


CS 3001-C: Computing, Society, and Professionalism

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Week 12: Technology and Pandemics
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Technology, the pandemic, and how we can respond **ethically**

The efficacy of social distancing

- Curfews and social distancing have been touted to help mete out the number of infections slowly—because say, 2 million patients over 18 months will be more manageable than 2 million over six months.

Early detection, contact tracing

- Early on in the pandemic, leaders looked for guidance on when to close schools or order residents to shelter in place, and whether the measures they've already taken are working.
- Early research on coronavirus suggested that isolating people soon after they become symptomatic plays the “largest role in determining whether an outbreak [is] controllable.”

Role of technology – Existing examples

- One potentially powerful tool for public health officials is **digital contact tracing**—identifying the people that an infected person has been around.
 - This reveals potential outbreak hot spots, offers some idea of where the virus may spread next, and importantly, warns officials who to contact next and potentially isolate if they become symptomatic.
 - Faster than manual tracing
- Early in the pandemic, the CDC issued a temporary rule requiring airlines to share data on passengers traveling from overseas on request, including addresses, phone numbers, and email.

Role of technology – Existing examples

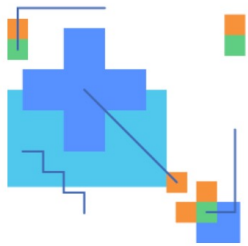
- Israeli Prime Minister Benjamin Netanyahu rolled out a surveillance program that uses the country's domestic security agency to track the locations of people potentially infected with the virus.
- South Korea has released detailed information on infected individuals—including their recent movements—viewable through multiple private apps that send alerts to users in their vicinity.
 - They're essentially texting people, saying, 'Hey, there's been a 60-year-old woman who's positive for COVID. Click this for more information about her path.'

Role of technology – Novel approaches

- Officials have a powerful potential surveillance tool unavailable in past epidemics: **smartphones**
- Government officials have been anxious to tap the information from phones to help monitor and blunt the pandemic
- White House officials in 2020 asked tech companies for more insight into our social networks and travel patterns

