

Electrical & Computer Engineering Seminar Series

Computer Engineering | Digital Systems



Deep Neural Language Models with Intrinsic and External Structures

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11:15am -12:05 pm

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Deep language models are ground-breaking techniques amazingly effective in many tasks, while at the same time they are also fragile and constrain on sequence to sequence learning tasks. This talk presents my recent research on “how to move forward with BERT and GPT-2” by introducing structures to deep neural networks. The first is to upgrade Transformer’s attention connections using the existing intrinsic structures in data. This leads to Transformer-XH (eXtra-Hop), which upgrades Transformer with inter-document (hop) attention connections to share information across multiple pieces of evidence. The second is to bring in external structured semantics from knowledge graphs to neural language modeling and generation. We ground the texts to an existing knowledge graph, form a latent semantic space using the grounded semantics, and aid the language modeling with a simulated ConceptFlow in the latent semantic space. These techniques achieved significant better performances than BERT and GPT-2 on multi-hop question answering and conversation response generation, respectively.

Chenyan Xiong is a senior researcher in MSR AI. His research area is in the intersection of information retrieval, natural language processing, and deep learning. His current research focus is on long-form text understanding, conversational information access, and neural information retrieval. Before joining MSR AI, Chenyan obtained his Ph.D. at Language Technologies Institute, Carnegie Mellon University in 2018. He has published 20+ papers on top IR and NLP conferences and is a PC member of SIGIR, WebConf, WSDM, ACL, EMNLP, KDD, NeurIPS, etc. He has organized three workshops on knowledge graph, was a guest editor for Information Retrieval Journal, and is organizing the Conversational Assistance Track (CAST) at TREC.