Computers, Ethics, and Public Policy
Today’s Agenda

1. Why we are teaching this course
2. Why are you interested in taking it?
3. Why you *should* take this course
4. What we are going to do together this quarter
Mehran Sahami

- Professor (Teaching) of Computer Science
- Associate Chair for Education, Department of Computer Science
- Spent a decade in tech industry before returning to Stanford
My Motivation

When I worked in industry, I saw two things first hand:

• Many decisions with social consequences result from decisions made in code
  • Rankings of search engine results
  • Recommendations in a social network
  • Objective functions to optimize in machine learning algorithms

• Often, social consequences of these decisions are not considered (or even identified) when the code is written
  • We don’t realize the full implications of our work (e.g., perpetuating biases, creating anti-social behavior, etc.)
  • We only deal with consequences after a problem is spotlighted (e.g., Cambridge Analytica scandal, creation of echo chambers, etc.)
The “New” Physicists

• After the Manhattan Project, many physicists realized the broader impact of their technical work
  • Some became peace activists

• Some have likened the computer scientists of today to the physicists of the mid-20th century

• In both cases, developing more technology does not provide a complete solution
  • Need to understand the interplay of technology, public policy, and societal impact
Unexpected Consequences

- “Waymo Collision Illustrates Why Society Might Eventually Ban Human Driving”
  - Forbes, Nov. 7, 2018

- “Wielding Rocks and Knives, Arizonans Attack Self-Driving Cars”
  - New York Times, Dec. 31, 2018
Rob Reich

- Professor of Political Science
- Faculty Director, Center for Ethics and Society
- Faculty Director, Center for Philanthropy and Civil Society
My Motivation

• [Digression: Minimize Powerpoint]

• Actual motivation: Maximize moral awareness, promote good lives and flourishing societies.
THE GETTYSBURG ADDRESS

November 19, 1863
At the Dedication of the Soldiers' National Cemetery in Gettysburg, Pennsylvania:

Four score and seven years ago our fathers brought forth on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

But, in a larger sense, we can not dedicate – we can not consecrate – we can not hallow – this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract. The world will little note, nor long remember what we say here, but it can never forget what they did here. It is for us the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us – that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion – that we here highly resolve that these dead shall not have died in vain – that this nation, under God, shall have a new birth of freedom – and that government of the people, by the people, for the people, shall not perish from the earth.

Abraham Lincoln
Gettysburg Cemetery Dedication

Abraham Lincoln

11/19/1863
11/19/1863

Agenda

- Met on battlefield (great)
- Dedicate portion of field - fitting!
- Unfinished work (great tasks)
Not on Agenda!

- Dedicate
- Consecrate
- Hallow
  (in narrow sense)
- Add or detract
- Note or remember what we say

11/19/1863
Review of Key Objectives & Critical Success Factors

- What makes nation unique
  - Conceived in Liberty
  - Men are equal

- Shared vision
  - New birth of freedom
  - Gov’t of/for/by the people

11/19/1863
Summary

- New nation
- Civil war
- Dedicate field
- Dedicated to unfinished work
- New birth of freedom
- Government not perish

11/19/1863
My Motivation

• [Digression: Minimize Powerpoint]

• Maximize moral awareness
U.S. President Ronald Reagan, 1981-1989

“The Goliath of totalitarianism will be brought down by the David of the microchip.”
U.S. President George Bush, 1989-1993

“Imagine if the Internet took hold in China. Imagine how freedom would spread.”
Donald Knuth, Stanford CS Legend

“Premature optimization is the root of all evil.”
Ms. Brown said a lot of students criticize Facebook and talk about how they would not work there, but ultimately join. “Everyone cares about ethics in tech before they get a contract,” she said.
Jeremy Weinstein

- Professor of Political Science
- Senior Fellow, FSI and SIEPR
- Director, Stanford Global Studies
My Motivation

When I served in government, I saw two things first hand:

• There is an enormous gulf between those who understand technology and those who have a responsibility for governing a society transformed by technology

• Debates around the governance of new technologies inevitably surface competing values, but we rarely make these values explicit and think about how to balance or choose among them
North Korea Cyberattack on Sony

November 24, 2014:
Demands that Sony withdraws its film, The Interview

Policy and cyber experts come together to deliberate on a response
North Korea Cyberattack on Sony

Challenge 1:
Understanding what had happened

Challenge 2: Figuring out how to respond
FBI-Apple Encryption Dispute

December 2015 terrorist attack in San Bernardino kills 14 people

FBI seeks access to shooter’s iPhone, Apple refuses to unlock the phone
FBI-Apple Encryption Dispute

U.S. Magistrate Judge rules that Apple must write software to unlock the phone, Apple refuses, and FBI eventually unlocks with help of a third party.

