

Workshop Keynote

Latent Variable Models for Content-Based Image Retrieval and Structure Prediction

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In the first part of the talk I will present recent work on learning latent variable models for content-based image retrieval. To learn a function that predicts the relevance of a database image to an image query all that we need is some form of feedback from users of the retrieval system. For example, we can obtain triplet constraints specifying that relative to some query Q , an image A should be ranked higher than an image B . When such feedback is available ranking SVMs can be used to induce the retrieval function. I will describe an extension of this framework where instead of learning a single relevance function we learn a mixture of relevance functions. Intuitively, given a query we first compute a distribution over "coarse" latent classes and then compute the relevance function for queries of that class. I will present a simple learning algorithm that induces both the latent classes and the parameters of each model.

In the second part of the talk I will describe some of my current work on developing efficient learning algorithms for structure prediction with latent variables. These algorithms are based on using an algebraic representation that exploits directly the Markovianity of the distribution.



Ariadna received her PhD from MIT in 2009 under the advise of professors Michael Collins and Trevor Darrell . Her dissertation was about transfer learning models for image classification. She has also worked on latent variable models for structure prediction with applications to Computer Vision and Natural Language Processing. After graduation she joined the Technical University of Catalunya as a research scientist. She is also the cofounder of dMetrics, a company specializing on NLP technologies for user generated content. She has published in all the major Computer Vision and Machine Learning Conferences. She has recently received the best paper award at the main European Natural Language Processing Conference for her work on spectral methods for latent variable dependency parsing.