Dalhousie University
CSCI6906 - Spec. Grad. Topics in Computer Science
2017 Fall
Project Instruction

Final project presentation: November 23, 2017 to December 4, 2017.
Final project submission on brightspace (code and report): December 04, 2017 (11:50PM).

Instructions:

- Submit your code and final report on **brightspace**.
- Read the Dalhousie Policy on Plagiarism.
- Properly cite any external source that you used.
- You are not allowed to use or reuse any piece of code from other **groups**.
- You can use any programming language for the backend and the frontend

Project Description:

The Visual Analytics project must have two components of machine learning and the visualization. While you are allowed to use existing visualization modules (e.g. scatter plot, pie chart, parallel coordinates, etc), choose them reasonably, try to add new features to them (e.g. add tooltip), combine and interconnect them, and connect the visual interface to the back end (machine learning part). For the machine learning (ML) part, you do not need to design a new algorithm but try to properly select existing ML methods and algorithms to address your problem.

Project elements:

1. [10 points] Early project presentation (**already done**)
    a. You need to present your project early steps in 5-10 minutes
    b. You get points based on the quality of the presentation

2. [20 points] Final project presentation
    a. Prepare 15-20 minutes presentation (group will be penalized if this time slot is not obeyed).
    b. The presentation should contain (at least)
        i. Introduction and motivation.
        ii. Data description (size, attributes, etc.) and Data pre-processing.
        iii. Employed solutions and justification (visualization and machine learning parts).
        iv. Discuss the code architecture and employed solutions (frameworks, libraries, etc.).
        v. Live execution of the proposed system, showing different use cases (sell your product).
        vi. Conclusions.
    c. You get points based on the quality of the presentation, the importance of the problem and the proposed solution.

3. [30 points] Project Report
    a. You get points based on the quality of the report, the difficulty of the problem, novelty of your solution and properly addressing the following steps.

b. The report should have at least 4 pages (no maximum limit, but avoid unnecessary text).
c. You need to submit your project report on Brightspace.
d. The final project should be in IEEE latex conference format.
e. The report should include (at least)
    i. Title
    ii. Abstract
    iii. Introduction (with motivation)
    iv. Materials and Methods (dataset(s) and techniques)
    v. Results and Use Cases.
    vi. Conclusion.
f. Clearly explain your project (what problem are you solving), discuss its importance, your solution to tackle the problem and your novelties in both visualization and machine learning part.
g. Explain the machine learning approach you used for solving the problem.
h. You need to clearly justify and explain each visualization module in your interface (visualization).
    i. Clearly explain why you chose these visualization modules.
    ii. Clearly explain what you want to present to the user by each of the visualization module.
i. Explain your evaluation metrics and how did you evaluate the quality of your proposed approach.
j. Clearly cite all tools, libraries and external resources you used in your project. You need to explain what you added or change to the existing code and resources.
k. Clearly explain the programming languages and technologies you used in your project.

4. [40 points] Project source code
    a. You get points based on the quality of the code (e.g. properly documenting the code, name your functions and variables), the difficulty of the implementation and novelty of your implementation.
    b. You need to submit your code on Brightspace.
    c. Add necessarily instructions for executing the source code.
    d. Attach any external resources or libraries you used in your project.
    e. Attach your dataset(s) (we are going to run your code, if we cannot, the group will be penalized)