

***The University of Alabama
Department of Computer Science
Colloquium Series***

**Chunying (Emily) Zhao
Ph.D. candidate
The University of Texas at Dallas**



Graph Transformation and Its Applications in Software Engineering

Wednesday, March 31st

Presentation at 11:00 a.m. in SEC 3437, refreshments across the hall in SEC 3438 at 10:45 a.m.

Abstract:

Graph transformation has been widely used for expressing model transformations. Many software models and program structures can be represented as graphs. Therefore, the transformations of software models / structures can be naturally formulated by graph transformations.

This talk first presents a graph grammar approach to program behavior discovery and verification. Discovering a program behavior and functionality can ease program comprehension and verification. The behavior recovery and verification problem is formulated as a graph grammar induction and parsing problem, i.e. iterative mining qualified patterns and then visually constructing graph grammar rewriting rules.

This talk will also discuss how to apply a graph transformation approach to software design evolution. Software can be evolved when developers modify their initial designs as requirements change. Modifications on software artifacts can introduce conflicts and inconsistencies in the previously applied design patterns. We validate a given design by a graph grammar parser and automatically evolve the design at pattern level to preserve the integrity and consistency of design patterns.

Bio:

Chunying Zhao is currently a Ph.D. candidate of Computer Science at the University of Texas at Dallas. Her research interests lie at the intersection of Software Engineering, Visual Languages, and Model Driven Architecture, with a special focus on exploring visual approaches to reengineering program structures and software design evolution and refactoring. A broad range of topics in her research projects include discovery of program behavioral patterns using graph grammar induction algorithms, pattern-level software evolution using a graph transformation approach, and adaptive Web interface layouts for mobile devices.