Group Project – Experiment Design for CS class

Summary

The students (in groups of two or three) must choose an experimental question of interest for investigation. While designed experiments are preferred, observation or retrospective studies are also accepted. The final project consists of:

- Definition of the experimental question;
- Review of the relevant literature;
- Experimental design (for designed experiments) or data cleaning and preconditioning (otherwise);
- Data collection according to the design (for designed experiments)
- Statistical modeling and analysis of the data;
- Drawing of conclusions from the data.

The group should sent a message to the processor with the participants by the end of the fourth lecture of the course.

Report

The report must be prepared using the same R Markdown template used for the case studies. The report should contain:

- Summary;
- Introduction, including the description of the *research question* being investigated and a brief literature review on the topic;
- Experimental design, including materials and methods, data collection protocols, criteria for including/excluding observations, etc.;
- Experimental results, including any observations about the actual data gathering, exploratory data analysis, statistical inference, model validation, quantification of effect sizes, and discussion of the results;
- Conclusions and recommendations (**note**: conclusions about the *experiment*. I'm not interested in comments about "the importance of design of experiments" - I know it's important - but instead I want to know what conclusions can you draw about your question of interest.)

The report will be evaluated according to the following criteria:

- Justification for the experiment (i.e., how well you can justify your question of interest);
- Compliance with the required format;
- Reproducibility of results;
- Technical correctness and methodological soundness;
- Structure of argumentation;
- Correct use of language (grammar, orthography, etc.);

Seminar

The group will present their work in a seminar during the last class. The format for this seminar is free, but the time limit is 12 minutes (10 minutes presentation + questions). The order of the presentations will be defined randomly.