Information Visualization - Syllabus

General Information:

Course: CS 6/77302, Spring 2022

Location: BOW 122

Lecture time: Tue, Thu 9:15 am - 10:30 am
Office Hour: Tue, Thu 1:30 pm - 2:30 pm at Blackboard Collaborate Ultra
                   or by email appointments

Instructor:

Ye Zhao, Professor

Kent State University

Department of Computer Science

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Part 1. Course Information

Course Goal:

Information visualization is the science that unveils the underlying structure of data sets using visual representations that utilize the powerful processing capabilities of the human visual perceptual system. In this class, we will study algorithms and systems for visually exploring, understanding, and analyzing large, complex data sets. Information visualization focuses on abstract data such as symbolic, tabular, networked, hierarchical, or textual information sources. The objectives of the course are to learn the principals involved in information visualization and a variety of existing techniques and systems. Students will also gain backgrounds and skills that will aid the design of new, innovative visualizations in realistic applications.

Course Prerequisite:

Basic mathematics is necessary such as vectors, matrix operations, derivatives, and basic trigonometry.

Course Programming Requirement:

This class will involve programming projects with a medium to heavy programming load, including coding, debugging, and report. You might need to conduct extra efforts and working load if your programming skills need to be trained and improved. Programming skills such as Python or Java Script is needed. This is an advanced class and we will not teach basic programming skills.

Course Topics and Learning Outcomes:

Topics covered will mainly include

1) Multidimensional visualization, tree visualization, graph visualization, geographical, and time series data visualization techniques
2) Visual perception, cognitive issues, evaluation, as well as other theory and design principles behind information visualization
3) Visual analytics techniques and systems, and their applications
4) Basic interaction techniques such as selection and distortion
5) Programming of information visualization applications and systems.

Course Text and Material:

Unfortunately, no single textbook covers all the material of this course. We will make class notes and papers available on Blackboard.

We recommend the textbooks below as references:

Visualization Analysis and Design, 1st Edition, Tamara Munzner, AK Peters Visualization Series, 2014

Interactive Data Visualization second edition by M. Ward, G. Grinstein, and D. Keim, A.K. Peters/CRC Press 2015

Now You See It by Stephen Few, Analytics Press 2015.

Information Visualization: Perception for Design 3rd edition. by Colin Ware, Morgan-Kaufmann, 2012.

Part 2: Course Evaluation

Grading Criteria:

1) Homework and Paper Tests (40 points): Homework and paper tests will be given for class-related concepts and topics.
2) Reading and presentation (20 points): Students are required to read technical papers related to class topics. Each student will be required to give a virtual presentation of your reading of technical papers during the semester.
3) Programming projects: (40 points): Programming projects including a final project will be given and will be evaluated by your project design, programming efforts, and results.

The final letter grade will be given based on the numeric scores (0-100) according to the score distribution over all students.

Assignment Submission:

Students should submit all assignments via the Blackboard Assignment tool using the following guidelines:
- Homework and projects must be submitted by the due date.
- An assignment/project turned in within one week after the due date will be considered late and will lose 30% of its grade.
- No assignments will be accepted for grading after one week late.
- The late submission needs prior consent of the instructor.
- Project submission will include a readme document explaining the program and a guidance to run the code. It should also include the source code.

Assessment Feedback:

All the assignments will be graded on the Blackboard. You can find your grades on Blackboard Grade Center about 2 weeks after the due date of each assignment.

Academic Dishonesty Policy:

The University expects a student to maintain a high standard of individual honor in his/her scholastic work. Unless otherwise required, each student is expected to complete his or her assignment individually and independently. Although it is encouraged to study together, the work handed in for grading by each student is expected to be his or her own. Any form of academic dishonesty will be strictly forbidden and will be punished to the maximum extent. Copying an assignment from another student in this class or obtaining a solution from some other source will lead to an automatic failure for this course and to a disciplinary action. Allowing another student to copy one's work will be treated as an act of academic dishonesty, leading to the same penalty as copying.

University policy 3-01.8 deals with the problem of academic dishonesty, cheating, and plagiarism. None of these will be tolerated in this class. The sanctions provided in this policy will be used to deal with any violations. If you have any questions, please read the policy at http://www.kent.edu/policyreg/administrative-policy-regarding-student-cheating-and- plagiarism and/or ask.

Discussion Boards:

In the Blackboard system, you can participate in the course discussion forum, post questions you encounter, and answer questions from others.
Please do not post any topics that are not relevant to this course.

Part 3: University Policies

Students are required to be aware of and follow all general and academic policies established by Kent State University. A list of the general academic policies is listed on the Kent State University Policy Register, which can be found in the University policies section of the Getting Started in Your Online Course link. Specific policies related to the successful completion of this online course can be located and reviewed in your Blackboard Learn course.

Students with Disabilities:

University policy 3342-3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Accessibility Services (contact 330-672- 3391 or visit www.kent.edu/sas for more information on registration procedures).

Course Enrollment and Withdrawal:

University policy requires all students to be officially registered in each class they are attending. Students who are not officially registered for a course by published deadlines should not be attending classes and will not receive credit or a grade for the course. Each student must confirm enrollment by checking his/her class schedule (using Student Tools in FlashLine) prior to the deadline indicated.

If registration errors are not corrected by this date and you continue to attend and participate in classes for which you are not officially enrolled, you are advised now that you will not receive a grade at the conclusion of the semester for any class in which you are not properly registered. Also, it is your responsibility to check the withdrawal dates for each semester.

Every class has its own schedule of deadlines and considerations. To view the add/drop schedule and other important dates for this class, go to Student > Resources > Courses and Registration in FlashLine. Choose View or Print Course Schedule and Purchase Textbooks. To see the deadlines for this course, click on the CRN. The add/drop schedule and important dates may also be found on the Drop or Add a Course link. Click on the green clock next to the course under Registration Deadlines.

Plagiarism and Academic Integrity:

Students enrolled in the university, at all its campuses, are to perform their academic work according to standards set by faculty members, departments, schools and colleges of the university; and cheating and plagiarism constitute fraudulent misrepresentation for which no credit can be given and for which appropriate sanctions are warranted and will be applied. For more information see the Kent State policy on plagiarism in the University policies section of the Getting Started in Your Online Course link within the Start Here folder.

Subject to Change Statement:

The syllabus and course schedule may be subject to change. Changes will be communicated via email or the Blackboard Learn announcement tool. It is the responsibility of students to check email messages and course announcements to stay current in their online courses.