## GRADUATE COLLOQUIUM:

# Scaling up Inference & Learning in Markov Logic Networks with Advanced Counting Techniques

Friday, October 9, 2015
12:30 – 1:30 PM, DH 351

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**ABSTRACT:**

Statistical Relational Learning (SRL) is an exciting sub-field in AI and Machine Learning that unifies logic and probability theory in an effort to model complex domains that have both relational structure as well as uncertainty (e.g., natural language understanding, computer vision, social networks, etc.). In this talk, I will focus on the most widely used SRL model called Markov Logic Networks (MLNs) that combines the cornerstones of AI and Machine Learning, namely, first-order logic and probabilistic graphical models. However, while MLNs are extremely expressive models and can represent high-dimensional probability distributions succinctly, it turns out that inference and learning in MLNs is highly intractable.

In this talk, I will present a novel approach to inference and learning in MLNs that scales up significantly better than existing approaches by leveraging advanced discrete counting techniques. Our recent results on several MLN benchmarks show that our approach is orders of magnitude more scalable than existing state-of-the-art MLN systems.

**BIO:**

Dr. Deepak Venugopal joined the University of Memphis in fall 2015 after completing his PhD in computer science at the University of Texas at Dallas. Dr. Venugopal's research interests are in probabilistic graphical models, statistical relational learning and applications of probabilistic models to problems in cyber-security and NLP. His dissertation work has produced key techniques for lifting probabilistic inference to first-order models and has been published in top-tier conferences such as NIPS, AAAI, UAI and EMNLP.

THE UNIVERSITY OF MEMPHIS
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**You are cordially invited to participate!**