Debate continues about whether technology should include a “backdoor” for law enforcement.
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Why are you interested in taking this class?

- Think about a moment when you saw/experienced/learned about/anticipated the impacts of a new technology that gave you pause about the costs to society of this technological change.
  - What was the technology?
  - What were your concerns?
  - Do these concerns outweigh the benefits? Why?

- Type up one paragraph sharing your thoughts and submit it now. There is a form to submit your write-up on the class website: http://cs181.stanford.edu
1. Why we are teaching this course
2. Why are you interested in taking it?
3. Why you *should* take this course
4. What we are going to do together this quarter
• We are experiencing the societal consequences of many new technologies
• These consequences are raising critical questions about whether and how new technologies should be governed and by whom
• You have a role to play in answering these questions – as an engineer, a corporate executive, a policymaker, a citizen, or simply a user
Technology has been an engine of growth for the United States
A Mixed Record

The wages of scale
US households, average wage income
Cumulative % change since 1980
- Top 1%
- Fourth quintile
- Middle quintile
- Second quintile
- Lowest quintile

More in their pockets
Change in income shares and top tax rates
1960-64 to 2005-09, percentage points

Source: Congressional Budget Office; The Economist

Source: "Inequality" by Anthony Atkinson

Economist.com
Facebook’s Struggles

“Making the world more open and connected”
-- Facebook mission statement until revision in 2017

Protecting Your Information

We understand the importance of keeping your data safe.

We have banned the app "This Is Your Digital Life," which one of your friends used Facebook to log into. We did this because the app may have misused some of your Facebook information by sharing it with a company called Cambridge Analytica. In most cases, the information was limited to public profile, Page likes, birthday, and current city.

You can learn more about what happened and how you can remove apps and websites anytime if you no longer want them to have access to your Facebook information.

There is more work to do, but we are committed to confronting abuse and to putting you in control of your privacy.
“We ignite opportunity by setting the world in motion”
-- Uber mission statement
Twitter’s Dilemmas

“We give everyone the power to create and share ideas and information instantly and without barriers.”

-- Twitter mission statement
What are the obligations of a platform to police the content that is posted on it? Does it depend on if the platform is a monopoly or not?

Who owns the underlying data about the users of internet platforms? Under what conditions can it be shared/sold?

Are platforms businesses or simply technologies for matching? Should this difference impact how they treat their employees?

And this is just scratching the surface of the difficult questions we now confront...
Pushback from Policymakers
“How do you sustain a business model in which users don’t pay for your service?”

-- Senator Orrin Hatch
Facebook Trailing In Trust
Share in the U.S. trusting the following to obey laws protecting personal information

- Trust
- Don't know
- Don't trust

n=2,237 (March 21-23, 2018). May not add up to 100% due to rounding.
Source: Reuters/lipos public opinion poll
Demand for Regulation

Roughly half the public thinks major tech companies should be regulated more than they are now

% of U.S. adults who say that major technology companies should be regulated more than they are currently

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<th>Less than</th>
<th>More than</th>
<th>About the same as</th>
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<tr>
<td>Total</td>
<td>9%</td>
<td>51%</td>
<td>38%</td>
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<tr>
<td>Republican/Lean Rep</td>
<td>12%</td>
<td>44%</td>
<td>43%</td>
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<tr>
<td>Democrat/Lean Dem</td>
<td>7%</td>
<td>57%</td>
<td>35%</td>
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Note: Respondents who did not give an answer are not shown.
Source: Survey conducted May 29-June 11, 2018.
“Public Attitudes Toward Technology Companies”

PEW RESEARCH CENTER
Central Themes

• The impacts of technology are not fixed. They reflect a set of “design” choices. Those design choices encode a set of values.

• When competing values are at stake, they must be weighed against one another. Who weighs these values and how? This is a critical question of governance, politics, and power.

• You are a central participant in this drama. Understanding your role(s) and exploring/debating the values you want to see encoded are a modern form of civic duty.
Evolution of Governance

- **1st Generation:** Technology was a product of researchers/hackers. They defined the underlying code and architecture.

