



STATISTICS DEPARTMENT COLLOQUIUM

FRIDAY, APRIL 24, 2009

Talk: 4:00 PM – *Science Center 309*

Reception: 5:15 PM – *Science Center, 7th Floor*

“Network Flow Algorithms for MAP Estimation of Markov Random Fields”

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ABSTRACT

Computing the MAP estimate of a Markov Random Field is a difficult problem with important applications in computer vision and related areas. The computational challenge is to minimize a non-convex function over many thousands of variables. I will describe network flow algorithms that have proved to be quite successful for solving this minimization problem. Experimentally, they produce strong results on a wide range of problems, and have seen significant use both in academia and in industry. Theoretically, these methods provide a range of guarantees for different priors, including both global optimality and several different forms of partial optimality. I will also discuss some recent work concerning linear inverse systems with piecewise-smooth priors, which is motivated by an important medical imaging application.