

Department of Computer Science
Thomas J. Watson School of Engineering and Applied Science
COLLOQUIUM

PING YANG
CS FACULTY CANDIDATE

Friday, March 24, 2006
EB Q-23
12 Noon – 1:00 pm

**“VERIFICATION AND ANALYSIS TECHNIQUES FOR MOBILE
PROCESSES, SECURITY PROTOCOLS AND ROLE-BASED ACCESS
CONTROL POLICIES”**

ABSTRACT

Complex software components are playing increasingly vital roles in mission critical systems as well as day to day life. The price of design and security flaws in these components can range from mere economic loss, to widespread service disruptions, and even loss of lives. In this talk, I will present my research work on new techniques to verify and analyze various properties of modern software systems.

First, I will describe the MMC (Mobility Model Checker) verification system, a toolset for model checking mobile systems and security protocols. MMC can be applied to detect and correct flaws in the design phase of software development life cycle. I will present the foundations that make MMC feasible and an optimizing compiler that significantly improves MMC's performance and scalability.

The second part of the talk will focus upon analysis techniques for Administrative Role-Based Access Control (ARBAC) policies. Role-Based Access Control is widely used for expressing access control policies; the policy changes are guided by administrative policies. I will present new techniques and complexity results for solving reachability and related analysis problems for several categories of ARBAC policies that are defined by simple restrictions on the policy language.

Biographical Sketch

Ping Yang is a Ph.D. candidate in the Computer Science Department at Stony Brook University. She received her B.S. in Computer Science in 1996 from Zhongshan (Sun-Yatsen) University, and M.E. and M.S. in Computer Science from the Chinese Academy of Sciences (1999) and Stony Brook University (2001), respectively. Her research interests are in the areas of Verification, Software Engineering, Security, and Programming Languages. She is the recipient of the Most Practical Paper Award at the Seventh International Symposium on Practical Aspects of Declarative Languages in 2005.