Class project

- Class project
- Project ideas
- Structural optimization
- Q&A

Class project

Goal: Create an IJulia notebook that explains and solves a problem using techniques we learned in class.

- Project proposal: **Tuesday April 10**
  - Choose a group (3 or 4 students)
  - Choose a topic and write a short description.
  - Not graded, can change it later.
- Final report due: **Monday May 7**
  - Each group turns in one IJulia notebook
- Prize!
  - Top 5 projects: featured on course website
  - Top 2 groups: free lunch!

Final report

1. **Introduction:** Background information on the problem. Should include a brief history (with some citations) as well as current uses/applications. (accessible to anybody)

2. **Mathematical model:** Derivation and explanation of how to create an optimization model that represents the problem. Explain approximations, etc. (accessible to any CS 524 student)

3. **Solution:** Code that solves the problem in JuMP and displays the solution. Should be well explained and commented.

4. **Discussion:** Discuss limitations, special cases, generalizations, variations on the theme that can be explored. This can include additional solutions.

Topics

- An example we saw in class. Of course, this would just be a starting point.
- Something you found online or in a book, e.g. Boyd's notes. Be sure to include relevant references. Again, think of this as a starting point.
- Your own idea (pending my approval). Can be something you come up with, or related to research you've done, etc.

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- Posted on the class website to serve as examples:
  10 top projects from 2016 and 6 top projects from 2017.

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- Stay away from issues involving algorithm design, tuning, or selection. Focus on the model.
- Stay away from large-scale problems with many local minima (not much to do from a modeling standpoint). No physics/materials simulations and no deep learning!

Structural optimization

- Reference: Vandenberghe (EE236a, UCLA)

Exam

- **Tonight**
- 7:15pm–9:15pm, Ingraham Hall, B10 (here).
- Bring a pen/pencil and aid sheet (optional)
- Scratch paper will be provided