Algorithmic Equity Toolkit

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UNIVERSITY of WASHINGTON
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DATA SCIENCE FOR SOCIAL GOOD

Outline (Internal only)

- Cor: Hook-Why surveillance and alg systems impact us broadly? -> real-life example of how surv and ADS are used today (ICE example w/ undocumented immigrants and driver's license photos)
- Cor: What are surveillance and alg systems? -> there are surveillance that is collecting data about everyone and ADS that are using that data to make decisions (in context of the ICE facial recog hook w/ walkthrough of what the system might look like)
- Dan? Or Cor: city of seattle surv ord, legislation in WA -> link to why b/c lack of pressure/care to pass bills and civil rights activists communities are most heavily impacted and care the most
- Dan? Or Cor: Introduce ACLU and the stakeholders ->together we decided to created toolkit
- Aar: Why did we create a toolkit? Why does it include the 3 parts- what is in the toolkit? Who is it for- Why we focus on civil rights activists?
- Aar: Participatory Design- > methodology- how did we create it w/ data scientists and stakeholders and prototypes
- Aar: Demo -> show alg bias, if we fix the ADS is problem solved?
- Aar: ID guide -> walk thru final (here's the final b/c stakeholders said X)

Technology

FBI, ICE find state driver's license photos are a gold mine for facial-recognition searches

A cache of records shared with The Washington Post reveals that agents are scanning millions of Americans' faces without their knowledge or consent.

CALIFORNIA

Facial recognition software mistook 1 in 5 California lawmakers for criminals, says ACLU

Machine Bias

There's software used across the country to predict future criminals. And it's biased against blacks.

by Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, ProPublica

May 23, 2016

Civil rights activists up in arms over Amazon update adding fear detection to facial recognition tech

What are surveillance and automated decision systems (ADS)?

Surveillance

(e.g. collection of drivers license photos)

Surveillance systems collect data about the mass population.

Automated Decision Systems (ADS)

(e.g. facial recognition software)

Use the collected data to make decisions.

Up Next:

Daniella Raz
2019 DSSG Fellow

On related legislation and stakeholders

WA Legislation HB 1654 & 1655

- Managing facial recognition and automated decision systems

Seattle Surveillance Ordinance 2013

- Transparency on the use of surveillance technologies
- New tech require council approval

Seattle Surveillance Ordinance 2017

the Stranger THINGS TO READ · THINGS TO DO ·

NEWS SEP 28, 2016

How the Seattle Police Secretly—and Illegally—Purchased a Tool for Tracking Your Social Media Posts

by Ansel Herz

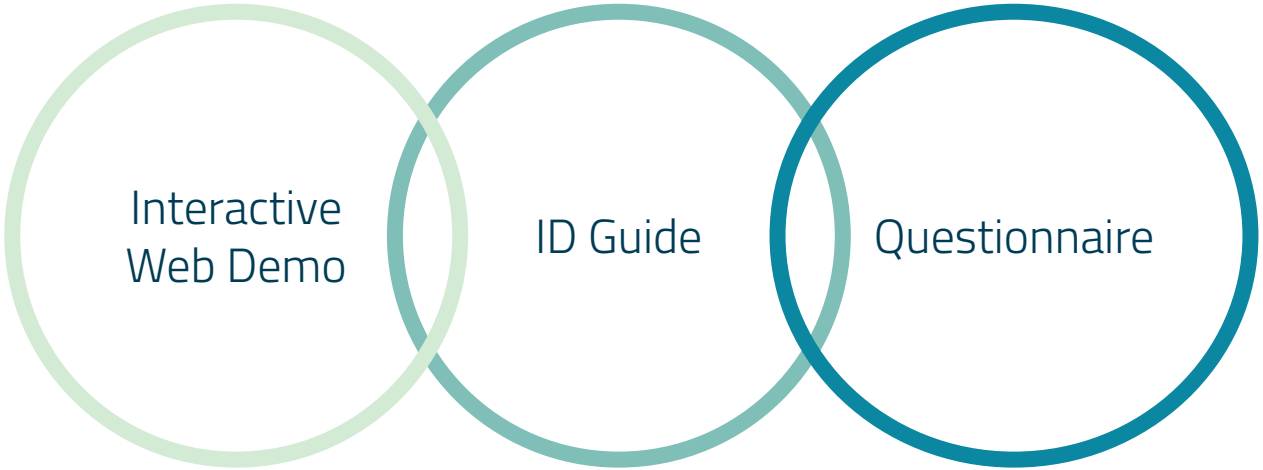
The company boasted the software could measure online "sentiment" and predict an eruption of violence at protests. MIKE FORCE

