## Logistics

<table>
<thead>
<tr>
<th>Week 14</th>
<th>Tuesday 5/2</th>
<th>Automation Review</th>
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<tbody>
<tr>
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<td>Thursday 5/4</td>
<td>HW 6 Due</td>
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<table>
<thead>
<tr>
<th>Week 15</th>
<th>Thursday 5/11</th>
<th>Final Exam</th>
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<tr>
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<td>10:30am-1:15pm</td>
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- Almost there
- HW6 Questions?
Beyond Engineering

Last Chapter of *Pattern* discusses the future of machines

**Central Ideas**

- Understandability of the human brain
- Differences of brain organization from computer organization
- Simulated Evolution
- Speeding up Evolution
- Potential for Intelligent Machines
- Expect a final exam question on this subject
Questions we will need to answer soon

What decisions should automated systems make in life/death situations?

- Self-driving car is zipping along a road
- Pedestrian(s) unexpectedly appear in front of the car
- What should the driving system do?
Driver or Pedestrian?

Source: Business Insider, Gus Lubin
Which Group to Sacrifice?

Source: Business Insider, Gus Lubin
Ethics Problems

- Automated systems will encode human values in some way
  
  - Explicitly:
    ```python
    if deaths_left < deaths_right:
      turn_left()
    else:
      turn_right()
    ```
  
  - Implicitly via training data
  
  - Early and Open discussions of these issues are important
  
  - Motivates study of ethics as a discipline
The social dilemma of autonomous vehicles

by Jean-François Bonnefon, Azim Shariff, Iyad Rahwan

Science 24 Jun 2016:
Vol. 352, Issue 6293, pp. 1573-1576
DOI: 10.1126/science.aaf2654

When it becomes possible to program decision-making based on moral principles into machines, will self-interest or the public good predominate? In a series of surveys, Bonnefon et al. found that even though participants approve of autonomous vehicles that might sacrifice passengers to save others, respondents would prefer not to ride in such vehicles (see the Perspective by Greene). Respondents would also not approve regulations mandating self-sacrifice, and such regulations would make them less willing to buy an autonomous vehicle.
"Sixteen of the top 100 best sellers on Kindle today were self-published," said Bezos (Amazon Founder/CEO). That means no agent, no publisher, no paper — just an author, who gets most of the royalties, and Amazon and the reader.
– Thomas Friedman, *Come the Revolution*, NYT 5/15/2012

Question
Are self-published authors job killers?
The Workplace

Advantages and disadvantages

Telework Can work from home / expected to work from home
Globalization Can hire abroad / don’t hire domestically
Automation Can use a robot / don’t need a person
Monitoring Can monitor productivity / can invade privacy

Discussion

◆ Identify some places where automation has displaced jobs
◆ Come up with 2-3 examples
Strange Automation Examples

- McDonalds Telework from New York Times, 2006
- Amazon Mechanical Turk: The Human API
- To Catch Worker Misconduct, Companies Hire Corporate Detectives from NPR (Audio, 5 min)
Will Your job be killed?

Any job that can be eliminated through technology or cheaper labor is by definition not coming back.
–John Jazwiec, *Speaking Of Unemployment - I Am A Serial Job Killer*

Is this an ethical mode of thinking?
Will My Job be killed?

MOOCs: Massive open online course (Wikipedia)

- https://www.edx.org/ has big backers: MIT, Harvard, Berkeley, Texas
- My job as a teacher may be killed
- You as students may benefit
  - Cheaper, more available, more convenient
- What questions and concerns would you have?

2 George Mason Economists Introduce Free Online Courses

- 9/5/2012, The Chronicle of Higher Education
The Immortal Job

What is a sustainable job? ... as a job killer, jobs I can’t kill.

I can’t kill creative people. There is no productivity solution or outsourcing that I can sell to eliminate a creative person.

I can’t kill unique value creators. ... They might be someone with a relationship with a client. They might be someone who is a great salesmen. They might be someone who has spent so much time mastering a market, that they are subject matter experts, and I know technology or outsourcing can’t be built profitably to eliminate a single unique job.

–John Jazwiec, Speaking Of Unemployment - I Am A Serial Job Killer
We Will Compete

Matt Barrie offered me a few examples on his site (freelancer.com) right now:

- Design “a fully functioning dune buggy.”
  - Forty bidders, average price of $268.
- Design “a car-washing cafe.”
  - Thirty-seven bidders, average price of $168
- Produce “six formulations of chewing gum”
  - Two bidders, $375 average
- “a rap song to help Chinese students learn English”
  - 2 bidders averaging $157
- Five-word award acceptance speech
  - $1,000 contest, 2,730 entries, winner: “The Tech Boom Is Back.”

– Thomas Friedman, How did the robot end up with my job?, NYT 10/1/2011

freelancer.com: An Example and another.
https://www.taskrabbit.com/: Inverse Globalalization
Every child in school, or any young adult, needs to understand, that there will only be a "free agent" market for labor going forward. Free agency means, by definition, every day there is an implied contract. The free agent decides whether the job, pay and working conditions match up to other opportunities. The company decides whether the job, the pay and the same individual free agent matches up to other options.

–John Jazwiec, Speaking Of Unemployment - I Am A Serial Job Killer
Educate Yourself

There will always be change - new jobs, new products, new services. But the one thing we know for sure is that with each advance in globalization and the I.T. revolution, the best jobs will require workers to have more and better education to make themselves above average. Here are the latest unemployment rates from the Bureau of Labor Statistics for Americans over 25 years old:

- less than a high school degree, 13.8 percent; (8.6%)
- a high school degree and no college, 8.7 percent; (5.4%)
- some college or associate degree, 7.7 percent; (4.7%)
- bachelor’s degree or higher, 4.1 percent. (2.7%)

– Thomas Friedman, Average is Over, NYT 1/24/2012

Up to date job stats courtesy of the Feds
Take-Home Message

Your education should prepare you to
- find/create a job that’s hard to kill
- recover gracefully if you do lose a job
- continue learning in order to prosper

Hopefully this class is putting you on that path