Administrative Notes
March 22, 2018

• Reminder: In the News Call #3 - Group is due Tuesday night @ 11:59PM
• Reminder: If your project group wants to sign up to possibly present to the class for an extra 2%, sign up closes tonight!
  • [Link to sign up](#) is on the course website under Extra Resources on the March 15 row
• Reminder: Midterm 2 regrade requests are due tomorrow @ 5PM
• Reminder: The final exam is on April 17, 2018 @ 3:30 in CIRS 1250
Quick Sidebar: 3D printed objects!

Some of you submitted files to print.

Here’s a sample of one of those files. It actually took quite a few hours to print!
In the News

- Let’s take some time to have you find a group if you have not and sign up on Canvas.
- Sign up procedure is the same as before (refer to the In the News page on the website if you have forgotten where to go).
- Make sure you sign up into a group! Canvas automatically assigns marks to everyone in the group when your submission is graded so if you are not in the group, you won’t get a mark.
The Trolley Problem
Imagine you were the software engineer writing the algorithm for a self-driving car. You need to figure out what to tell the computer to do in the case of the trolley problem. Do you program the car to hit the five people or the one person?

A. Five People
B. One Person
C. Quit and find a new career
Trolley Problem Version 2

https://www.youtube.com/watch?v=Zp11WL0PVOI
Software Twist on the Trolley Problem

Imagine you were the driver inside a self driving car. You can choose where the car goes. Do you program the car to hit the five people or the one person?

A. Five People
B. One Person
C. Start walking everywhere instead
Who do you want to make these decisions?

In a situation like the trolley problem where you are the one sitting in the car about to hit someone, who do you want as the decision maker?

A. The car company
B. The software company
C. You (the driver)
A big problem is liability

Group discussion. Consider driverless car accidents. Come up with different scenarios where: (1) the car manufacturer is at fault, (2) the software manufacturer is at fault, (3) the car’s owner is at fault.

Situation 1: Multiple accident

Situation 2: Trying to find out how to improve; easier to train software manufacturer to improve decision making

Situation 3: Someone isn’t looking/paying attention
Person who hacked the software; software company can try to stop it but people will always get around it
Insurance companies probably will nullify policy
A liability case study

In July 2016, a 40 year old man was killed using Tesla’s Autopilot function on the highway when a truck pulled across the road to make a turn. The autopilot (and presumably driver) failed to see the truck and slammed into it.

Some additional factors:

• The driver was going 74 MPH in a 65 MPH zone. The driver manually set this speed.
• The autopilot is in “beta”: Tesla reminds drivers that it is only to supplement a fully-alert driver
• The car shut down the motor the instant of the crash
• The weather was very sunny
• Europe has a law to require a bar on the bottom of trucks that would have likely stopped the accident

Who was to blame?

A. The driver  B. Tesla  C. Truck Driver  D. Other

http://www.theregister.co.uk/2016/07/28/tesla_autopilot_death_driver_was_speeding/
Another issue: Adversarial attacks

"Adversarial examples are inputs to machine learning models that an attacker has intentionally designed to cause the model to make a mistake; they’re like optical illusions for machines."

– Ian Goodfellow and colleagues at OpenAI

https://blog.openai.com/adversarial-example-research/
Another issue: Adversarial attacks

"Adversarial examples have the potential to be dangerous. For example, attackers could target autonomous vehicles by using stickers or paint to create an adversarial stop sign that the vehicle would interpret as a ‘yield’ or other sign”


https://blog.openai.com/adversarial-example-research/
That does not, however, mean that the other jobs will not change

- Let’s look at my job
- In 2011 MOOCs (Massive Open Online Courses) came on the scene and were predicted to take over higher education within a decade
Group exercise:

Would you rather take an online course or come to one at UBC? Which do you prefer and why?

A. Online course at UBC as part of a degree program
B. Come physically to UBC
Group exercise:

Would you rather take an online course or come to one at UBC? Which do you prefer and why?

Online Course
If you feel really confident with the material
Do at your own pace at your own time
Don't have to wait for instructor or other students

Come to UBC
Interaction with other students or the teaching staff would be more beneficial then come to UBC
Gets you out of your house into a routine
Good time management if you do an online course (might just procrastinate)
What happened to MOOCs?

**MOOCs Are Dead. Long Live Online Higher Education.**

By Phil Hill  |  AUGUST 26, 2016  |  PREMIUM CONTENT FOR SUBSCRIBERS. SUBSCRIBE TODAY

- But some changes have persisted
  - Online classes
  - Blended classes
  - More videos and such for other classes

Group Exercise: How do you think university education will change in the next 20 years?

- All the glitches now will be yesterday’s news
- Screensharing when teaching
- Textbooks online (or for free)
- No more iClickers (app based and not with the actual clicker)
Does this mean there won’t be enough jobs?

All this has happened before

Agriculture workers

[Chart 1: Agricultural labourers]

[Chart 2: Washers, Launderers]

Launderers

https://www.theguardian.com/business/2015/aug/17/technology-created-more-jobs-than-destroyed-140-years-data-census
So what happened to all those people? What are they doing?

Accountants  Hairdressers
Clicker question

Going back to the three jobs that you were interested in, how many existed in 1871?

A. None
B. 1
C. 2
D. 3
Clicker Question

Thinking back to the tasks you wrote down for each of your careers, how many of them could be automated? Another way to think about this is: how many of your tasks could you write an algorithm for?

A. 0 to 25%
B. 25 to 50%
C. 50 to 75%
D. 75 to 100%
Note…

• I’m not saying this transition is going to be smooth
• I’m not saying that the government shouldn’t get involved
• I’m not saying that changes aren’t going to have to be made
• But I don’t think we’ll all be out of jobs, either
What can robots do now? Let’s look at movement

https://www.youtube.com/watch?v=tf7IEVTDjng
SpotMini Improved

Boston Dynamics

https://www.youtube.com/watch?v=aFuA50H9uek
Atlas, a humanoid robot
What can robots do now?
Let’s look at movement

A. I’m not worried about the robots in this video
B. This video worries me a bit
C. This video worries me a lot
What can robots do now? Let’s look at movement

Group exercise: Do these robots worry you? Why or why not?

• No, robots are very basic
• Robot can deal with problems but it shows potential to do more
• Robots can do one thing very very well and only that
• Now that they can travel and navigate the world to a certain degree, could be turned into weapons
Let's take another look at what robots can do now

https://www.youtube.com/watch?v=dMrX08PxUNY
A related Sophia video
Based on what we’ve learned what do you believe Sophia is capable of? What are her limitations? Did you see any “cracks”?