WA Legislation HB 1654 & 1655

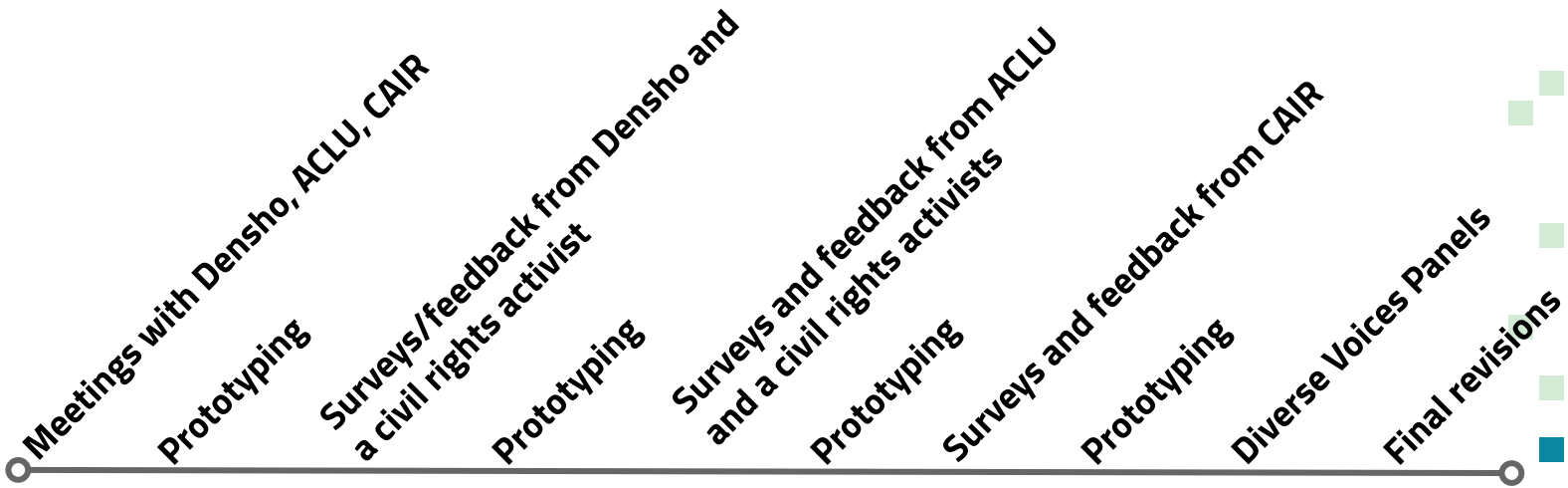
- Managing facial recognition and automated decision systems

Stakeholders

Toolkit

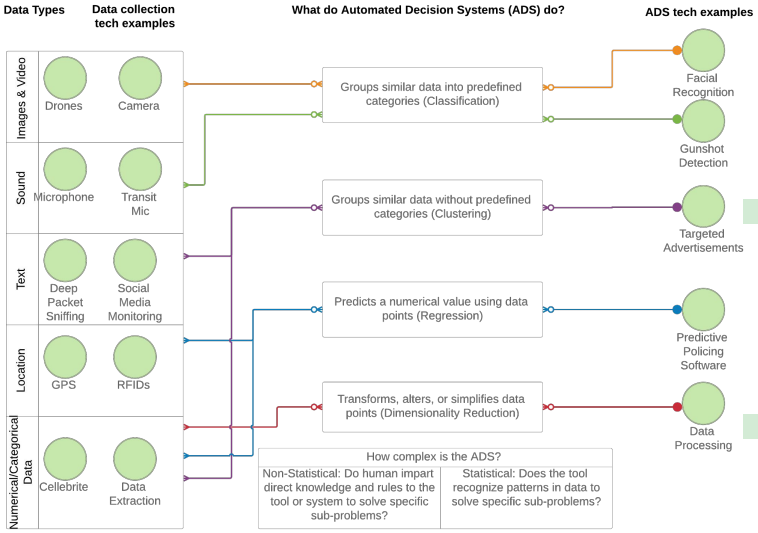


Participatory Design Timeline



Participatory Design

- Accuracy-> Data scientists
- Usefulness and Clarity -> Civil rights advocates



Participatory Design

What is your level of familiarity with automated decision systems/artificial intelligence? How would you define an automated decision systems/artificial intelligence?

