

Computer Science Seminar

Learning Weakly-Labeled and Cross-modal Semantics for Structured NLP

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Abstract: For artificial intelligent agents to function autonomously in our homes and workplaces, they must be able to effectively understand natural language for instructions and conversational dialog. For this, it is necessary to resolve the various deep semantic and pragmatic ambiguities that exist in everyday natural language, a challenging goal that involves two fundamental requirements. First, we need diverse, external world knowledge which is simply not present in the standard training datasets used for supervised NLP tasks. Second, we need to develop appropriate machine learning models that can extract the precise disambiguation cues lying latent in such diverse, large-scale knowledge datasets. My research addresses both these requirements by learning novel weakly-labeled and cross-modal semantic representations with accurate, well-formulated disambiguation methods. We model world knowledge via unlabeled Web-scale features, weakly-supervised language embeddings, and grounding cues from vision and speech, and harness these in both structured and neural network based learning methods to achieve the state-of-the-art on various core NLP tasks and multimodal applications.

Monday, February 15 at 3:00 PM in SEO 612