CS 221 Project Proposal Guidelines

Deliverables:

- PDF writeup of proposal (2 pages max)
- Code for baseline (submit link in writeup)

Suggested proposal structure:

- Motivation
    - What is the problem you are trying to solve? Why is it important?
- Task Definition
    - Describe the technical aspects of the problem you are trying to solve
    - Provide concrete input/output pairs for your problem (eg if your input is an image and output is classification, have an actual example of an image along with its classification)
- Approach
    - Baseline
        - A baseline is a simple solution to act as a benchmark to compare against your method (ie is your approach actually better than something simpler).
        - You should have this implemented and working by proposal deadline
    - Proposed Methods
        - Explain the techniques you plan to use in your project
        - Does not have to be overly detailed but sufficiently clear for us to know if it makes sense and is a sufficient amount of work or not
        - Can include section of extra-credit ideas
- Evaluation
    - Metric
        - Explain how you plan on evaluating your method
        - How well does the baseline perform?
        - Put the metric into context (your metric may be very domain specific, so provide context for what a good/bad score is; for example, how well would a normal human do?)
    - (Optional) Data

        - If your project involves ML, here is where you discuss your specific dataset
    - Experiments
        - What quantitative experiments besides the metric evaluation, if any, do you plan to go with
    - Qualitative Analysis
        - What kinds of non-quantitative analysis do you expect to do
- Plan
    - Team Roles
        - A very brief (can just be a few bullet points) breakdown of how you plan to divide up work. If you are working alone, obviously no need.
    - Timeline
        - A very brief breakdown of when you plan to finish up the work by.

Additional points:

- We encourage you to not do a plain Machine Learning Project
- If you do want to just do an ML project, you should either do an extra ambitious project (eg Deep Learning) or one that has a second AI technique from the class also involved:
    - Search - for state-based models, finding action sequences given an objective. Example problems include route finding, puzzle solving.
    - MDPs - state-based models, similar to search but the state transition is probabilistic and/or unknown. Example problems include robot planning with unknown environment, game playing.
    - Adversarial Games - playing games against opponents, eg chess.
    - CSPs - finding solutions to problems with constraints. Example problems include event scheduling (with time constraints), coloring problems.
    - Bayesian Methods - expressing causal relationships among variables and reasoning about probabilities. Example problems include diagnosis, object tracking.
    - Logic - model problems in terms logic formulas and infer new knowledge via logic equations. Example problems include knowledge bases.
- We encourage you not to do the whole proposal last minute (as in, start on it a day or two before the due date). Put a lot of thought into it ideally starting at least a week before the due date, so you have a good plan as soon as you finish it.
- Broad grading basis: having all the content we indicated, formatting, writing