Distributed word embeddings (word2vec) provides a powerful way to reduce large text corpora to concise features readily applicable to a variety of problems in NLP and data science. I will introduce word embeddings, and review several of our recent efforts to apply them for natural language processing (NLP) including the Polyglot system for entity recognition, POS tagging, and sentiment analysis) for over 100 different languages. DeepWalk is an approach we have developed to construct vertex embeddings: vector representations of vertices which be applied to a very general class of problems in data mining and information retrieval. DeepWalk exploits an appealing analogy between sentences as sequences of words and random walks as sequences of vertices to transfer deep learning (unsupervised feature learning) techniques from natural language processing to network analysis. DeepWalk has become extremely popular, having been cited by over 4000 research papers since its publication at KDD 2014. In this talk, I will introduce the notion of graph embeddings, explain how DeepWalk constructs them, and demonstrate why they make such powerful features for machine learning applications.

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