

COLLOQUIUM

Friday, November 5, 2010

3:00 P.M.

113 Information Sciences & Technology Building

The Cybertorium

By

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***"3D-ness, Reasoning, and Late Commitment
in Scene Interpretation"***

Scene interpretation, i.e., labeling objects and surfaces in image data, is a very difficult problem. Although considerable progress in developing statistical classifiers that operate on local features computed from the pixels has been achieved in the last decade, these are still limited to (simplifying a bit!) pattern classification operations for two reasons. First, they do not account for the constraints afforded by the physical world seen in the image, including geometric constraints (what surfaces appear where), visibility constraints (which object occludes which) and even physical constraints (such as gravity). Second, it is difficult to account for complex relationships between image elements. Graphical models and other structured models attempt to capture such relations but they have limitations that are both practical in terms of computation and theoretical; reasoning tools in addition to now standard statistical inference are needed. In this talk, I will present a series of approaches that attempt to estimate more and more complete scene interpretations from images. As we move through these different approaches, we will see how the level of geometric representation of the world "3D-ness" increases, and how iterative reasoning about multiple hypotheses is used to manipulate complex models.