

# Department of Electrical and Computer Engineering



TEXAS TECH UNIVERSITY

Edward E. Whitacre Jr.  
College of Engineering™

## Spring 2012 Seminar Series

### Seminar Title: Computational strategies for understanding how biological networks function.

Time: Feb 24th, 2012, 3:00 - 4:00 PM

Location: Lankford Lab ECE 101

#### **Speaker:**

**Tamer Kahveci**

Associate Professor

Dept. of Computer and Information Science and Engineering,  
University of Florida, Gainesville



#### **Abstract:**

Biological networks of an organism show how different bio-chemical entities, such as enzymes or genes, interact with each other to perform vital functions for that organism. Each subnetwork within a network can perform various functions that it cannot do without interacting with other entities in the network. Understanding the functions of the entire networks as well as the individual subnetworks has been a prime goal for explaining how the organisms work. Dr. Kahveci's lab is focusing on developing computational methods that will help in understanding the functions of large scale biological networks. This talk we will discuss some of the recent research activities at Dr. Kahveci's lab. Particularly we will focus on comparative analysis of biological networks. We will first discuss some of the challenges in comparing two networks by paying special attention to the metabolic networks. The major challenges we discuss will aim at understanding what it means to align two networks in a biologically meaningful way. After demonstrating these challenges as well as possible solutions to them we will move our focus to the problem of querying a large database of biological networks. This part will constitute a majority of the talk. Finally, we will describe how to integrate biological networks with other datasets such as gene expressions to understand how the molecules that make up these networks are affected from each other as well as their environment.

#### **Speaker Bio:**

Tamer Kahveci received his B.S. degree in Computer Engineering and Information Science from Bilkent University, Turkey in 1997, and his Ph.D. degree in Computer Science from University of California at Santa Barbara in 2004. He is currently an Associate Professor in the Computer and Information Science and Engineering Department at the University of Florida. Dr. Kahveci received the Ralph E. Powe Junior Faculty Enhancement award in 2006, CSB best paper award in 2008, the NSF Career award in 2009, the ACM-BCB (Bioinformatics and Computational Biology) best student paper award in 2010 and the ACM-BCB honorary best paper award in 2011. His main research interests are bioinformatics and databases. He has worked on indexing sequence and protein structure databases, sequence alignment and computational analysis of biological pathways. Dr. Kahveci is serving as the PC co-chair of the ACM BCB conference and the BioKDD workshop in 2012. He is a member of the editorial review board for the journal "International Journal of Knowledge Discovery in Bioinformatics (IJKDB)" Also, he is the lead guest editor of the Journal of Advances in Bioinformatics, special issue on "Computational analysis of biological networks". In addition to these, he has served on Program Committees of numerous computational biology and database conferences.