

Project 3

Due December 11, 2014

This project is for AI applications. You are free to choose problem that

- 1) interests you;
- 2) can be solved by suitable AI techniques; and
- 3) is somewhat nontrivial.

You are required to submit a proposal for your project no later than November 18 (**email is ok**).

The proposal should contain

- 1) a brief description of the problem you plan to solve;
- 2) the AI techniques/methods you plan to use to solve the selected problem;
- 3) how do you plan to assess/validate/test your program's performance; and
- 4) whether you plan to implement the method by yourself or adopt some code by other.

The following are a few suggested topics

- **State space search** for a combinatorial optimization problem (e.g., TSP, 8 or 15 puzzle problem, vertex covering problem, knapsack problem, etc.). You may compare different search strategies for their performance (accuracy, time and space complexity, etc.) test different methods for speedup search. You may also explore ways for approximate solutions of complex problems.
- **Logic based** problem solving (using either the theorem prover you developed in Project 2 or other systems such as Prolog) for some problem.
- **Knowledge base system** (using CLIPS, Jess or some other system) for some real-world application (e.g., system diagnosis, process control, stock market trading, social networks, semantic web, etc.)
- Model the uncertainty of some problem domain with a **Bayesian network** and conduct probabilistic reasoning with the BN (using Netica or other available software package).
- Other topics such as programming a board game strategy; genetic algorithms; neural nets; planning; decision tree, etc.

LANGUAGE: Any language you choose

REPORT:

- 1) A cover page of your name, the class, and the date of your submission;
- 2) a brief description of the problem you select;
- 3) the method/technique you use to solve the selected problem;
- 4) the result/output of the problem-solving;
- 5) the explanation/analysis/comments on the results; and
- 6) any points you wish to make.

7) **If needed, demonstration can be arranged after final exam**

SUBMIT. Please zip your project report and your source code and email the zipped file to me (ypeng@umbc.edu) with the subject line “CMSC671 Project3 your first and last name”.