CMPT 479 - D100 Spec.Topics: Automated Software Analysis and Security

Instructor(s): Nick Sumner

SFU Burnaby

Calendar Objective/Description:
Current topics in computing systems depending on faculty and student interest.

Instructor's Objectives:
Special Topics Title: Automated Software Analysis and Security

Software development is a time consuming and error prone process. Most developers still rely on manual processes to generate tests, discover errors, or correct misbehaving programs. Software security is often an afterthought. Program analysis provides tools and techniques that allow developers to push these burdens onto computers, making software both easier to develop and more reliable. This seminar and project based course explores both foundational and emerging research in program analysis and software engineering. Special focus will be given to automated approaches for avoiding, locating, tolerating, and remediating software failures as well as identifying, remediating, and exploiting security vulnerabilities. Students are expected to learn core techniques used in program analysis and to ultimately apply them. Prerequisites for this course are flexible with instructor approval. CMPT 379 is recommended but not required. Introductory projects will involve programming in C++. Term projects can be done using a language of student preference.

Prerequisites:
CMPT 300.

Topics:
- Static and dynamic analysis
- Software security
- Slicing
- Automated test generation
- Managing concurrency and detecting concurrency bugs

Grading:
Subject to change. Paper presentations, paper reviews, class participation: 40%. Assignments: 30%. Term project: 30%.

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).