CS475

Time	MWF 2:00
Room	A-017 Root Hall
Professor	Geoffrey Exoo
Email	ge@cs.indstate.edu
Office Hours	MWF 12:30-1:00
	MW 4:00-4:30
	By appointment
Class Web Page	`http://cs.indstate.edu/CS475`
Academic Integrity Policy	`http://www.indstate.edu/academicintegrity/studentguide.pdf`

Grading

Programming Assignments	59%
Midterm	13%
Final Exam	23%
Attendance	5%

Course Outline

I. **Searching in graphs**

A. **Applications**

1. Google page rank.
2. Google maps, Mapquest.
3. Big Blue - Chess.
4. Watson - Jeopardy.

B. **Review of some basic graph theory.**

C. **Fundamental search algorithms.** Depth first search and breadth first search.

D. **Constraint satisfaction.** Backtracking, game trees, alpha-beta pruning.

E. **Optimal paths in graphs.**

1. Dijkstra's algorithm.
2. The A* algorithm.
3. Bidirectional algorithms.
4. Landmarks, reaches, shortcuts.

II. **Machine Learning**

A. **Applications**

1. Netflix movie suggestions.

2. Amazon purchases preferences.
3. Spam filtering.
4. Handwriting analysis.
5. Speech recognition.
6. Robot navigation.
7. Climate modeling.

B. **Review of basic probability and statistics.**

C. **Supervised learning.**
   1. **Classification problems.**
   2. **Regression.**

D. **Unsupervised learning.**

E. **Everything in between.**

F. **Specific examples.**