Department of Computer Science
University of Houston

FACULTY CANDIDATE SEMINAR
SPRIL 2011

WHEN: MONDAY, APRIL 25, 2011
WHERE: PGH 232
TIME: 11:00 AM

SPEAKER: Dr. George Giakkoupis, University of Calgary

Host: Dr. Ernst Leiss

Title: Models and Algorithms for Large Complex Networks

ABSTRACT:
Large complex networks, from social and biological networks to the Internet and the World Wide Web, have become the focus of significant research activity in many disciplines. An important component in the study of these networks is the development of simple mathematical models that capture their qualitative properties. Such models have the potential to help us reason about the organization of these networks.
Another important component is the study of network algorithms that work without global knowledge of the network or central control, and are robust to network changes and failures. Such algorithms are necessary given the size and the ever-changing nature of these networks.

I will present an overview of my work on two topics in this area. The first is models and algorithms for the "small world" phenomena observed in social networks: Any two individuals who are apparently far apart in a social network can find "short paths" to one another. Besides their sociological interest, models of these phenomena have also had an effect on the design of peer-to-peer systems. The second topic I will discuss is epidemic algorithms for disseminating information in large networks.
The principle underlying such algorithms is that they mimic the spread of viruses or rumors, and they are often used to design simple, scalable, and robust protocols for various network applications.

Biography:
George Giakkoupis received his PhD from the University of Toronto in November 2008. He was a Postdoctoral Fellow at University Paris 7 until April 2011, and is currently a Postdoctoral Fellow at the University of Calgary. His interests are in the design and analysis of algorithms, with emphasis on randomization and probabilistic techniques. Topics he has worked on include search in social networks, peer-to-peer networks, rumor spreading, load balancing, and network immunization.