAI 2020, JAIR 2022, COLING 2022*

Volunteer Coordinator, NAACL 2022 *July 2022*

Co-organizer, 2nd DialDoc Workshop at ACL 2022 *May 2022*

Visitor Coordinator, UIUC Data Mining Research Group *2017-2018*

Alumni Chair, UIUC Women in Electrical and Computer Engineering *2011-2012*

Mentoring

Ryu Parish, UW CSE BS -> MS *Nov 2021 - June 2022*

Chengyu Huang, NUS CS BS *May 2023 - Present*

Skills

Programming: Python, Pytorch, JAX, Java, Matlab, C

Language: English, Chinese, Wu