



Technology & Ethics

Marist CLS

Fall, 2021

Paul Stoddard

Course Background

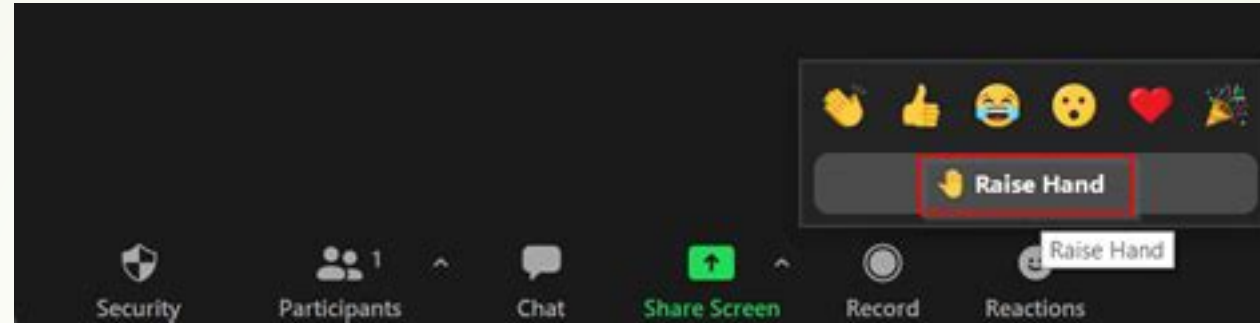


Technology & Ethics was developed and taught by David Sampah and Paul Stoddard at [Ashesi University](#) in Ghana, West Africa in Spring 2019.

Ashesi's mission: "to educate ethical, entrepreneurial leaders in Africa; to cultivate within students the critical thinking skills, the concern for others, and the courage it will take to transform the continent."

[TED Talk](#) by Ashesi President & Founder, Patrick Awuah.

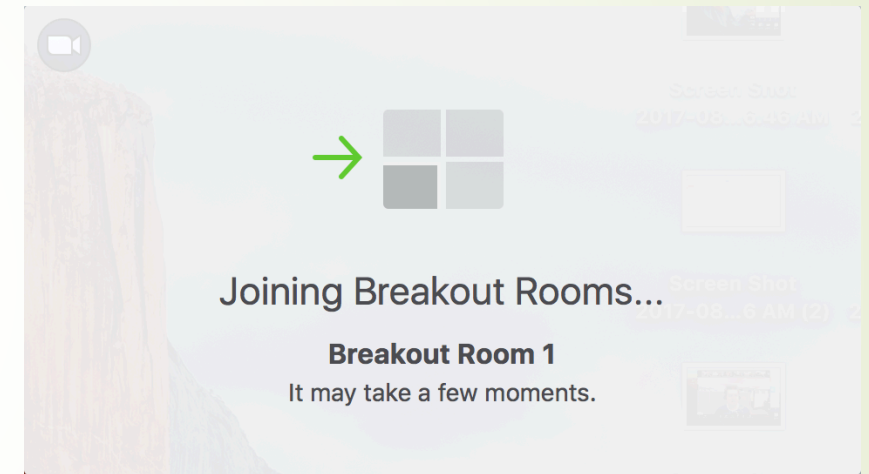
How to ask and answer questions



- In Zoom, click on Reactions, then on Raise Hand.
- When I call on you, unmute yourself and ask your question or give your answer.
- You can also type questions in the Chat.


Introduce yourselves

- ▶ Zoom Breakout Rooms (small groups) for 10 minutes.
 - Introduce yourselves to each other.
 - Answer this question:
What interests you about this topic?
See if your group members have common reasons for taking the course.
- ▶ When we return to the large group, I'll ask for some of your answers and write them down.





What interests you about this topic?

- ▶ Privacy, government surveillance, biotech
 - ▶ Smart phone surveillance, policing
 - ▶ Cultural impacts, unintended consequences
 - ▶ Limiting tech capabilities
 - ▶ Corporate governance, congressional weakness in understanding, China, Russia
 - ▶ Tech is advancing so fast, genetic engineering
 - ▶ CRISPR – should it be monitored
 - ▶ Ethics of cyber-porn, child safety
- 



What interests you about this topic?

