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## Dissertation Defense: Abhishek Sharma

Friday, September 16, 2011, 03:00pm - 05:00pm

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### Thesis title: STRUCTURAL AND NETWORK-BASED METHODS FOR KNOWLEDGE-BASED SYSTEMS

**Abstract:** In recent years, there has been considerable interest in Learning by Reading and Machine Reading systems. These systems can learn thousands or even millions of facts from the Web. But to exploit this opportunity, we must address two issues: (a) Efficient first-order reasoning systems can be built today only for small-to-medium sized knowledge bases and by careful hand-tuning of inference mechanisms and representations. As knowledge bases grow, better ways to automatically use such knowledge efficiently must be found. (b) Secondly, how do reasoning systems that learn evolve over time? Characterizing the evolution of these systems is important for understanding their limitations and gaining insights into the interplay between learning and reasoning. In this work, we address these problems by focusing on the systemic properties of knowledge-based systems. We show that ideas from the fields of complex networks, SAT solving, and game theory can be used to improve Q/A performance in large knowledge-based learning systems.

**Committee Members**

Kenneth D. Forbus (Northwestern University)  
 Chris Riesbeck (Northwestern University)  
 Doug Downey (Northwestern University)  
 Johan de Kleer (Xerox PARC)

**Location :** QRG lab -- Ford 3.310**Contact :** Jennifer Stedillie jenn at cs.northwestern.edu

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