What's Gonna Happen Today

- Intro to Optimization Systems and their harms
- Intro to Protective Optimization Technologies (POTs)
- Small Group Discussions (if you get here early introduce yourself to your 3 nearest neighbors)
- Make some POTs! (Protective Optimization Technologies)

- @ us: @hiddenmarkov @bekah_overdorf
- Photos of us and the slides are ok to share
- Please interrupt us if something is unclear or if you have something to add!

Open our pad: pad.internetfreedomfestival.org/p/1028

A GUIDE TO REVOLUTIONARY COUNTER OPTIMIZATION

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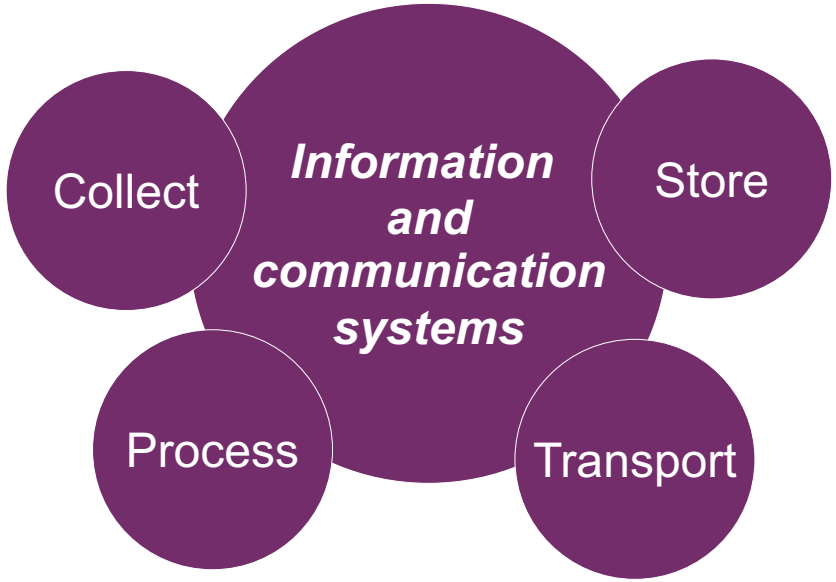
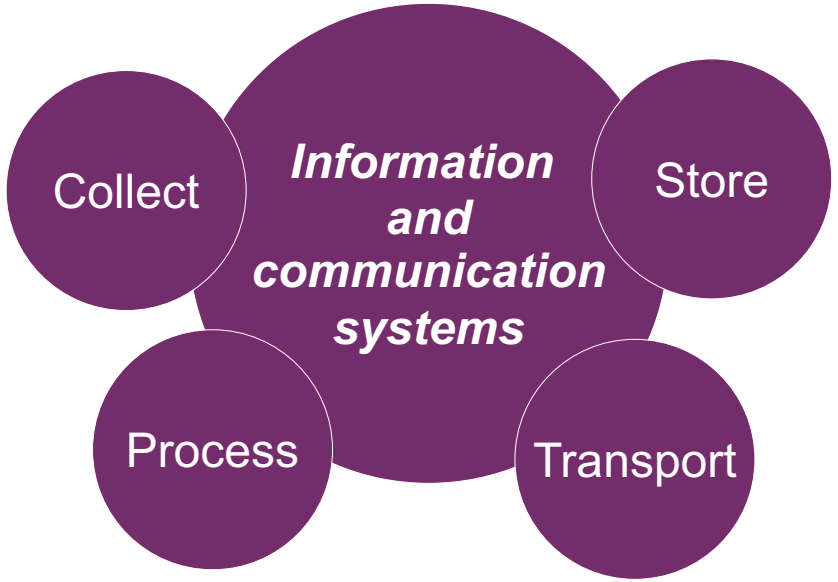
What to Expect

- Explore optimization systems and their harms
- Explore methods to counter these harms

