CMPT 479 - D100 Special Topics in Computing Systems

Instructor(s): Nick Sumner

SFU Burnaby

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

Instructor's Objectives:
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 security, fault tolerance, and program synthesis. Students are expected to learn core techniques used in program analysis and to ultimately apply them. 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 program analysis
- Software security (offense and defense)
- Automated program synthesis
- Automated test generation
- Concurrency and parallelism
- Smart contracts and blockchain

Grading:
Paper presentations, paper reviews, class participation 40%, Assignments 30%, Term Project 30%. Grading criteria are subject to change.

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).