Final Project Proposal

In this assignment, you will produce a written proposal plan for your final project and slides for an in-class presentation (to be given on Wednesday 8th Nov).

Guidelines

The final project is as a whole is worth 25% of your overall class grade. This proposal assignment is worth one-quarter of that.

This means that it is more heavily weighted than a typically weekly homework. Please do a good job.

Here are the things that will make a high-quality project:

- explicit connection to ideas that were introduced in the course

or, an area of AI that we did not cover but which you wish to pursue

- explicit connection to a real-world domain
- something that you personally are interested in and care about
- an implementation in which you learned something carrying it out
- developing a high-quality source of data (or using an existing data set)

or, developing a high-quality simulation environment (or using an existing one)

- demo that lets people (or yourself) interact with your project
- a writeup that explains what you accomplished
- an interesting overall concept

The Proposal

The proposal itself is a written document that explains what you are going to do. It should have the following sections:

- **Project title.** No more than ten words. Really.
- **Problem statement with literature review.** What is the problem and why is it interesting? Include citations to at least three published papers that connect with your work. See properly cite academic work.
- **Problem analysis.** Explain what AI approaches from the class (or beyond) you will bring to bear on the problem. Be explicit. This section ***must*** include the following components:
    - State space formulation. How are you representing the state of the world that your AI will operate upon? Why is this reasonable? How large is the state space (a number or an expression that would generate a number)?
    - State transition function. How does the system move from one state to the next? Are transitions deterministic or stochastic? How much real time corresponds to one tick of the state-space clock?

- Evaluation function. Does the system have a goal test, or an evaluation function that measures the “goodness” of a given state? What is it?

Also, make sure to characterize and explain your problem-representation along the parameters we discussed at the beginning of the class, which are:

- fully observable or partially observable?
- single agent or multi-agent (and the relationship among agents, if multi-agent)?
- deterministic or stochastic?
- episodic or sequential?
- static or dynamic?
- discrete or continuous? (note: the underlying world might be continuous, and you are creating a discrete representation of it. Note this specifically if this is the case.)

- **Data set or other source materials.** If you will be working from existing data, where will you get the data (e.g., will you download it from a web site, will you create it via a simulation that you build, etc.)? How will you convert it into a form that is usable for your project? Do your homework here: if you are pulling a data set off the web, actually download it and look at it. Explain in some detail your plan for accomplishing the necessary data processing.

If you are using some other starting materials, explain what they are.

- **Deliverable and Demonstration.** What exactly will you produce by the end of the project? Of course, there will be a piece of software, but what will it do? Is it a batch-mode kind of thing, and you will present some analytical results? If so, how would your program be re-run on different source data?

Will your program be interactive, and you can show it at work? There will be a demonstration, so interactive/live programs will be good.
Explain exactly what you'll have at the end.

- **Evaluation of results.** How will you know if you are successful? This *must* include some kind of quantitative analysis.
- **Major components and schedule.** Explain how you will go from proposal to finished product. Explicitly define at least three major components of the project. Put them in logical sequence as to the order they will be created. Indicate dates that they will be done. Remember the final code, demonstration, and presentation is due Tue Dec 8. (The writeup will be due somewhat after this date.)
- **References.** Include a section titled **References** and number the cited papers in alphabetical order (by first author's last name).

In short: You should be proposing something that you have high confidence that you can achieve, and the proposal should project that confidence.

The proposal should be no longer than necessary, but long enough to include critical detail. Three to four pages is appropriate.

Diagrams are welcome.

In-Class Presentation

Create three slides of presentation of your idea which you will present in class next Wed. (You are expected to be ready to present on Wednesday.)

You and your partner will have three minutes to present.

Teams

All students must work in teams.

The default team size is two persons.

Teams of three will be allowed only under exceptional circumstances. All three students must be doing A level work in the course. The project proposed must have three clearly separable components (each teammate will be responsible for one of them). An integration plan must also be described.

All teams must propose a joint product, but with each of the individuals responsible for clearly separable parts.

In the *Deliverables* section, the project must be described in a modular way, so that each person his responsible for different pieces.

In the *Major Components* section, there should be two columns, one for each partner, showing parallel work. Please make sure to leave time for integration.

You are welcome to help your teammate with your teammate's portion, but you will be evaluated on the part that you specified that you are responsible for (in the proposal).

So, please make sure to specify the separate pieces that each of you will be working on. If you do your part, but your partner totally bails, I should be still be able to evaluate your work and give you an A (or whatever grade is appropriate).

Each teammate must submit a copy of the same proposal with all team members' names on it.

Submit

Submit a **PDF only** of your final project proposal. Each teammate should submit a copy of the same document. The document should have everyone's name on it.

The PDF should be named:

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partner1lastname_partner2lastname_fpp.pdf
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Important: I will require two files to submitted. One is the slides and the next is the proposal.