## ECE236C Project Instructions

ECE236C requires a final project. The project should involve independent research, algorithm implementation and testing, documentation, and a project report. You can propose any topic related to ECE236C. Typical projects fall in one of the following two categories, but can also be a combination of the two.

- *Algorithms.* A project that evaluates a numerical algorithm or class of algorithms for large-scale optimization. This type of project includes:
  - An implementation (in MATLAB or another programming language) of an algorithm for a specific class of large-scale optimization problems, for example, based on first-order algorithms discussed in the course or related algorithms from the literature.
  - Numerical results and a comparison with alternative methods.
  - Software documentation.
- Application and modeling. A project that develops an efficient algorithm for a specific application. This type project uses more material from ECE236B and emphasize modeling, *i.e.*, the formulation of a tractable optimization model for a practical application. The final report of this type of project includes:
  - An introduction, with background on the area where the problem arises, its application, and the motivation for the project.
  - An optimization model, with a description of the optimization variables, constraints, and properties of the optimization problem, and the assumptions or simplifications that were made. The model can be convex or not. If it is not convex, you need to explain how it can be approached via techniques from convex optimization (for example, by making a convex relaxation or using a convex heuristic).
  - Implementation of an efficient and scalable optimization method, based on techniques discussed in ECE236C, and a comparison with general-purpose solvers (CVX or other software).

You are asked to submit an initial proposal of your project topic (maximum two pages) by the end of week 5 (May 3). The final report is due on Monday, June 10.