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Building Interactive Natural Language Interfaces

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Abstract: Constructing natural language interfaces (NLIs) that allow humans to acquire knowledge and complete tasks using natural language has been a long-term pursuit. This is challenging because human language can be very ambiguous and complex. Moreover, existing NLIs typically provide no means for human users to validate the system decisions; even if they could, most systems do not learn from user feedback to avoid similar mistakes in their future deployment. ¶br¶

In this talk, I will introduce my research about building interactive NLIs, where an NLI is formulated as an intelligent agent that can interactively and proactively request human validation when it feels uncertain. I instantiate this idea in the task of semantic parsing (e.g., parsing natural language into a SQL query). In the first part of the talk, I will present a general interactive semantic parsing framework [EMNLP 2019], and describe an imitation learning algorithm (with theoretical analysis) for improving semantic parsers continually from user interaction [EMNLP 2020]. In the second part, I will further talk about a generalized problem of editing tree-structured data under user interaction, e.g., how to edit the Abstract Syntax Trees of computer programs based on user edit specifications [ICLR 2021]. Finally, I will conclude by outlining future work around interactive NLIs and human-centered NLP/AI in general. ¶br¶

Bio:

Ziyu Yao is a Ph.D. candidate at the Ohio State University (OSU). Her research interests lie in Natural Language Processing, Artificial Intelligence, and their applications to advance other disciplines. In particular, she has been focusing on developing natural language interfaces (e.g., question answering systems) that can reliably assist humans in various domains (e.g., Software Engineering and Healthcare). She has built collaborations with researchers at Carnegie Mellon University, Facebook AI Research, Microsoft Research, Fujitsu Laboratories of America, University of Washington, and Tsinghua University, and has published extensively at top-tier conferences in NLP (EMNLP, ACL), AI/Machine Learning (ICLR, AAAI), and Data Mining (WWW). In 2020, She was awarded the Presidential Fellowship (the highest honor given by OSU graduate school) and selected into EECS Rising Stars by UC Berkeley. Please visit her webpage for more details: <https://ziyuyao.org/>

Friday, April 16, 2021, 1:00 pm
<https://emory.zoom.us/j/92103915275>

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