

## Information Foraging as a Foundation for Code Navigation

Dr. Nan Niu  
Department of Computer Science and Engineering  
Mississippi State University

Date and Time: October 5, 2011 - 11:00am-12:00pm

Location: SEC 3437

### Abstract:

The process of traversing an unfamiliar code base to fulfill software maintenance tasks is referred to as *code navigation*. Studies show that even experienced developers have difficulty navigating around programs of very moderate size. The problem associated with code navigation is presumably worse when less experienced developers try to maintain unfamiliar and large programs, a situation that is not uncommon in the software industry. Thus, a major software engineering challenge is to understand the fundamental mechanisms that underlie the developers' code navigation behavior.

In this talk, I introduce a novel and unified theory based on the premise that we can study developers' information seeking strategies in light of the foraging principles that evolved to help our animal ancestors to find food and to help users to find useful information on the Web. The central hypothesis is that developers evolve the strategies to maximize the gains of useful information to their maintenance tasks per unit cost. In this way, the developers' behavior and their information and task environments co-evolve, each shaping the other in important ways. We recently conduct studies on code navigation graphs and software clustering to investigate the underlying foraging theory's tenets in the context of code navigation. The studies provide valuable insight into information seeking in software maintenance. The research opens the avenue towards the development of ecologically valid tool support to augment developers' code search skills.

### Biography:

Nan Niu is an Assistant Professor in the Department of Computer Science and Engineering at Mississippi State University. His main research interests are in the area of Software Engineering. His current research focus is on the information seeking strategies that developers use in software development and maintenance. He received his Ph.D. from the University of Toronto in 2009, his M.Sc. degree from the University of Alberta in 2004, and his B.Eng. degree from Beijing Institute of Technology in 1999. He worked as a software engineer at Lenovo from 1999 to 2001 in Beijing, China.