Autumn 2004
Instructor: B. Ross

COSC 3P71 Artificial Intelligence: project

Due date: End of term.

Option I: Term paper

Length: 8-10 pages (1.5 line spacing, 12 pt, word processed, "reasonable" margins)

Topic**:** You are to write a critical essay on a topic in Artificial Intelligence. Since the field is vast, you should pick a topic that is fairly focused. Please discuss your topic with me before you begin writing your paper. Some possible topics include:

- A commercial AI tool.
- An industrial application of AI that has solved some problem.
- The use of AI in the entertainment industry (ie. computer games).
- An overview and critique of some contemporary approach in AI research.
- A discussion paper on philosophical aspects of AI.

Essays should have the following structure:

Title page with abstract (1 paragraph outlining what is in the essay)
Section 1: Introduction
Section 2: Discussion of counter-arguments or support, as well as your own ideas
Section 3: Conclusion
Bibliography

Marks will be based on:

• Spelling, grammar, formatting
• The clarity of your paper: how well do you make your points?
• The accuracy of your arguments (philosophy topic), or the descriptive clarity of the system you describe.
• The use of additional references. You should use at least 4 references in your bibliography, appropriately cited within your text.

In addition to your printed handin, you will be asked to submit your essay to Turnitin.com. Details later.
(over)

Option II: Chess program

Working alone or in a group of two, implement a chess-playing program. Requirements for the system are as follows:

- The program should respect the rules of chess, for example, the movement of pieces (including castling and *en passant*), piece promotion, and check and checkmate conventions. Please obtain a book on chess to verify your understanding of the game!
- You can implement your system either on SGI Irix or Windows, using any language you want.
- The program must use a game tree search scheme with alpha-beta pruning. The program should permit user-supplied control parameters, for example, the depth of search.
- Much effort should be given towards designing an effective board evaluation function. You should research the literature on computer chess to find strategies used by other systems. You can borrow ideas from the literature (properly acknowledged). I also encourage you to try your own ideas!
- The program should interact with a human player. Moves should be given via board coordinates. Minimally, the program should dump out the current board as an ASCII table (eg. upper case = black, lower case = white, space = "-",...). Although a graphical user interface is not required, an effective GUI will be positively considered during evaluation.
- Your program should permit any board setup to be used initially. This is good for testing purposes.
- An option is that your program dump out the game in terms of a standard chess output text file.

Hand in printouts of all your code, an executable version of the program, and a 6 page written document describing the use and design of your system, and references you used during your research.

Note: If there is interest, we can set up a 3P71 Chess Tournament in December for all the programs implemented. Prizes for the winner!