1128-01-233   **Jana Doppa*** (`jana@eecs.wsu.edu`), School of EECS, Pullman, WA 99163. *HC-Search: A Learning Framework for Search-based Structured Prediction.*

We are witnessing the rise of the "Big Data" paradigm, in which massive amounts of data (e.g., text, images, videos, speech) can be analyzed to make sense of the data, and to make useful predictions. To fully realize the promise of Big Data, we need automated systems that can transform structured inputs to structured outputs (e.g., resolving coreferences of entity and event mentions in a piece of text, interpreting a visual scene). Problems such as these are often referred to as structured prediction problems in the machine learning community. These prediction problems pose severe learning and inference challenges due to the huge number of possible outputs.

In this talk, I will introduce a new framework to solve these structured prediction problems called HC-Search. The problem of structured prediction is formulated as an explicit search process in the combinatorial space of outputs. The search seeks to optimize the cost function C using a heuristic H to guide the search. Both the cost function and the heuristic are learned from supervised data to minimize a given task loss function. I show that the HC-Search framework achieves state-of-the-art results in a wide range of structured prediction problems that arise in natural language processing and computer vision. (Received February 27, 2017)