15-830/630 – Final Projects

Important Due Dates (due at start of class)

- **10/11** – Initial project proposal
- **11/8** - Project milestone report
- **12/12** - Final project report (Due at midnight, 12/12)

Description

A major component of 15-830/630 is writing a final report looking in depth at a topic in computational approaches to some aspect of sustainable energy. Projects will be done in groups of two, and the final report will be up to five pages. The purpose of the final project is to let you explore in greater depth some particular problem related to energy and computation, beyond what we may have covered in class. This may extend topics that we have covered in class, or it may explore a new area.

There is one important distinction between the final projects for the 15-830 class and the 15-630 version: for 15-830, the final project much contain a portion of original research (that is, you should be running some sort of experiments to test and algorithm or to analyze data related to sustainable energy systems). For 15-630, the final project does *not* need to contain a portion of original research, so for example it woudl be perfectly acceptable to just survey a body of work in computational methods applied to sustainability (though an original research portion is certainly fine for those who are interested). If you have questions about the suitability of a topic or set of references, please ask about it during office hours.

Projects without an original research component will be graded chiefly upon how clearly they explain and describe the importance of computation within the context of a sustainable energy system. Such projects should state the problem clearly, describe the key mathematical models used by the relevant papers, and highlight the strengths and weaknesses of the existing approaches. Projects with an original research component should make a similar effort in summarizing relevant past approaches, but then devote the majority of the writeup to clearly describing the algorithm and data, then presenting experimental results adhering to the practices of evaluating algorithms as described in the course. The final writeup is due 12/6, and late days are *not* acceptable to use.

Proposal

The initial project proposal, due 10/11, must include 1) a list of the students participating in the project and project title 2) a short (500 word max) written description of the project, and 3) at least three references to academic papers that you will be either summarizing or building upon in your own research. The goal of the proposal is not to actually carry out any of the work, but just to lay out a plan for the project, so that we can make sure it is the right size and scope for the class. These proposals should be emailed to `zkolter@cs.cmu.edu` by the start of class on 10/11; late days are acceptable to use for the proposal.

The proposals are worth 10% of the total final project grade, but you will receive full credit as long as you make an effort to address all the elements above. Since certain proposals may need revisions after first submission, the goal here is to make sure that you submit something we can give feedback about.

Milestone report

The milestone report, due 11/8, should describe the progress made on the project so far in a maximum of two pages. Since this date is roughly halfway between the proposal and the final project deadline, we expect you to be approximately halfway done with the project, and the report should reflect this. For instance, a good milestone report (for an original research project) would describe what data and algorithms you are using for the project, include some initial results from the methods, and indicate directions that you want to explore for the remainder of the semester; a milestone report for a project without original research should include an overview of the problem and methods you are looking at, and the beginning of a synthesis that describes the algorithmic approaches used by the different methods you are looking at. Late days are acceptable to use for the milestone.

The milestone is worth 10% of the final project grade, but again you will receive full credit as long as you make a reasonable effort to accomplish the above; the goal is to give you an idea of the most difficult portions of the project, and allow us to give feedback.