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

Web   News   Maps   Images   Videos   More ▾   Search tools

About 323,000,000 results (0.57 seconds)

Medical Schools - US News & World Report
www.usnews.com/...schools/top-medical-scho... ▾ U.S. News & World Report ▾
See the top ranked **medical schools** in primary care and research and find the best
medical school for you at US News.

Harvard Medical School - Harvard University
hms.harvard.edu/ ▾ Harvard Medical School ▾
Official site providing an overview of academic and research programs, resources, news
and events, and links to other web sites located throughout the Harvard ...

Best Medical Schools: Research - US News & World Report
grad-schools.usnews.rankingsandreviews.com › Graduate Schools ▾
See the top ranked **medical schools** for research at US News. Use the best **medical
school** rankings to find the best research program for you.

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

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

A's Action

Time in prison for A, B

Golden Balls 1   Golden Balls 2

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

▶ **For full rankings, MCAT scores, and student debt data, sign up for the U.S. News**

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

ELECTION NIGHT IN AMERICA

4 42 36

HRS MIN SEC

ON CNN

TRUMP CASTS VOTE IN PRESIDENTIAL RACE

CNN

NAS ▲ 11.06

NEWSROOM

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) ?

Medical school

From Wikipedia, the free encyclopedia

"Med school" redirects here. For the experimental music label, see Hospital Records.

> ⚠️ **This article has multiple issues.** Please help **improve it** or discuss these [hide] issues on the **talk page**.
>
> - 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?

Predict It

Markets   Analysis   About   👤 Sign In   ⊕ Sign Up

★ Featured

✚ New Arrivals

↕ Biggest Movers

⚡ Trending

🔥 Most Predicted

⚠ Closing Soon

U.S. Elections

U.S. Politics

World

Trending

Trump tweets 1/11-1/18?
Top Predictions | 💬 5465 Comments
| 35-39 | 34¢ ↑17¢ |
| 40-44 | 29¢ ↓5¢ |

Agriculture Secretary on 3/31?
Top Predictions | 💬 4443 Comments
| Perdue 💬2 | 41¢ ↑5¢ |
| Rastetter | 14¢ ↓3¢ |

Secretary of State in 2017?
Top Predictions | 💬 159902 Comments
| Tillerson 💬358 | 85¢ ↑1¢ |
| Shannon 💬1 | 8¢ ↑2¢ |

Putin-Trump U.S. meeting in first 100 days?
Current Market | 💬 254 Comments
| Yes | 33¢ ↓2¢ |
| No | 67¢ ↑2¢ |

Direction of country on 1/16?
Top Predictions | 💬 83 Comments
| 32.5+ | 99¢ ↑13¢ |
| 30.9- | 1¢ NC |

Obama RCP avg. approval 1/20/17?
Top Predictions | 💬 795 Comments
| 55.0+ | 70¢ ↑21¢ |
| 54.0-54.9 | 27¢ ↓25¢ |

Next SCOTUS justice?
Top Predictions | 💬 1074 Comments
| Pryor 💬14 | 31¢ ↑6¢ |
| Sykes 💬4 | 16¢ ↓1¢ |

Will Trump inauguration viewership exceed Obama's?
Current Market | 💬 166 Comments
| Yes | 40¢ ↓2¢ |
| No | 60¢ ↑2¢ |

Congress approval on 1/16?
Top Predictions | 💬 72 Comments
| 14.0-14.4 | 99¢ ↑8¢ |
| 13.9- | 1¢ ↓5¢ |

Who will be elected president of France in 2017?
Top Predictions | 💬 578 Comments
| Fillon | 55¢ ↓1¢ |
| Le Pen 💬93 | 36¢ ↓3¢ |

