CSCI 5980
Seminar on Location-aware Technologies

Instructor

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KHKH 5-191
Office Hours: Mondays, 3-5p (tentative)

Class Meeting

Mondays and Wednesdays, 9:45-11am in STSS 420A. You will also be required to meet with Dr. Hecht several times during the semester to discuss your course project, typically as a project group.

Summary

Tom Erickson, a well-known researcher at IBM, has said that, in the near future, he expects maps to be as important to the future of the computing experience as the GUI is today. This course will provide students with the necessary theory and applied knowledge to succeed in an increasingly "geo" world of computer science. The course will have a major group project component. For students interested in the private sector, the project will involve the conception and development of a location-aware technology (e.g. app) that they can add to their portfolio. For those interested in graduate school, the project will consist of the conception and execution of a location-aware technologies research project.

Course Description

Upon successful completion of this course, you will have an understanding of the theory and practice of location-aware technologies. Very few people working with these technologies have formal training, and this course will provide you with an advantage in a fast-growing field.

This course is *project-focused*. A large percentage of your grade will be based on a final class project, to be completed individually or in groups. This final project will involve either (1) the implementation of a challenging and interesting location-aware technology or (2) the execution of a research project in the location-aware technology space.

Your aim with your course project should be to support your professional goals while at the same time demonstrating excellence in the topic matter of this course. My hope is that those of you who are headed to the job market will be able to use your course project as a shining example in your portfolios for potential employers. Similarly, for those of you who are interested in Ph.D. programs, this course project will be a great opportunity to execute a potentially publishable research project. In both cases, I look forward to working closely with you to make your project the best it can be.

The course will also be *discussion-focused*. While most Monday course meetings will be in a somewhat traditional lecture format, most Wednesday meetings will consist all, or in part, of discussion. The typical week will involve a Monday lecture on the week's topic, with Wednesday focused on discussion of that topic. In order to support these discussions, readings will be assigned for each Wednesday meeting. Whereas the Monday lectures will focus on current best practices and recent well-known findings, Wednesday's discussions will focus on classic papers and hot-off-the-presses research. In this way, you will be exposed to the past, present, and future of each week's topic.

It is expected that all students complete the assigned readings. Most Wednesdays will open with a small quiz on the assigned readings in order to support the discussion in class that day. These quizzes will count towards a small portion of your grade (see below).

Readings

There will be no textbook for this course, and all readings will be made available on the course webpage. Readings will consist primarily of scientific papers, but textbook chapters and other materials may also appear on the reading list.

Prerequisites and Necessary Background

The majority of students in the class will have competence programming in high-level languages and should have the ability to learn a new language and new programming tools quickly. Prior experience with web-based and mobile development is helpful but not a requirement.

Students without this background will be admitted to the course because of strengths in related areas (e.g., geography, environmental science). These students will participate in projects (no more than one per group) and will be evaluated on all of the non-programming parts of the course.

Workload

This demanding course will require substantial and sustained effort. In accordance with standard university guidelines, students should expect to spend about nine hours per week on this course to meet the minimum requirements for a C-level grade. Students aspiring to higher grades will need to work harder, more efficiently, or both.

Because of the integrated group activity in the course, students whose work or personal lives would lead them to miss more than one consecutive week of class or more than two weeks total should not enroll in the course. Much of the material covered in this class can be learned in other venues more suitable for students who are unable to commit a semester to the material.

Working in Groups

Working in project groups may be new for some of you and can be challenging for all. Spend time at the start of the course learning about prospective group members. Remember that you will have a better group experience if your group is diverse in talents and interest, but united in goals and compatible in work habits.

Should you encounter problems in group work, please see the TA or instructor as soon as possible. Most group problems can be resolved if they are addressed promptly. In extreme cases, we may rearrange groups.

Course Computing

Students may do their work using the CSE laboratory computers. By enrolling in this course (or by being an CSE student) you are charged the computing fee, and you are therefore entitled to an account. You can register that account through the web or in person in the CSE lab in KHKH 4-240, ME308, or any of the other labs (see http://www.cselabs.umn.edu).

However, you may develop your software on any system with the appropriate software tools.

Project

You will be required to prepare a project proposal and form a project team (if desired) by the beginning of Week 6 as outlined in the course schedule. More details about the course project will be announced in class as the semester proceeds.

Your project may be jointly submitted to another course with the approval of the other instructor (it will still be judged on this course's criteria).

Examination

A single examination will be held the final regular meeting of class. The intent of this exam is not to test your knowledge of details and minutae from course notes, but rather evaluate your understanding of high-level concepts. Note that, as described below, this exam will have significantly less impact on your grade than final exams in many other courses.

Homework

Homework that is not related to your course project will be assigned several times early in the semester. As we move through the semester, homework will get more project-focused and less frequent. It is expected that you will work hard on your course project every week once the project proposal has been approved.

Discussion Leadership

Each student will be required to lead one Wednesday discussion on readings (some may do this in pairs). As a discussion leader, it is your responsibility to do a small presentation on the most important topics in the reads, identify subjects for class deliberation, plan a brainstorming session around a particularly appealing idea, and so on. *The best discussion leaders will incorporate material outside of the assigned readings*.

Discussion leaders should prepare to lead a 75-minute discussion, but this time may be reduced from week to week.

Participation and Reading Quizzes

As noted above, quizzes on assigned readings that take place at the beginning of class on most Wednesdays will make up a small portion of your grade. The lowest two quiz scores will be dropped. You will also be graded on the extent of participation in class discussions. If you speak up and express your opinion on a semi-regular basis, you will receive full participation credit.

If participation in group discussion is exceptionally difficult for you for any reason, please talk to me.

Grading Policy

Grades are computing as follows:

- Project: 50%
- Final: 20%
- Homework: 10%
- Participation and Reading Quizzes: 15% (7.5% quizzes, 7.5% participation)
- Discussion Leadership: 5%

The course is not graded on a curve. My goal is to foster a collaborative, collegial environment. The nominal scale awards an A or A- for 90% and better, B+, B, or B- for 80% and better, etc. That scale may be adjusted to lower numerical cut-offs if warranted, but will not be raised.

Scholastic Conduct

Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own, can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

"…plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis."

Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. Cases will also be reported to the Office for Student Academic Integrity, which may pursue more severe sanctions, including suspension and expulsion. If you have any questions regarding the expectations for a specific assignment or exam, ask.

Incompletes

Incompletes are only awarded in very rare circumstances when an unforeseeable event causes a student who has completed all coursework to date to be unable to complete a small portion of the work remaining in the course. Because of the heavy groupwork nature of the course, incompletes

will generally not be awarded except in cases of severe medical or family emergency. Making up an incomplete grade will usually require completing a new project. Any incomplete grade will require a written agreement on the work to be completed.

Special Circumstances

Students with special needs or circumstances should contact me as soon as possible to make any necessary arrangements. Because of the extensive group work involved in the class, please be sure to inform your group members should you plan to miss class or be out of town for a lengthy period. As with incompletes, extensions are only granted for unforeseeable events, but arrangements may be made to obtain assignment handouts in advance if needed. Other accommodations, including sign language interpreters, large-print exams, and private exam rooms can be arranged in cooperation with disability services.

Miscellanea

This syllabus was based on part on that of Loren Terveen and Joe Konstan's CSCI 5115 course (with permission).