- **2nd Generation:** Technology is generated by the commercial sector. The people inside companies—engineers, product managers, designers, sales people, and executives—set the rules, with limited oversight from government.

- **3rd Generation:** Technology becomes an issue of politics, and outcomes reflect a push-and-pull between the companies that make things, the governments that oversee them, and the citizens/users who are affected by them.
Historical Precedent: Internet

Spam with everything
Spam as % of total e-mail

Source: Brightmail.

VIRUSES CAN BE SPREAD THROUGH...
- Email
- Social Networks
- Text Messages
- Internet Downloads
Historical Precedent: Internet

A world of insecurity
Worldwide

Information-security spending
$bn

Breached records
m

Sources: Gartner, Risk Based Security; Ponemon Institute

*Estimate  †Forecast
Navigating the Moment

We want you to prepare you for this moment by:

• Exploring technological frontiers that surface difficult trade-offs and require us to grapple with competing values
• Making those competing values explicit and thinking about why we might prioritize some over others
• Investigating the underlying technologies to understand how design choices can produce different outcomes, as well as the limits of what we can engineer
• Thinking hard about how we should choose the values we want new technologies to encode
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The course will focus on four frontier technologies that (a) you are likely to play a role in shaping over the next decade and (b) where engagement with material from philosophy, social science, and public policy is likely to be helpful.

1. Algorithmic Decision-Making (Jan 11 – 25)
2. Data Collection, Privacy, and Civil Liberties (Jan 28 – Feb 8)
3. Artificial Intelligence and Autonomous Systems (Feb 11 – 25)
4. Power of Private Platforms (Feb 27 – Mar 11)
Different Lenses

Technologist

Philosopher

Policymaker
Each unit will have a two-week sequence of lectures, discussions, and assignments

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<th>Week 1</th>
<th>Week 2</th>
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<tr>
<td><strong>Promise and Perils</strong></td>
<td><strong>Bringing to Life</strong></td>
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<tr>
<td><em>intro to topic and competing values at stake</em></td>
<td><em>moderated discussion with experts</em></td>
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<tr>
<td><strong>Technical Deep Dive</strong></td>
<td><strong>Tensions and Trade-offs</strong></td>
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<tr>
<td><em>overview of relevant computer science concepts</em></td>
<td><em>interactive discussion on difficult debates/issues</em></td>
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<tr>
<td><strong>Rights and Responsibilities</strong></td>
<td><strong>Making Choices</strong></td>
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<tr>
<td><em>policy implications and social science research</em></td>
<td><em>designing a product/system/policy in light of competing values and trade-offs</em></td>
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As part of each unit, we will bring to campus a group of distinguished practitioners with relevant perspectives on the key issues we’ll be discussing.

Speakers will include: a California Supreme Court Justice, the CEO of Credit Karma, the former Deputy Director of the National Security Agency, the Deputy Chief Privacy Officer at Facebook, the Civil Liberties Lead at Palantir, the former Deputy National Security Advisor, the Founder of Google News, and more!

They will join us for a moderated discussion in lecture, and some will be available for meetings with groups of students after class. TAs will circulate information on how to sign up.
Each discussion of tensions and trade-offs will be organized around a case study we have developed specially for this course. The narrative case studies are written by professional journalists and include primary source materials for you to review.

Case study discussions will be highly participatory and will take place in Blount Hall in the Traitel Building at the Hoover Institution. Please note the dates of the case study discussions on the syllabus.
Hilary Cohen

- Pre-Doctoral Fellow, Center for Ethics and Society
- Head TA/Course Manager
We have a terrific, interdisciplinary team of teaching assistants from computer science, philosophy, political science, law, and sociology.

They will meet with you in small groups once a week to discuss critical issues raised in lecture and the readings.

Section attendance is mandatory and active participation is essential to success in the course.

You will submit preferences for section times via a form on the CS181 web site (cs181.stanford.edu). The form will be available 5pm Thurs., Jan. 10th until 5pm Sun., Jan. 13th.
Your Role

• Come to lecture and section having done and digested the readings

• Engage actively in discussion

• Complete the four required assignments
  • Algorithmic Decision-Making (Technical)
  • Privacy (Essay)
  • Autonomous Systems (Policy Memo)
  • Platforms and Networks (Technical)

• Take the final exam