(answers from 2020 class)

- ▶ Bandwidth availability in rural locations. Abuse of connectivity.
- ▶ Concern about surveillance related to contact tracing.
- ▶ Freedom of speech vs. truth, spreading untruth.
- ▶ What is Facebook doing, politics. How Russia and China are misusing it.
- ▶ Why do people use social media for news?
- ▶ Education and equity. Will tech impact it positively or negatively?
- ▶ Monopolies
- ▶ Tech taking over everything.
- ▶ Want to be able to talk to their children.
- ▶ Neuroscientists think devices are causing anxiety.
- ▶ Netflix documentary – Social Dilemma.
- ▶ Online bullying. Responsibility of platform, school, parents?

Why study Technology & Ethics? News items:

- Numerous hacks (theft) of personal, private data



- Inappropriate use of personal data by Corporations



Cambridge
Analytica

- Silicon Valley attitude – if we *can* build it, we *should* build it (and worry about the consequences later).

Mark Zuckerberg's now-famous motto in the early days of Facebook was “**Move fast and break things.**”

Why study Technology & Ethics?

- Predicted job losses due to AI and automation
- Dangers of powerful technology being abused (example: facial recognition)



Why study Technology & Ethics?

- Social media problems



- How do we answer questions like:
If a hospital has too many COVID patients, should they treat the vaccinated patients before the unvaccinated ones?
Wired article
- *How can you and I influence the ethical use of technology?*



Poll – Some Personal Tech Problems

- ▶ Have you experienced any of the following? (You can choose more than 1)
 - Credit card number stolen and used for fraudulent purchase
 - Identity stolen (for example, someone opened a loan or credit card using your name and information)
 - Malware on your computer
 - Notification from a store or other organization that your data may have been stolen by hackers (Experian, Target, etc.)
 - You or someone you know lost their job to a robot or other new technology
 - You were forced to agree to a very long, difficult to understand user agreement before you could use a website or software
 - You received suspicious emails or text messages
 - Your email address was subscribed to websites without your consent



Topics for this semester

- How to protect yourself and your devices
 - Artificial Intelligence and Machine Learning – AI and ML
 - Traditional ethical frameworks (next week)
 - Autonomous Vehicles (self-driving cars) – AV
 - Data breaches and hacking
 - Targeted advertising
 - Addictive apps
 - Bioethics
 - Environmental Ethics, Geo-engineering
 - Codes of Conduct, government regulation
- 



Related disciplines

Discussions about ethics often overlap with:

- Philosophy
- Law
- Political Science
- Economics
- Statistics
- Sociology
- Psychology
- Medicine
- Journalism
- etc.





Some tech terms - matching quiz

1. Malware
2. Artificial Intelligence
3. Machine Learning
4. Big Data
5. Cloud computing
6. Blockchain
7. Algorithm
8. Cryptocurrency

- A. A growing list of data records linked together using cryptography.
- B. Digital information that is too large to analyze using traditional data processing methods.
- C. Software intentionally designed to cause damage to a computer or computer network, or to steal information.
- D. A digital means of storing and exchanging value.
- E. On-demand availability of computing resources that are managed by someone other than the user.
- F. Machines that can perceive things in their environment and take actions to achieve a designed goal.
- G. Computer algorithms that can improve automatically through experience and by the use of data.
- H. A finite sequence of instructions that can be followed to solve a specific class of problems.

Some tech terms - matching quiz

-
1. Malware
 2. Artificial Intelligence
 3. Machine Learning
 4. Big Data
 5. Cloud computing
 6. Blockchain
 7. Algorithm
 8. Cryptocurrency
- A. A growing list of data records linked together using cryptography.
 - B. Digital information that is too large to analyze using traditional data processing methods.
 - C. Software intentionally designed to cause damage to a computer or computer network, or to steal information.
 - D. A digital means of storing and exchanging value.
 - E. On-demand availability of computing resources that are managed by someone other than the user.
 - F. Machines that can perceive things in their environment and take actions to achieve a designed goal.
 - G. Computer algorithms that can improve automatically through experience and by using lots of data.
 - H. A finite sequence of instructions that can be followed to solve a specific class of problems.

