Artificial Intelligence: Project Proposal

Due date: March 8 (Tuesday)

Submit a one-page project proposal by 3:30 pm on March 8th. The proposal must include the following:

- The names of one or both students who will work on the project.
- A detailed description of the selected problem.
- Your approach to solving the problem.
- Methods for evaluating your results.

For two-person teams the proposal must include the division of responsibility that specifies which team-member is responsible for ensuring that a specified part of the larger project gets done. Make sure your proposal explains how you will measure the performance of your solution, and what level of performance will be considered a success. The proposal will be used to determine if your project is suitable to serve as the final Project for the course and that the responsibility is divided up equally.

Options

This section provides examples of projects that students may elect to carry out for their final Project. This list is not exhaustive in that similar projects (of the same difficulty) will be considered. Note that none of the examples given here is sufficiently detailed to serve as a description of a final project. Your proposal must fill in the missing details.

Search

Use the 24-puzzle to compare the performance of at least three informed search and/or iterative improvement algorithms (e.g. A*, hill-climbing, and hill-climbing with random restart). -OR-

Develop and compare the performance of several heuristics for solving n-queens puzzles. Use the heuristics to try to solve as large a puzzle (20-queens, 30-queens,...) as you can.

Games

Implement a program that improves its own ability to play a given game by learning better evaluation functions. Assess its performance by comparing it to a program that searches to end-game states (always finds the optimal move).

Expert system

Develop a small expert system (approx. 20 rules) using CLIPS.
Note: I will cover CLIPS in class when I talk about expert systems, for now you can checkout links from the course website for additional information (clips itself is installed on grad).

Learning

Implement a decision tree program that can properly handle numerical attributes and missing information. Find (or collect) a large database of training examples and measure the performance of your program on those examples.