

# Artificial Intelligence

## PROJECT I

1. Choose a puzzle such as those discussed in the class, say, sliding tiles or sudoku, but not the simple ones (cannibals and missionaries, Hanoy tower). The more interesting the puzzle, the better, only make sure the complexity is realistic.
2. Find an appropriate representation of the puzzle's states in computer memory. Define the initial state and the terminal (solution) state.
3. Write a program that uses for the solution of the puzzles the following AI search techniques: depth-first search, breadth-first search, and iterative deepening. Make sure you prevent the same state being re-visited (using the technique of open and closed lists).
4. Run systematic experiments comparing the performance of the three algorithms along two performance criteria: space (maximum length of the open list) and time (number of states visited—which is final the length of the closed list).
5. Write a 3-5 page report that (1) explains the puzzle, (2) compares the performance of the three search algorithms, and (3) explains and discusses your observations of the algorithms' behaviors. Make sure the report follows the usual structure expected from scientific papers—introduction, problem statement, proposed solution, experimental setting, experimental results, discussion of the results and findings.
6. Prepare a 10-15 minute PowerPoint presentation, summarizing your experiences so that others can learn from them.