Software Testing

Class Meetings: 3:30pm - 4:45pm, Tuesday/Thursday, 1109 SC
Credit: 3 undergrad hours; 3 or 4 grad hours
Wiki: http://wiki.cites.illinois.edu/wiki/display/cs498stfa17
Piazza: piazza.com/illinois/fall2017/cs498st/home (This term we will be using Piazza for class discussion. The system claims to be highly catered to getting you help fast and efficiently from classmates and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the Piazza developers, email team@piazza.com.)

Instructor: Tao Xie, taoxie@illinois.edu, 4237 SC, 217-244-5931
Office Hours: By appointment
Grader: none this year?

Overview

This course will provide an introduction to systematic and organized approaches to software testing. A 2002 NIST report estimates that software errors cost the U.S. economy $59.5 billion annually and that improving testing infrastructure could save $22.2 billion. Various studies show that testing can account for over 50% of software development costs. Students in this course will learn techniques and tools that could significantly improve their testing (and development) skills. Topics to be covered include testing process, coverage criteria, automatic and manual generation of test inputs, execution of test cases, and validation of test outputs. This semester the course will be structured around testing some big open-source C# or Java software.

Prerequisites

No formal requirement, but it is recommended that students have basic knowledge of software engineering (CS 427) and programming languages (CS 421). If you did not take these courses or are not sure whether you can take this course, please consult the instructor for consent.

Deliverables

There will be several homework assignments and a course project. Students are encouraged to do projects in teams, preferably of two students. Each project will be related to testing some part of an open-source software, and the main deliverable will be a final project report. You will also hopefully find some bugs and get to submit bug reports (and/or pull requests if using Git).

Textbook (Recommended but Not Required)

Introduction to Software Testing by Paul Ammann and Jeff Offutt

Software Tools


- IntelliTest (Pex)
- Code Contracts (available for VS 2015)

Grading

For 3 hours of credit, coursework points will be based on the project (30%) (i.e., the final term project submission) and homework assignments (70%) for which the milestone midterm submission is considered as a bigger homework assignment: milestone midterm
submission counts 18% and each of MP1-MP4 occupies 13%. A student can get up to 2% bonus points for participation (on Piazza and in lectures). For 4 hours of credit, the points for 3 hours of credit will be 75% of the grade, and the remaining 25% will be based on the project. The general policy for late submissions is that they get 0 points; if you need an extension for some reason, please ask well in advance.

Based on your points, you will get at least these grades: A+ (97%), A (93%), A- (90%), B+ (87%), B (83%), B- (80%), C+ (77%), C (73%), C- (70%), D+ (67%), D (63%), D- (60%), and F (for less than 60%). The instructor reserves the right to lower the number of required points but will not increase them.

Collaboration

You are not allowed to discuss problem sets with other students (unless explicitly stated otherwise), and you must each write your solution separately. You are strongly encouraged to undertake projects in teams.

Other Items

Items not specifically mentioned for this course, including unauthorized collaboration or copying of online material without credit, will be handled according to the general departmental and university policies. CS498DM uses the standard code for CS courses. If you have questions about any of these, for example on disabilities, please consult the instructor as soon as possible.