12-780 Advanced Python and Web Prototyping for Infrastructure Systems
Fall 2016

Course Project   =   40 points
(5 points proposal, 10 points Progress Report and Code, 20 points final report and Code, 5 points final presentation)

Project Proposal Instructions

This document should be about 2 pages. It should describe the topic you have chosen and the general vision of the software. All proposals should have the following sections.

1. Title/name/date/contact info
2. Introduction (purpose/overview/organization of document)
3. Background (industry and domain)
4. Potential users and customers
5. Main features for the whole product
6. Main features to be developed in this project
7. Estimated schedule

Note: The difference between item 5 and 6 is that you may have a vision that beyond what you will implement during this course (e.g., you may think about functions that can be further developed in 12-780 or in the future). Please list all your vision in item 5, and then discussed the ones that you will implement in item 6.

Examples of project topics

The following topics are from previous classes. I didn't include details, but most of the topics are actually extended with more functions than the traditional name (e.g., adding networking communication, save data to files and database, importing data from other software, conducting data analysis using Python libraries, etc.).

- Games:
    - Tic Tac Toe
    - Bounce ball
    - Automated player for Golden Fraud
    - Brick breaker
- Engineering applications
    - Indoor space heat calculator
    - Automotive sampling system data processing
    - Sensor data visualization on building floorplan
    - Visualizing Carbon Dioxide emission data in the U.S.
- Other applications
    - Predictive software for soccer lottery
    - Personal weight manager
    - SUV-Match – vehicle purchase searching tool
    - Collaborative calendar

Project Progress Report Instructions

For the progress report, please give a brief description of the project you are working on (to remind me), address any concerns I had from your proposal, and please present to me some evidence of progress you are making. I expect that this report will be short on text and mostly be made up of example runs or code snippets).

Project Presentation Instructions

The presentation is going to be offline from the classroom and online on YouTube! You will create a 2~3 minutes video of your product (both the prototype and any slides, animation or other relevant information you want to provide). Here are several great videos with different styles.

https://www.youtube.com/watch?v=UX0mqLVlauk
https://www.youtube.com/watch?v=xy9nSnalvPc
https://www.youtube.com/watch?v=0QRO3gKj3qw

You don't need to follow these examples, but just need to provide two main parts of the content:

a. An introduction about what your application is, who are the users, and why do you want to create this application (similar to the 2nd and 3rd video. You can use slides or videotape yourself for this portion)
b. A demo of how the software is used (similar to the first video)

Project Final Report Instructions

Please follow the following structure for your report (~10 pages without the appendix):

1. Introduction
    a. Problem Description
    b. Objectives for Project
    c. Overview of Approaches Taken
    d. Organization of the rest of the report
2. Detailed features of the product design
3. Detailed features developed
4. Assessment of how well approach works for problem
5. Appendix: Any details about the GUI, codes and other information about the product.