Reading and Reasoning with Vector Representations

In recent years, vector representations of knowledge have become popular in NLP and beyond. They have at least two core benefits: reasoning with (low-dimensional) vectors tends to lead to better generalisation, and usually scales very well. But they raise their own set of questions: What type of inferences do they support? How can they capture asymmetry? How can explicit background knowledge be injected into vector-based architectures? How can we provide “proofs” that justify predictions? In this talk, I sketch some initial answers to some of these questions based on our recent work. In particular, I will illustrate how a vector space can simulate the workings of logic.

Bio:
Sebastian Riedel is a reader in Natural Language Processing and Machine Learning at the University College London (UCL), leading the Machine Reading Lab. He is also an Allen Distinguished Investigator. His work focuses on teaching machines how to read and work in the intersection of Natural Language Processing (NLP) and Machine Learning, including structured prediction, end-to-end reading and reasoning systems.
After having received a Dipl. Ing in Computer Science and Engineering at the Technical University Hamburg-Harburg in 2003, he went on to do an MSc (2004) and PhD (2008) in the University of Edinburgh. In 2008, he worked as researcher at University of Tokyo and the Database Center for Life Sciences. After being postdoc and research scientist at UMass Amherst, he started as a lecturer at UCL in 2012. Sebastian is also the program co-chair for EMNLP this year.