- 
- 
- *Class tip: raise your hand if you see an acronym or term you don't understand. Articles on technology are full of them.*

Artificial Intelligence

[Interview](#) with Sophia on Good Morning Britain (3 minutes)

Sophia on [Spec Tech](#) (6 minutes)

Sophia was made by [Hanson Robotics](#) to make humans more comfortable with AI.

Do you think “she” succeeds?

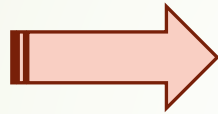
The bigger concern is with AI systems that affect hiring, credit scores, college admissions, policing etc.

Artificial Intelligence & Machine Learning

Brain analogy



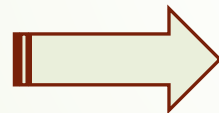
Senses collect a constant stream of information



Brain creates and modifies mental models, predictions, and determines reactions.

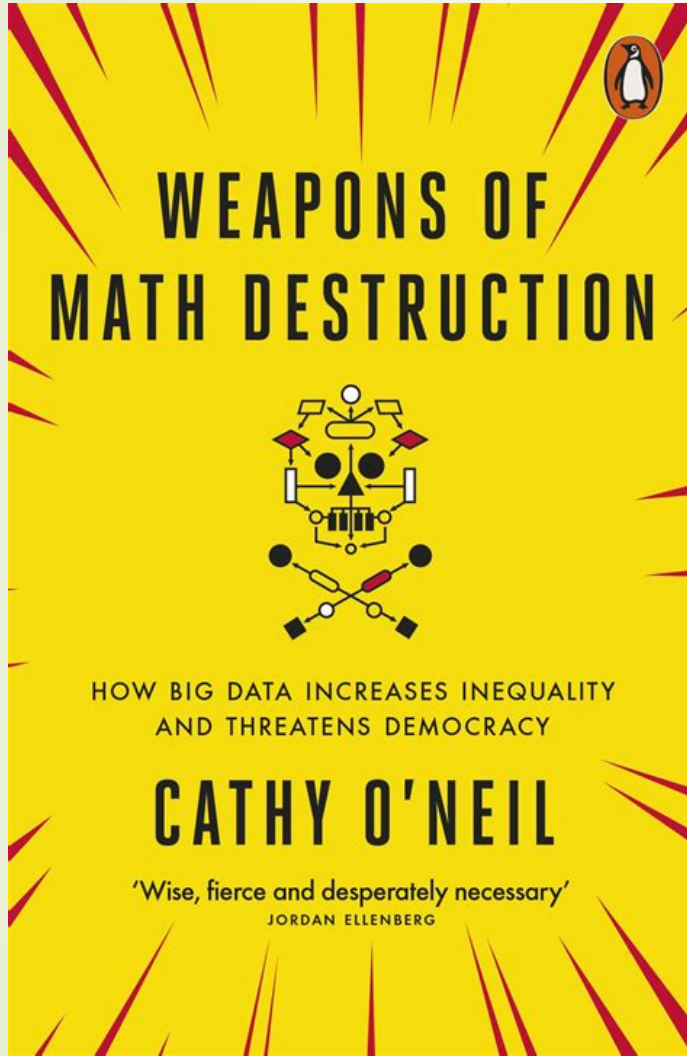


System receives a lot of big data



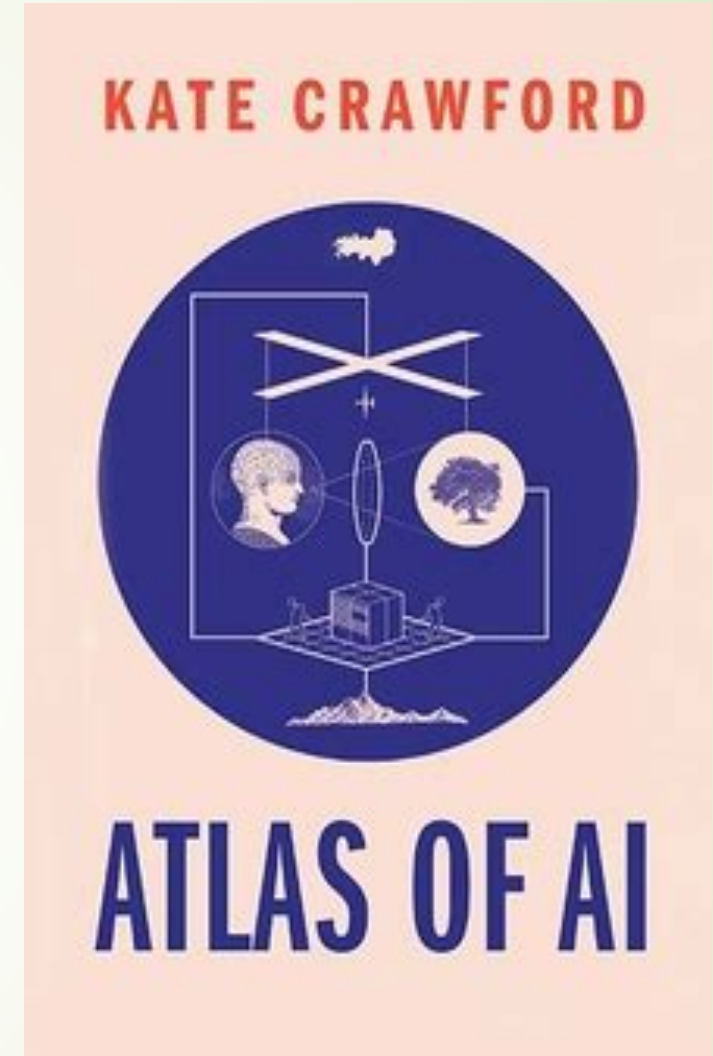
System "learns" from lots of data and creates and modifies statistical models and predictions.

Training: Before using a ML application, it is "trained" using huge data sets. Example: medical images



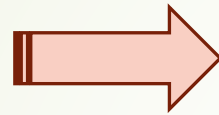
AI & ML criticisms

- *Weapons of Math Destruction* by Cathy O'Neil
- WNYC [interview](#) with Cathy O'Neil (17 minutes)
- *Atlas of AI* by Kate Crawford
- European Union tries to [draft laws](#) regulating “high risk” AI (such as facial recognition)



AI & ML

Brain analogy – what's missing?



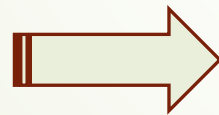
Senses collect a constant stream of information



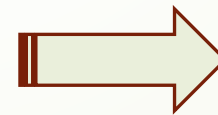
Brain creates and modifies mental models, predictions, and determines reactions.



Could ethics be programmed in?



System receives a lot of big data



System "learns" from lots of data and creates and modifies statistical models and predictions.

WEF - Top 9 ethical issues in AI (2016)