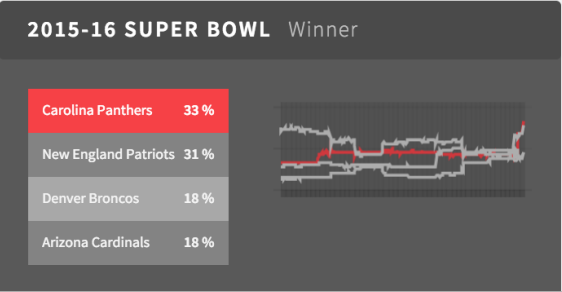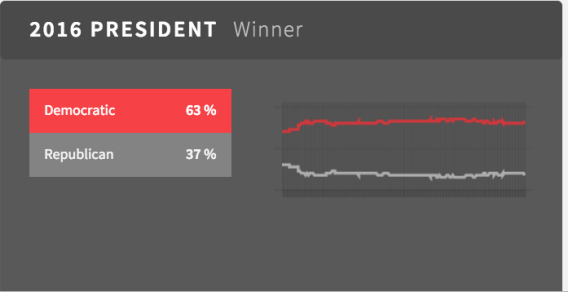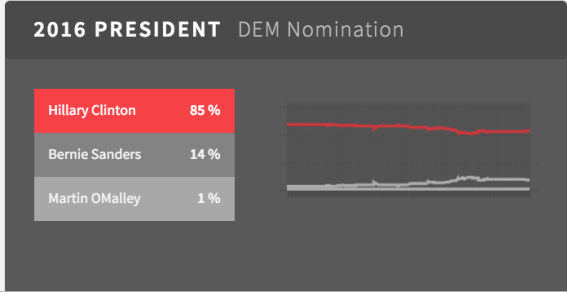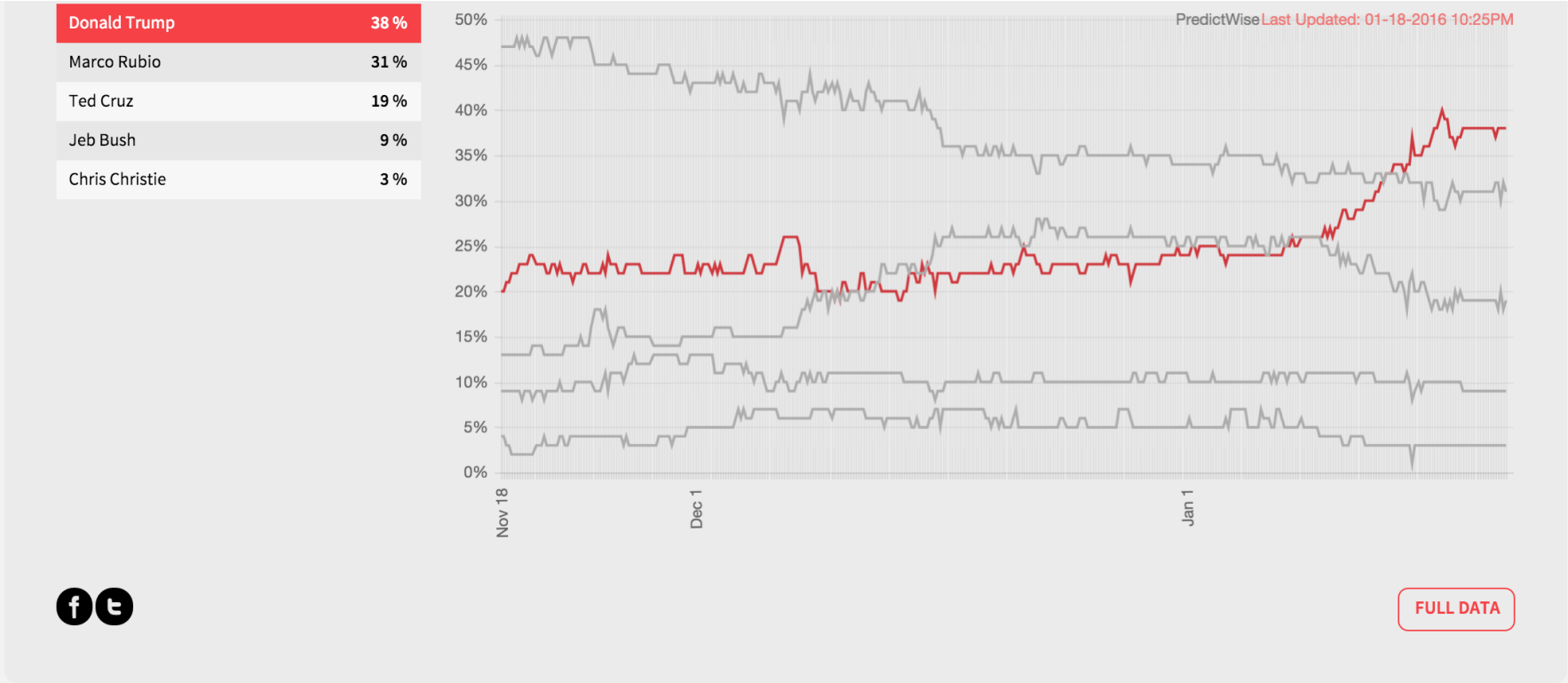### "Acting" cabinet members on Jan. 31?
Top Predictions | 💬 327 Comments
| 5+ 💬13 | 70¢ ↓1¢ |
| 4 | 20¢ ↑1¢ |

Will Obama pardon Manning?
Current Market | 💬 227 Comments
| Yes | 37¢ ↓4¢ |
| No | 63¢ ↑4¢ |

One year ago…

Where do these numbers come from?

A prediction market

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

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

Syllabus and course logistics

Let's look over the syllabus and discuss