

CMPT 381.3 - Implementation of Graphical User Interfaces

Department of Computer Science – University of Saskatchewan
2016-2017 Winter

Course Description

Advanced introduction to concepts and structures used to develop GUIs in software, focusing on building user interfaces. Covers the fundamentals of GUI toolkits including input, widgets, layout, events, model-view-controller architectures, and two-dimensional graphics.

Moodle

The Computer Science Moodle page will be the main location for all materials related to 381.

Prerequisite

CMPT 270

Brief Learning Objectives

When finished this course you will be able to:

- Build graphical user interfaces in several development environments
- Develop interactive systems that use widgets, layout managers, event handlers, and 2D graphics
- Build systems using the model-view-controller pattern
- Implement common interaction techniques such as selection, drag and drop, and undo

Course Meeting Information

Lecture: Tuesdays and Thursdays, 10:00am – 11:20am, Geology 261

Lab: Tuesdays, 11:30am – 12:20pm, Spinks S320

Instructor Information

Instructor: Prof. Carl Gutwin

Contact: gutwin@cs.usask.ca (Thorvaldson 377.2; hours by appointment – send email)

Guest Lecturer: Prof. Alix Goguey

Contact: alix.goguey@usask.ca

Tutorial Leader: Matthew Miller

Contact: matthew.miller@usask.ca

Student Evaluation

Grading Scheme:

- Assignments: 45%
 - Midterm exam: 15%
 - Final exam: 40%
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- Assignments: coding tasks due every two weeks
 - Midterm: in class, March 2

Textbook

Required:

- Olsen, D. R. Building Interactive Systems : principles for human-computer interaction, (2009), Course Technology, Boston, MA. ISBN-10: 1423902483 ISBN-13: 9781423902485 (available in the U of S bookstore; electronic versions also available).

Recommended:

- The U of S library has several electronic reference books for the different development environments (Java FX and Android). Additional reference materials will be made available on the course website.

Course Topics

- Intro to UI development and interactive systems
- GUI Architecture: the layered model, MVC, and the interaction cycle
- Paradigms for specifying UIs: programmatic and declarative
- Widgets, Layout, and Events
- Building basic UIs in different environments: Java FX and Android
- 2D graphics: canvases, points, lines, shapes, and transformations
- Model-View-Controller pattern and implementation
- Threading for GUIs
- Basic interactions: select, scroll, drag and drop, cut/copy/paste, undo
- Advanced interaction: e.g., ink, gestures, zoom & pan
- Other topics as determined by class interest

Policies

- All students must be registered in order to attend lectures and receive credit for this course.
- *Late Assignments*. No late assignments will be accepted or marked without medical reason, and no extensions will be given.
- *Missed Assignments*. See above.
- *Final Exam Scheduling*. The Registrar schedules all final examinations, including deferred and supplemental examinations. Students are advised not to make travel arrangements for the exam period until the official exam schedule has been posted.
- *Missed Examinations*. U of S policy states "Students who have missed an exam or assignment must contact their instructor as soon as possible. Arrangements to make up the exam may be arranged with the instructor. Missed exams throughout the year are left up to the discretion of the instructor if a student may make up the exam or write at a different time."
(www.arts.usask.ca/students/transition/tips.php)
- *Academic Honesty*. Students are expected to be academically honest in all of their scholarly work, including course assignments and examinations. Academic honesty is defined and described in the Department of Computer Science Statement on Academic Honesty (www.cs.usask.ca/undergrad/honesty.php) and the University of Saskatchewan Academic Honesty Website (www.usask.ca/honesty). The Student Academic Affairs Committee treats all cases according to the University Policy and has the right to apply strict academic penalties (see www.usask.ca/university_secretary/honesty/academic_misconduct.php).