Information Systems

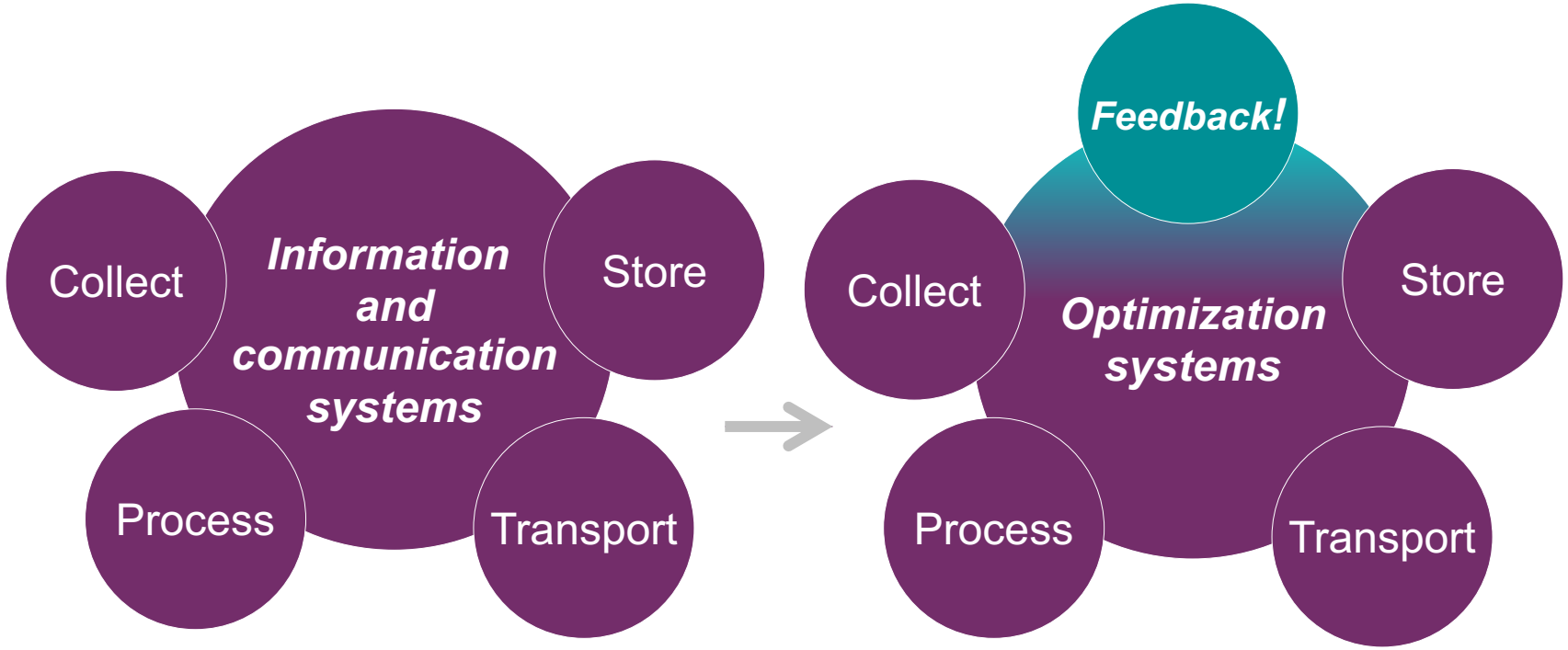


Information Systems

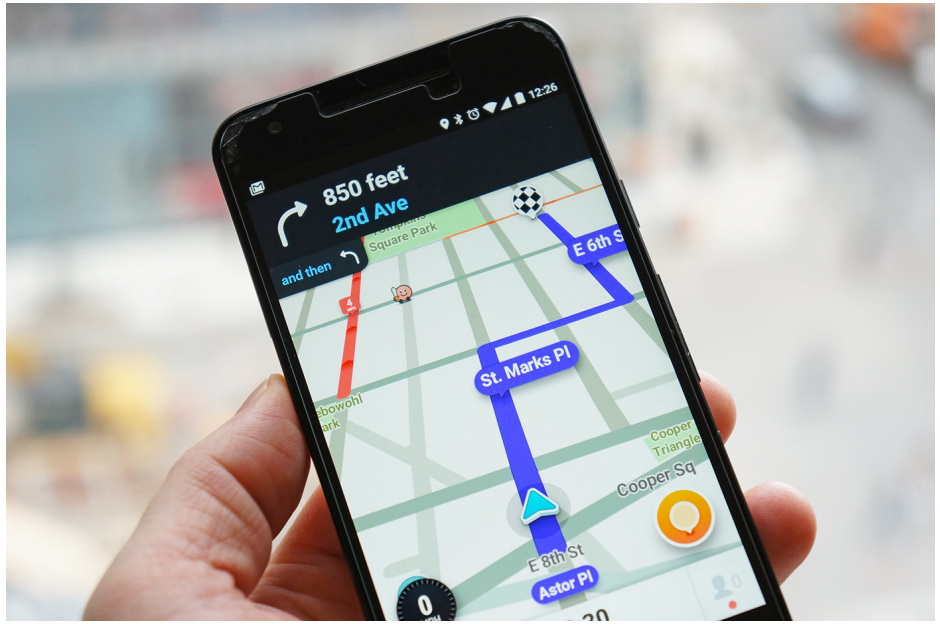


- Issues
  - Surveillance
  - Censorship
  - Manipulation

From Information Systems to Optimization Systems



From Information Systems to Optimization Systems



Optimization Systems

Use optimization algorithms to extract maximum value (U) from the manipulation of people's activities and their environment.

$$\max_{x \in \mathbb{R}} U(x)$$

Optimization Systems

Recommendations

Prices

Police Resources

Recitivism (prison resources)

Routes

Waze

Optimizes ROUTES for its users around traffic

What is optimized?

Fastest Routes

Who benefits?

Users

Harms

- Antisocial and negative environmental outcomes
- Adverse side effects
- Only benefit a few
- Externalize exploration costs
- Externalize cost of errors
  - Produce errors due to distributional shift
  - Fulfill objective but not its intended goals
  - Distribute errors unfairly

Externalities of Optimization Systems

Externalities are the negative effects, intended or accidental, that are caused by these systems.

Who loses?

Non-Users/residents whose neighborhoods are flooded with users.

Break Out! (10 minutes)

Turn to the people near you
Come up with some examples of optimization systems.

- What are these systems optimizing for?
- Who benefits?
- Who loses?
- What externalities may these systems have?

Example Optimization System: Waze
Who benefits: Users Optimizing for: Quickest routes for users
Who loses: Non-users Externality: Surface roads are congested

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Break Out! (5 minutes)

Now that you've come up with systems and their externalities…

What do we do about these externalities?

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Tell us about your problems and solutions

Solutions from within the system

Solutions from outside the system

Solutions from within the system

"We're creating algorithms that cause harms, so we need to fix the algorithms"

Solutions from outside the system