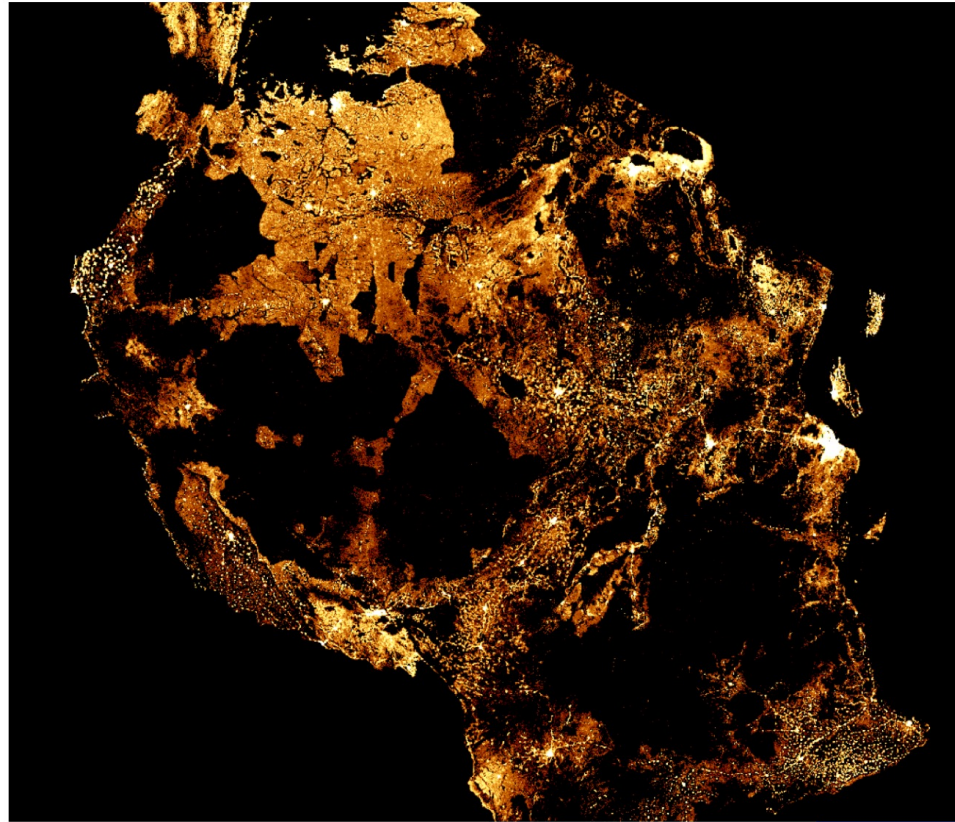
Facebook's Disease Prevention Maps

- **Facebook** created a disease mapping tool that tracks the spread of disease by aggregating user travel patterns.
- "Disease Prevention Maps have helped organizations respond to health emergencies for over a year and we've heard from a number of governments that they're supportive of this work," Laura McGorman, Policy Lead of Facebook's Data for Good project, said in a statement to Business Insider.



Disease Prevention Maps

Facebook Disease Prevention Maps are designed to help public health organizations close gaps in understanding where people live, how people are moving, and the state of their cellular connectivity, in order to improve the effectiveness of health campaigns and epidemic response. These datasets, when combined with epidemiological information from health systems, assist nonprofits in reaching vulnerable communities more effectively and in better understanding the pathways of disease outbreaks that are spread by human-to-human contact.



Role of technology – Novel approaches

- Another potential -- tap the geofencing capability of phones, to learn who may have been near people infected with the virus
- Police have relied on geofencing in investigations, using broad warrants to request information on every smartphone near a crime scene.
 - Last May, police requested location data from every “Google account that is associated with a device” within 150 meters of a bank robbery.
- In theory for covid-19, Google could notify users whose phones were recently near an infected person.

Role of technology – Novel approaches

- The controversial facial recognition startup Clearview AI says it is in talks with public officials to use its software to identify anyone in contact with people who are infected.
- The weapons detection company Athena Security claims its AI-enabled cameras can detect the coronavirus by spotting fevers.

Privacy threats

- These possibilities raised red flags to privacy advocates
 - European and US laws
 - There's already legal debate over whether such actions would overstep the Fourth Amendment's restrictions on the government's ability to search private property.
- What are the specific privacy threats?

“Public policy must reflect a balance between collective good and civil liberties in order to protect the health and safety of our society from communicable disease outbreaks” the Electronic Frontier Foundation

A balance - Transparency

- The government should be really clear in articulating what specific public health goals it's seeking to accomplish
- * Be clear about how the government is limiting the collection of personal data to what's necessary to achieve those very specific goals
- Making sure that there are appropriate privacy safeguards put in place before data starts to change hands

A balance - Data collection based on science, not bias

- Ensure that any automated data systems used to contain COVID-19 do not erroneously identify members of specific demographic groups as particularly susceptible to infection
 - Avoid bias based on nationality, ethnicity, religion, and race—focus on facts about a particular individual’s actual likelihood of contracting the virus, such as their travel history or contact with potentially infected people.

A balance – Parsimonious use of data

- Any data collection must be scientifically justified and proportionate to the need.
- Even anonymized, aggregate data can inform health efforts.
- Consider a scenario where city officials close bars and restaurants for a weekend, hoping to reduce the number of new coronavirus infections.
 - But instead, infections increase.
 - Some may be the result of exposures days earlier, but tracking where people went over the weekend could reveal new transmission hot spots.

A balance – Due process

- If the government seeks to limit a person's rights based on this "big data" surveillance (for example, to quarantine them based on the system's conclusions about their relationships or travel), then the person must have the opportunity to timely and fairly challenge these conclusions and limits.

A balance - Expiration

- There is a hazard that the data surveillance infrastructure we build to contain COVID-19 may long outlive the crisis it was intended to address.
- The government and its corporate cooperators must roll back any invasive programs created in the name of public health after crisis has been contained.

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Is it ethical for the tech companies and governments to partner to use technology data to identify which individuals may be unvaccinated?

- Kantian approach
- Utilitarian approach