1035-62-2034   **Zhuowen Tu*** (`ztu@loni.ucla.edu`), Lab of Neuro Imaging, University of California Los Angeles, and **Arthur W. Toga** (`toga@loni.ucla.edu`), Lab of Neuro Imaging, University of California Los Angeles. *Learning unified low-level and context information for image analysis.* Preliminary report.

The importance of combining low-level, mid-level, and high-level cues has been realized in recent literature for both natural and medical image analysis. However, it is unclear how to efficiently and effectively engage and fuse different levels of information. Given an input data, a Bayesian approach often looks for the optimal solution through the combination of likelihood and prior. Unfortunately, they are both very hard to learn/design in many challenging applications, especially for natural and medical images. In this talk, we present a turbor classifier scheme to learn the posterior directly through iterative procedures. The model learns low-level and context information in a unified framework. In testing, the algorithm performs rapid inference through inhomogeneous message propagation. We show significant improvement of our algorithm over the traditional classification, Markov Random Fields (MRFs) and belief propagation approaches for several challenging tasks. (Received September 28, 2007)