Carleton University
School of Computer Science
COMP 5117: Mining Software Repositories
Fall 2019

Class Schedule

Seminars are held every Thursday from 8:35 AM to 11:25 AM in SA 311.

Instructor

Dr. Olga Baysal
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Office Hours: by appointment only

Course Website

http://www.olgabaysal.com/teaching/fall19/comp5117_f19.html

Short Description

Introduction to the methods and techniques of mining software engineering data. Software repositories and their associated data. Data extraction and mining. Data analysis and interpretation (statistics, metrics, machine learning). Empirical case studies.

Description

Software development projects generate impressive amounts of data. Mining software repositories research aims to extract information from the various artifacts produced during the evolution of a software system and inferring the relationships between them. This course will introduce the methods and tools of mining software repositories and artifacts used by software developers and researchers. Students will learn to extract and abstract data from software artifacts and repositories, such as source code, version control systems and revisions, issue-tracking systems, and mailing-lists and discussions. Students will also learn about various techniques of analyzing this data in order to identify meaningful relationships, patterns and trends, to recover behaviours and software development processes from evidence, or to empirically test hypotheses about software development.

Prerequisite

Students are expected to have some background in software development and software engineering. Prior knowledge of data mining, machine learning, statistics and natural language processing would be an asset, but is not required.

Objectives

This graduate course explores the mining of data in software repositories in order to help researchers gain empirically based understanding of software development practices, and to support practitioners in managing, maintaining, and evolving complex software projects. The course will discuss leading research in the areas of mining software repositories. Papers discussed in this course will give students a glimpse of leading research which transforms software repositories from static record keeping repositories to active repositories that are used by researchers and practitioners to better understand and predict software development activities instead of depending on personal experiences and intuition. Students will be able to extract and analyze information from multiple software repositories in order to reason about existing software systems and development processes, as well to validate hypotheses about software development using data extracted from existing software systems.

Content Overview

The course will be adjusted according to students' interests and experience. This is an overview of the kinds of topics the course could cover:

- Mining software repositories (data extraction and analysis)
- Development team processes
- Software development tools and environments
- Software analytics
- Software visualization
- Mining social data
- Software evolution
- Quantitative and qualitative evaluation of software engineering research

Evaluation

- Weekly paper reviews (10%)
- Class participation and discussion (20%)
- Paper presentations (20%)
- Project (50%)

University Policies

Student Academic Integrity Policy

Academic Integrity is everyone's business because academic dishonesty affects the quality of every Carleton degree. Each year students are caught in violation of academic integrity and found guilty of plagiarism and cheating. In many instances they could have avoided failing an assignment or a course simply by learning the proper rules of citation. See the Academic Integrity for more information.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Pregnancy obligation

Write to the instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website.

Religious Obligation

Write to the instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website.