

CSE 516A: Multi-Agent Systems

Introductory Lecture
Prof. Sanmay Das

Plan for today

Welcome & introductions

What is this class about?

Class logistics

What is this course?

Multi-agent system: a system where multiple autonomous entities with different information sets and goals interact.

Let's see some examples of the kinds of things we're going to study



medical school



+Sanmay



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[Medical school - Wikipedia, the free encyclopedia](#)

en.wikipedia.org/wiki/Medical_school ▾

A **medical school** is a tertiary educational institution—or part of such an institution—that teaches medicine, and awards a professional degree for physicians and ...

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Sponsored Search Auctions

Each sponsored search listing occupies a slot

Advertisers pay per-click

Google's problem: how to allocate slots

Advertiser's problem: how much to bid for a click

Key idea: must reason about the actions of other (intelligent) agents

Aside: Why does Google clearly delineate sponsored results?

Reasoning about others

Can I get two volunteers to play a game?

B's action

A's
Action

	Cooperate	Defect
Cooperate	1 year, 1 year	3 years, Free
Defect	Free, 3 years	2 years, 2 years

Time in prison for A, B

Golden Balls



A medical career starts with finding the program that best fits your needs. With *U.S. News* research, narrow your search by location, tuition, school size, and test scores.

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Research rank	School name	Tuition	Total medical school enrollment
#1	Harvard University Boston, MA	\$49,875 (full-time)	700
#2	Stanford University Stanford, CA	\$47,343 (full-time)	461
#3	Johns Hopkins University Baltimore, MD	\$44,100 (full-time)	479
#4	University of California—San Francisco San Francisco, CA	\$31,134 (in-state, full-time); \$43,379 (full-time) (out-of-state)	648
#4	University of Pennsylvania (Perelman) Philadelphia, PA	\$47,090 (full-time)	646
#6	Washington University in St. Louis St. Louis, MO	\$52,020 (full-time)	478

Incentives in voting

Polling for “top medical school”

3 candidates: Harvard, UCSF, JHU, WUSTL

Method: Rank candidates, assign 3,2,1,0 points

Person 1: Harvard > UCSF > WUSTL > JHU

You think: WUSTL > Harvard > UCSF > JHU

What would you do?

What happens when you graduate?

Apply to residencies

Alice	WUSTL > UCSF > Harvard	WUSTL	Chris > Alice > Bob
Bob	WUSTL > Harvard > UCSF	UCSF	Alice > Chris > Bob
Chris	Harvard > WUSTL > UCSF	Harvard	Alice > Chris > Bob

Suppose we match (Alice, UCSF), (Bob, WUSTL), (Chris, Harvard)?

Alice and WUSTL would rather be together than with their assigned matches: **unstable**

What about: (Alice, WUSTL), (Bob, UCSF), (Chris, Harvard) ?

And: (Alice, Harvard), (Bob, UCSF), (Chris, WUSTL) ?



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Medical school

From Wikipedia, the free encyclopedia

"Med school" redirects here. For the experimental music label, see [Hospital Records](#).



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- This article **needs additional citations for verification**. *(April 2013)*
- This article **may require cleanup to meet Wikipedia's quality standards**. The specific problem is: **poorly worded**. *(April 2013)*

See also: [Medical education](#) and [List of medical schools](#)

A **medical school** is a [tertiary educational](#) institution—or part of such an institution—that teaches [medicine](#), and awards a professional degree for physicians and surgeons. Such degrees include the [Doctor of Medicine](#) (MD), [Doctor of Osteopathic Medicine](#) (DO), or [Bachelor of Medicine, Bachelor of Surgery](#) (BMBS, MBBS, MBChB). Many medical schools offer additional degrees, such as a [Doctor of Philosophy](#), [Master's degree](#), a [physician assistant](#) program, or other post-secondary education.

Medical schools can also employ medical researchers and operate hospitals. The entry criteria, structure, teaching methodology, and nature of medical programs offered at medical schools vary considerably around the world. Medical schools are often highly competitive, using standardized [entrance examinations](#) to narrow the selection criteria for candidates.



Wikipedia and Peer Production

Why should I contribute?

How is quality maintained?

Can it be subverted?

Predictions ▾

Results & Papers

Still to Come

FAQ

Blog

POLITICS

Congress - Likelihood of Party Control - After 2014 Election

Senate	62.0 %
House	11.0 %

2016 Presidential Election - Next President

Hillary Clinton	34.9 %
Chris Christie	8.6 %
Marco Rubio	7.4 %
Jeb Bush	5.6 %
See All »	

2016 Presidential Election - Likelihood of Republican Nomination

Chris Christie	15.2 %
Marco Rubio	14.9 %
Jeb Bush	10.9 %
See All »	

2016 Presidential Election - Soon to Be Added for Republican Nomination

Mike Pence	1.3 %
John Kasich	1.3 %

SPORTS

2013-14 NFL Super Bowl - Likelihood to Win (Team)

Seattle Seahawks	29.5 %
Denver Broncos	26.4 %
San Francisco 49ers	13.6 %
New England Patriots	10.5 %
See All »	

2013-14 NBA Championship - Likelihood to Win

Miami Heat	30.7 %
Indiana Pacers	18.5 %
Oklahoma City Thunder	10.9 %
San Antonio Spurs	9.0 %
See All »	

2013-14 NHL Stanley Cup - Likelihood to Win

Pittsburgh Penguins	15.2 %
Chicago Blackhawks	13.7 %
St Louis Blues	11.3 %
Boston Bruins	9.1 %
See All »	

ECONOMIC/FINANCIAL

Likelihood of U.S. Recession

U.S. Recession during 2013	17.5 %
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POLITICS ▾

SPORTS ▾

ECONOMIC/FINANCIAL ▾

Where do these numbers come from?

A prediction market

Applies principles from information aggregation in financial markets to predicting event probabilities

Why does it work? What's the meaning of a stock price?

Syllabus and course logistics

Let's look over the syllabus and discuss