



# **Introduction to Artificial Intelligence**

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**COS302**

**Michael L. Littman**

**Fall 2001**

**MW 3-4:20 104**



# Contact Information

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**Course web page:**

**[http://www.cs.princeton.edu/courses/  
archive/fall01/cs302/](http://www.cs.princeton.edu/courses/archive/fall01/cs302/)**

**real soon now...**



# Administration

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***AI: A Modern Approach, Russell & Norvig, 1994.***

## Teaching Assistants

- **Gang Tan (gtan@cs)**      **215**
- **Kedar Swadi (kswadi@cs)**      **416**



# Grading

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**Homework**                      **20%**

**Programming**                **20%**

**Midterm**                        **20%**

**Final Project**                **20%**

**Final Exam**                   **20%**

**Programming primarily in “C”.**



# About You

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**Sophomores: 5**

**Juniors: 25**

**Seniors: 29**

**• Total: 59**



# About Me

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## Where was I?

- **Research: Bellcore** **88-92**
- **PhD: (CMU) Brown Univ.** **92-96**
- **Prof.: Duke University** **96-99**
- **Research: AT&T Labs** **00-**

## What do I do (in AI)?

- **Planning under uncertainty**
- **Algorithm design**
- **Statistical natural lang. processing**



# **What is AI?**

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**Princeton student connections**

**Minsky, Edmonds: neural  
computer 1951**

**McCarthy helped create the  
Dartmouth workshop in 1956  
that defined the field.**

**What is it now?**



# **AI Survey Game: Rules**

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**“face off” to control board**  
**opportunity to steal**  
**three “strikes”**  
**opportunity to steal**  
**6 rounds**



# Family Feud



It's time for AI Family Feud! Let's meet the  
A-L family! - Ready for action!....

And the K-Z family! - On your  
marks!..Let's start

**AI FAMILY FEUD!**



# Round 1

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**Name a reason that humankind studies AI.**

**Survey says!**

**X X X**

**next**



# Round 2

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**Name something that defines AI  
as distinct from other fields.**

**Survey says!**

**X X X**

**next**



# Round 3

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**To the nearest 5 years, how long  
will it take humankind to create  
human-level AI?**

**Survey says!**

**X X X**

**next**



# Round 4

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**Name something that an AI system will do that will signal the arrival of human-level AI.**

**Survey says!**

**X X X**

**next**



# Round 5

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**Name the smartest AI from  
science fiction.**

**Survey says!**

**X X X**

**next**



# Round 6

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**Name the most impressive  
accomplishment in AI in the last  
ten years.**

**Survey says!**

**next**

**X X X**



# Syllabus Sketch

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## I. Search

**Example: Rush Hour Puzzle**

**<http://kgs.kiseido.com/~wms/rushHour/>**

## II. Language Processing

**Analogy Problems**

**[http://www.kagi.com/edicom/edu/sat\\_51.htm](http://www.kagi.com/edicom/edu/sat_51.htm)**





# I. Search

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<b>9/17 Intro</b>	<b>Ch. 1</b>
<b>9/19 Search</b>	<b>Ch. 3 [3.3, 3.5]</b>
<b>9/24 Heuristic Search</b>	<b>Ch. 4 [4.1, 4.2]</b>
<b>9/26 Constraint Sat.</b>	<b>[3.7]</b>
<b>10/ 1 Satisfiability</b>	<b>Ch. 6 [6.4, ex. 6.15]</b>
<b>10/ 3 Sat. Encodings</b>	
<b>10/ 8 Local Search</b>	<b>Ch. 4 [4.4], B. 3.1, B, [20.8]</b>
<b>10/10 Game trees</b>	<b>Ch. 5 [5.2, 5.3, 5.4]</b>
<b>10/15 Catch up day</b>	
<b>10/17 Games of chance</b>	<b>[5.5]</b>
<b>10/22 Markov Models</b>	
<b>10/24 Midterm</b>	



# II. Language Processing

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<b>11/ 5 Language and learning</b>	<b>Ch. 22</b>
<b>11/ 7 Probability and IR</b>	<b>Ch. 14 [14.2], Ch. 23 [23.1]</b>
<b>11/12 Sequence models</b>	<b>[24.7]</b>
<b>11/14 Statistical Parsing</b>	<b>[23.2]</b>
<b>11/19 Hidden Markov Models</b>	
<b>11/21 Catch up day</b>	
<b>11/26 Supervised Learning</b>	<b>Ch. 18 [18.3]</b>
<b>11/28 Neural Networks</b>	<b>Ch. 19 [19.3, 19.4]</b>
<b>12/ 3 Latent Semantic Indexing</b>	
<b>12/ 5 Belief Networks</b>	<b>Ch. 15 [15.1, 15.2]</b>
<b>12/10 Belief Network Inference</b>	<b>Ch. 19 [19.6]</b>
<b>12/12 Wrap up</b>	