Towards Open Environment Event Knowledge Acquisition

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Zoom Link: https://go.uncg.edu/cs-colloq

Abstract
Who? What? When? Where? Why? are fundamental questions asked when gathering knowledge about and understanding an event. The answers to these questions underpin the key information conveyed in the overwhelming majority, if not all, of language-based communication. Unfortunately, typical machine learning models and event extraction techniques heavily rely on in-domain annotations, thus cannot be directly applied to open environment scenarios, domains or languages.

In this talk, I will first introduce a new Query-and-Extract framework that takes event schemas (i.e., types and argument roles) as natural language queries to extract candidate triggers and arguments from the input text. With the rich semantics in the queries, our framework benefits from the attention mechanisms to better capture the semantic correlation between the event types or argument roles and the input text, thus allowing our approach to leverage all available event annotations from various ontologies as a unified model. Then, I will further talk about the various strategies to formulate the queries to represent event types, and compare them under supervised, few-shot and zero-shot event extraction. Our study shows that a well-defined and comprehensive event type representation can significantly improve the performance of event extraction, especially when the annotated data is scarce or not available. Finally, I will describe how the query-and-extract framework is incrementally updated with new event types and data while retaining the capability on previously learned old types, yielding lifelong event extraction.

Bio
Dr. Lifu Huang is an Assistant Professor in the Computer Science department at Virginia Tech. He obtained a PhD in Computer Science from University of Illinois at Urbana–Champaign in 2020. He has a wide range of research interests in natural language processing, including extracting structured knowledge with limited supervision, natural language understanding and reasoning with external knowledge and commonsense, natural language generation, representation learning for cross-lingual and cross-domain transfer, and multi-modality learning. He is a recipient of the 2019 AI2 Fellowship and 2021 Amazon Research Award.