Overview

The purpose of the project is to give you a chance to investigate an AI topic in more depth than we can during the rest of the class. You may work in teams (although the larger the team, the more ambitious a project will be expected). The topic must relate to AI (for example, something related should appear in the textbook somewhere) but otherwise you may propose any topic you wish. Most people choose to implement and evaluate one or more algorithms that we cover in class, but feel free to undertake a different kind of project if you want.

Proposal

Please talk with me about your project ideas well before the preliminary proposal is due. I can usually guide you to relevant material and help you avoid common pitfalls. Many people change or refine their idea quite a bit before settling on their final proposal. The sooner your idea is fully fleshed out, the more successful your project is likely to be.

The preliminary proposal must specify: 1) the problem you intend to investigate, 2) why it is interesting, 3) how you will address it (what you will do, including evaluation, with as much specificity as possible). I suggest that you divide your work into three categories: things you absolutely must do for the project to work at all, things you plan to do that are important for success, and cool enhancements that you will do if you have time. The most common failure mode for projects is to be too ambitious, so be sure to stage your work carefully so that you have something to show even if not everything works.

The full proposal must show that you have read background material on your topic and are qualified to undertake what you propose to do. In addition to more detail on the same topics required for the preliminary proposal, the full proposal must also contain 4) cartoon sketches of the results (eg, plots or tables) that you intend to show, indicating exactly what statistics you will report (eg, labeled axes), 5) who is responsible for each portion of the work (if it’s a team project), and 6) full references for the papers and other sources that you have consulted and that will form the foundation for your work.

Presentation

Just before exam period, you will give a ≈12 minute oral presentation of your project and the results you've obtained. Presentations of team projects will have each member present one after the other (each for 12 minutes). For a 12 minute talk, I would plan on showing maybe eight slides: example scenario showing the problem, formal problem statement, description of your algorithm (2 slides), results of testing your algorithm (3 slides), extensions you would do if you had time.

Please practice giving your talk out loud (preferably in front of a live person) before giving it in front of the class. Email me a PDF before 8am or bring a USB drive to class.

Paper

This is the most important part of the project. If you can get compelling results with little coding, that’s great. You will submit any source code you write (both electronically and as an appendix to your paper), but the write-up is what will be graded. It should 1) clearly state the problem that the project addresses, 3) discuss the methods employed in solving the problem, 4) evaluate their performance and adequacy, and relate them to other existing possibilities. You should 5) mention possible extensions of your project and things you would have done if you had more time. I recommend (but do not require) the AAAI format for your paper—templates for \LaTeX{} and Microsoft Word are linked from the course website. If you are a grad
student or if you plan to continue on as a professional in computer science, I highly recommend using \LaTeX for your paper.

If you give me a draft of your paper several days in advance, I’d be happy to give you feedback on it. Please hand in two copies of the final paper, since I like to keep one on file for posterity even if you want your marked-up copy back.

Evaluation

The proposal:
2 Ready to go
1 Significant problems, please resubmit
0 Completely non-specific

The presentation:
5 Great all around.
4 Good work, bad talk. At least one of problem, approach, or results was disappointing.
3 Clear, on track, no results. Or, approach a bit confused, but some results.
2 Not clear, something to show.
1 Nothing to show, project in serious jeopardy.
0 Didn’t show up.

The paper:
23 Submit as is to a AAAI/IJCAI workshop
20 Very nice work
18 Good.
16 Very rough in significant parts.
10 A bunch of work, but not a decent project.

Roughly: 5 evaluation methodology
what tests did you run?
are you sure it works?
does it work better than another reasonable things one might try?
how would you improve it if you had more time?
what advice do you have for future students doing this kind of project?
3 clear motivation and problem specification
what is the problem you are attacking? be specific.
how does it relate to this course?
why is it interesting or important?
2 discussion of possible approaches
what are their good and bad points?
8 your approach/algorithm
how does it work?
why is it appropriate to the problem?
why would you expect it to work well?
5 quality of the writing
is it clear, easy to follow?
no grammar, spelling, or reasoning mistakes?
does it thoroughly address all the questions in these grading standards?

There is no page minimum or limit. Please be concise but thorough in answering the questions listed above.