Protective Optimization Technologies

POTs: Solutions from the Outside

New Jersey Town Restricts Streets From Commuters To Stop Waze Traffic Nightmare

May 8, 2018 · 4:01 PM ET

SAMANTHA RAPHELSON

Miami Police Fight Back Against Waze App

Published Jan 29, 2015 at 11:10 PM | Updated at 10:58 PM EST on Feb 17, 2015

Local

Traffic-weary homeowners and Waze are at war, again. Guess who's winning?

g back against the Waze app which

Protective Optimization Technologies

POTs are solutions to the harms of optimization systems that come from *outside* the system

GOAL: design tools to deal with Optimization on behalf of the users

Design Steps for Protective Optimization Technologies

1. Name the externality
2. Identify who or which environments are harmed
3. Dissect the roots of its cause: what is the technical problem?
4. Identify the Goal of the POT and the benefactors of the POTs
5. Create the Solution
6. Evaluate impact on benefactors and other actors

Design Steps for Protective Optimization Technologies

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6. Evaluate impact on benefactors and other actors

1. Surface roads are congested
2. Non-users
3. That the routing algorithm sends users through the town
4. Reroute traffic off of surface roads
5. Find the minimum number of roads to block s.t. the town is not congested
6. See if there's still traffic!

Break Out! (15 minutes)

Make some POTs! Are there any solutions that you can come up with that don’t rely on the service provider?

Some help: Think about how the inputs to the system – on what data does the system make a decision? How can we edit that data? Can we?

Is your POT “acceptable” “ethical” “feasible”?
Does it have it’s own Externalities?

Tell us about your POTs!

The Rest of the POTs Team

Carmela Troncoso

Ero Balsa

Seda Gürses

Thank you

Blog Post:https://bit.ly/2VhUgDq

Code:github.com/spring-epfl/pots

Papers:

arxiv.org/abs/1806.02711

arxiv.org/abs/1811.11293

Tell us your problems!

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