1. Loss of Jobs.
2. Inequality. Concentration of wealth and power.
3. Effects on human behavior.
4. AI mistakes and fooling AI.
5. AI bias. Technology is made by humans and reflects human biases. (ML bias 2:33 [video](#))
6. Cybersecurity.
7. Unintended consequences.
8. AI becoming more intelligent than humans. (But what is intelligence?)
9. Robot rights. (Science fiction?)

I would add to this list: the difficulty of explaining how AI systems reach their decisions (called "Opacity" in *Weapons of Math Destruction* book).

“ The merger of infotech and biotech might soon push billions of humans out of the job market and undermine both liberty and equality. Big Data algorithms might create digital dictatorships in which all power is concentrated in the hands of a tiny elite while most people suffer not from exploitation but from something far worse - irrelevance. ”



Yuval Noah Harari

21 Lessons for the 21st Century

Harari also wrote

Sapiens: A Brief History of Humankind and
Homo Deus: A Brief History of Tomorrow

More on AI

- ▶ China has a goal to be the world leader in AI by 2030. (For more on the rise of China and foreign policy concerns related to technology see Joseph Nye's book *Do Morals Matter?* pages 197 – 211.)
- ▶ Many groups have discussed and proposed ethical guidelines for how AI should be developed or deployed: IEEE, a global professional organization for engineers, has issued a [280-page document](#) on the subject, and the European Union has published its [own](#) framework. The [AI Ethics Guidelines Global Inventory](#) has compiled more than 170 such guidelines from around the world.
- ▶ Kai-Fu Lee [article](#) **Top 10 Most Endangered Jobs from AI**
- ▶ The US [National Institute of Standards and Technology](#) is working on how to improve trust in AI systems.

