Information Science and Technology Seminar Series

Alexander Ihler
UC Irvine

"Mixed Inference Algorithms for Estimation and Decisions in Graphical Models"

Wednesday, April 25, 2012
3:00 - 4:00 PM
TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: Significant progress has been made in developing approximate inference methods,such as the family of belief propagation algorithms, for summation tasks (computing marginal probabilities and partition functions) and MAP estimation (finding optimal configurations). However "mixed" inference tasks that include more than one such variable elimination operator are significantly more difficult. This class of problems include "marginal MAP" problems that predict a subcomponent of the full model, and decision-making problems such as Maximum Expected Utility tasks. We give a general variational framework describing mixed inference problems, in which analogues of the Bethe, tree-reweighted, and mean field approximations can be applied, resulting in new message-passing approximations on these tasks.

Biography: Alexander Ihler is an Assistant Professor of Information and Computer Science at UC Irvine. Ihler attended college at Caltech where he majored in mathematics and electrical engineering, and graduated in 1998. He also attended graduate school at MIT in the Stochastic Systems Group where he completed his PhD in 2005 under the supervision of Alan Willsky and John Fisher.

Ihler works in artificial intelligence and machine learning, focusing on statistical methods for learning from data and on approximate inference techniques for graphical models. Applications of his work include data mining and information fusion in sensor networks, computer vision and image processing, and computational biology.

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