What is social computing?
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Usually focuses on types of computations that are hard for computers
Games with a Purpose
Grease stains?
Is it at all possible to remove grease stains? and if so how?

postal
6 years ago

Best Answer - Chosen by Asker
A friend of mine who's a neat freak told me that dish soap works on grease stains (as long as it's a fairly new stain). Just add some to the stain, rub it in and wash it out.
Dish soap is made to get rid of grease.

smoofus7...
6 years ago

Asker's Rating:  *****
cool idea, I'll have to try it
Online Labor Markets

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- Pay only when you're satisfied with the results

Fund your account Load your tasks Get results

Find HITs Now Get Started
What is this class about?
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• We will focus largely on **incentives** and **learning**
  - How can we motivate contributions and effort?
  - How can we aggregate information?
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• We will focus largely on **incentives** and **learning**
  – How can we motivate contributions and effort?
  – How can we aggregate information?

• Techniques we study will come from statistics, learning theory, microeconomics / game theory.
Structure of the Course

• Introduction and game theory background
• Current research papers
  – Prediction markets
  – Social networks and task routing
  – User generated content and crowdsourcing
  – Reputation mechanisms
  – Games with a purpose
• Project presentations
Course Logistics
Breakdown of Grades

Paper Reviews (35%)
  – Submitted the night before each class

Presentations and Discussion Leading (25%)
  – Each student will be responsible for leading class discussion twice, possibly in groups of 2-3

Course Project (40%)
  – In-class presentation and written report
Paper Reviews

• What are the main contributions of the paper?

• What are the main limitations of the paper?

• What are the most important assumptions made by the authors? Why were these assumptions made?

• Are these assumptions realistic? Are they limiting?
Paper Reviews

• What are the main analytical techniques used?

• Which parts of the paper were unclear to you?

• What are some ways in which this work could be extended?

• Does this relate to other research we have discussed, and if so, how?
Should I really read the whole paper?
Should I really read the *whole* paper?

- You are not expected to understand every detail of every proof in the papers that we cover.
Should I really read the *whole* paper?

- You are not expected to understand every detail of every proof in the papers that we cover.
- However, you should...
  - Be able to answer the paper review questions.
  - Thoroughly understand the model used and the statement of the results.
  - Attempt to understand the main ideas behind the proofs of major results.
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• However, you should...
  
  – Be able to answer the paper review questions
  – Thoroughly understand the model used and the statement of the results
  – Attempt to understand the main ideas behind the proofs of major results

• Plan to spend around three hours per paper
Discussion Leading

• You will be expected to lead the class twice during the quarter, possibly in groups of 2 or 3
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• Yes, you really do need to read the whole paper when you’re the discussion leader…
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• Prepare a presentation on the paper, but leave lots of time for questions and debate
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• Yes, you really do need to read the whole paper when you’re the discussion leader…

• Prepare a presentation on the paper, but leave lots of time for questions and debate

• Start with the high level motivation, then use the paper review questions to guide you
Course Projects

• Project goals:
  – Develop a deep understanding of a specific research area relevant to the course
  – Make progress towards stating and solving open problems in this area

• The details will be largely up to you, but must relate to the themes of the course
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• HCOMP 2012 deadline is March 30…
Prerequisites

- Familiarity and comfort with probability theory
- Familiarity and comfort reading and writing mathematical proofs
- Background in algorithms (e.g., big O notation)
- Experience reading mathematical research papers
- Willingness to get involved in class discussions
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• Experience reading mathematical research papers
• Willingness to get involved in class discussions

A background in learning theory, microeconomics, and game theory is helpful but not required.
Enrollment

• Enrollment will be limited to enable a good environment for active class discussions

• If you would like a PTE and you meet the prerequisites, please
  – Come to class today and Thursday
  – Send me an email after Thursday’s class telling me a little about your background and research interests and why you want to take this class
Academic Honesty Policy

Collaboration and discussion outside of class is strongly encouraged, but…

– Each student must write down the paper reviews independently in his or her own words.

– All sources (internet included) must be properly credited in presentations and reports.

– The university academic integrity policy must be followed at all times.
Class Website

The class schedule, announcements, and links to required reading will be posted at:


Check this website often!!
Overview of Topics
Mitt Romney to be Republican Presidential Nominee in 2012
Last prediction was: $8.12 / share
Today’s Change: ▼ -$0.17 (-2.1%) 81.2% CHANCE
Potential payoff is $10. If I think that the probability of Romney winning is $p$, I should

- **Buy** this security at any price less than $10p$
- **Sell** this security at any price greater than $10p$
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Price measures the population’s collective beliefs.
Potential payoff is $10. If I think that the probability of Romney winning is $p$, I should

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Price measures the population’s collective beliefs
How good are these predictions?

• In theory…
  – Under certain assumptions, prices converge and reflect the traders’ collective knowledge
How good are these predictions?

• In theory…
  – Under certain assumptions, prices converge and reflect the traders’ collective knowledge

• In practice…
  – Election markets beat data from polls (BR02)
  – Oscar markets beat expert columnists (PGN01)
  – HP internal markets beat sales forecasts (P00)
  – Racetrack odds beat experts (F79)
  – and many more
How do they work?

- Securities are offered for every state of the world

$1 \text{ iff Horse wins}$

$1 \text{ iff Horse wins}$

... $1 \text{ iff Horse wins}$
How do they work?

• Securities are offered for every state of the world

  $1 \iff \text{horse wins}$  $1 \iff \text{horse wins}$  \ldots  $1 \iff \text{horse wins}$

• Mechanism determines prices
  – Traditional stock market style pricing (“continuous double auction”) leads to low liquidity, huge spreads
How do they work?

• Securities are offered for every state of the world

$1$ iff $1$ iff $1$ iff ...

$\text{wins}$ $\text{wins}$ $\text{wins}$

• Mechanism determines prices
  – Traditional stock market style pricing (“continuous double auction”) leads to low liquidity, huge spreads
  – What alternatives are there?
Prediction Market Questions

• How can we design a market mechanism to automatically price contracts in a “nice” way?

• How can we design a mechanism that scales well when the number of possible outcomes is large?

• We’ll also examine how markets can be used to “crowdsource” learning problems…
Task Routing in Social Networks
Task Routing Questions

• How can we incentivize individuals to route tasks to appropriate members of their social networks?

• How can individuals in a network find the best/shortest path?
User Generated Content

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**As a Mechanical Turk Requester you:**
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UCG Questions

• How can we incentivize users to produce the highest quality content?

• How can content/answers from multiple unreliable users be aggregated most accurately?

• How should tasks in online labor markets be priced to maximize revenue or social welfare?
UCG Questions

• How can we incentivize users to produce the highest quality content?

• How can content/answers from multiple unreliable users be aggregated most accurately?

• How should tasks in online labor markets be priced to maximize revenue or social welfare? total benefit or “utility” to all users
Reputation Mechanisms

Top-rated seller
platinumcapital (156 ⭐)

100% Positive feedback

- Consistently receives highest buyers' ratings
- Ships items quickly
- Has earned a track record of excellent service
Reputation Mechanisms

- Can be used for sanctioning or signaling
Questions about Reputation

• How can we design reputation systems that lead to the highest revenue or social welfare?

• How can “whitewashing” be prevented?

• How can manipulation be discouraged?

• Can social network structure be incorporated into reputation mechanisms?
Other Social Computing Systems

• How can we incentivize high quality contributions to question and answer forums?

• How can we incentivize high quality contributions in games with a purpose?
A Brief Introduction to Game Theory
(Part 1)