CSE 516A: Multi-Agent Systems

Introductory Lecture
Prof. Sanmay Das
Plan for today

Welcome & introductions
What is this class about?
Class logistics
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
Duke-NUS Medical School - Duke-NUS.edu.sg
Be A Medical Leader of the 21st Century. Apply For Our Programs Now

University of Phoenix® - Phoenix.edu
Make a Difference. College Health Care Programs for the 21st Century.

Caribbean Medical School - umhs-sk.org
Small Class Sizes. Financial Aid. $50 Million Campus. 93% USMLE Pass

Medical Schools - US 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
Official site providing an overview of academic and research programs, resources, news and events, and links to other web sites located throughout the Harvard ...
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?**

<table>
<thead>
<tr>
<th>A’s Action</th>
<th>B’s action</th>
<th>Time in prison for A, B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperate</td>
<td>Cooperate</td>
<td>1 year, 1 year</td>
</tr>
<tr>
<td></td>
<td>Defect</td>
<td>3 years, Free</td>
</tr>
<tr>
<td>Defect</td>
<td>Cooperate</td>
<td>Free, 3 years</td>
</tr>
<tr>
<td></td>
<td>Defect</td>
<td>2 years, 2 years</td>
</tr>
</tbody>
</table>

**Golden Balls 1**

**Golden Balls 2**
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.

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

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

TRUMP CASTS VOTE IN PRESIDENTIAL RACE
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

<table>
<thead>
<tr>
<th></th>
<th>Alice</th>
<th>Bob</th>
<th>Chris</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WUSTL &gt; UCSF &gt; Harvard</td>
<td>WUSTL &gt; Harvard &gt; UCSF</td>
<td>Harvard &gt; WUSTL &gt; UCSF</td>
</tr>
<tr>
<td>Alice</td>
<td>WUSTL &gt; UCSF &gt; Harvard</td>
<td>WUSTL &gt; Harvard &gt; UCSF</td>
<td>Harvard &gt; WUSTL &gt; UCSF</td>
</tr>
<tr>
<td>Bob</td>
<td>UCSF</td>
<td>Alice &gt; Chris &gt; Bob</td>
<td>Alice &gt; Chris &gt; Bob</td>
</tr>
<tr>
<td>Chris</td>
<td>Alice &gt; Chris &gt; Bob</td>
<td>Alice &gt; Chris &gt; Bob</td>
<td>Alice &gt; Chris &gt; Bob</td>
</tr>
</tbody>
</table>

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 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?
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