6 responses

low level. Use a neural network for img processing. system that uses an algorithm to determine responses given an input.

very little familiarity. honestly not sure how to define these terms, but perhaps systems that collect/compile data and make decisions based on that data with little/no human oversight.

Somewhat familiar. ADS/AI are software systems that rely largely an infrastructure of generated algorithms primarily derived from machine-learning approaches, rather than the traditional explicit logic written by human programmers.

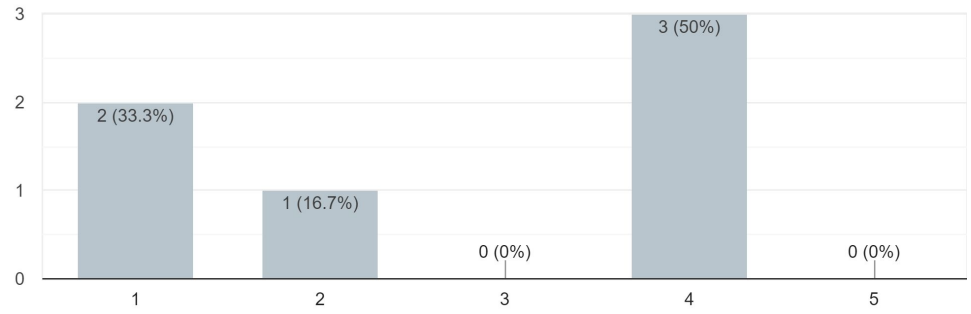
Not too familiar. I'd define it as technology that is capable of learning, without any person reprogramming it

Machine learning. AI slowly learns by probing, trying things, and maintaining relevant knowledge. It's my understanding that IBM's Watson is often used

basic understanding. I know more about how these broadly relate to social justice issues. to my understanding, these systems use data to provide results/answers/etc

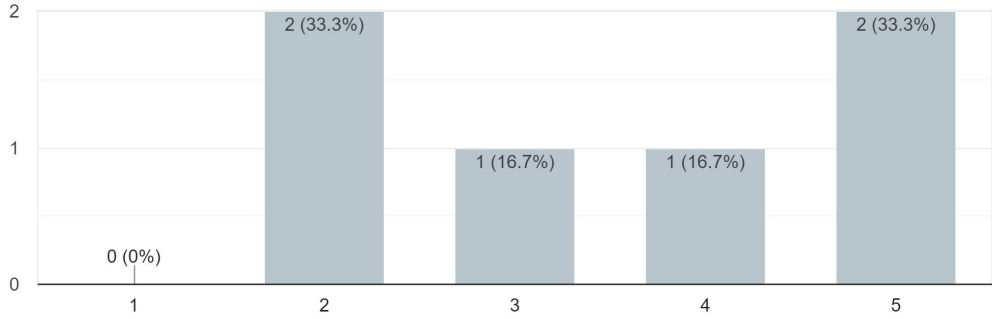
How comfortable would you feel testifying on government use of a new automated decision system/artificial intelligence?

6 responses



How comfortable would you feel testifying on government use of a new automated decision systems/artificial intelligence after reviewing this toolkit?

6 responses



What additional questions do you have about automated decision systems/artificial intelligence?

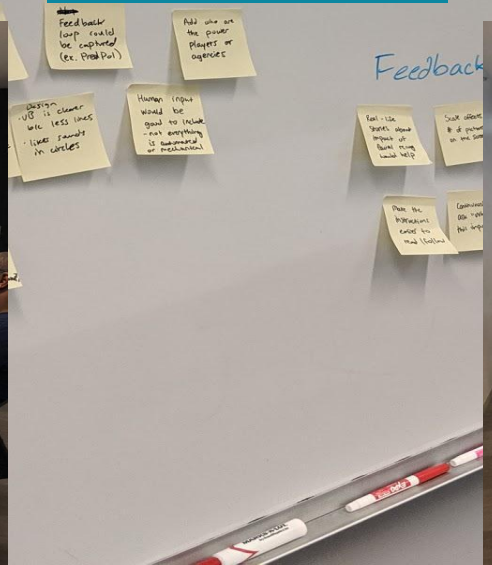
3 responses

What regulations are there on artificial intelligence systems right now? Think people assume that gov't is more interested in regulation than they actually are.

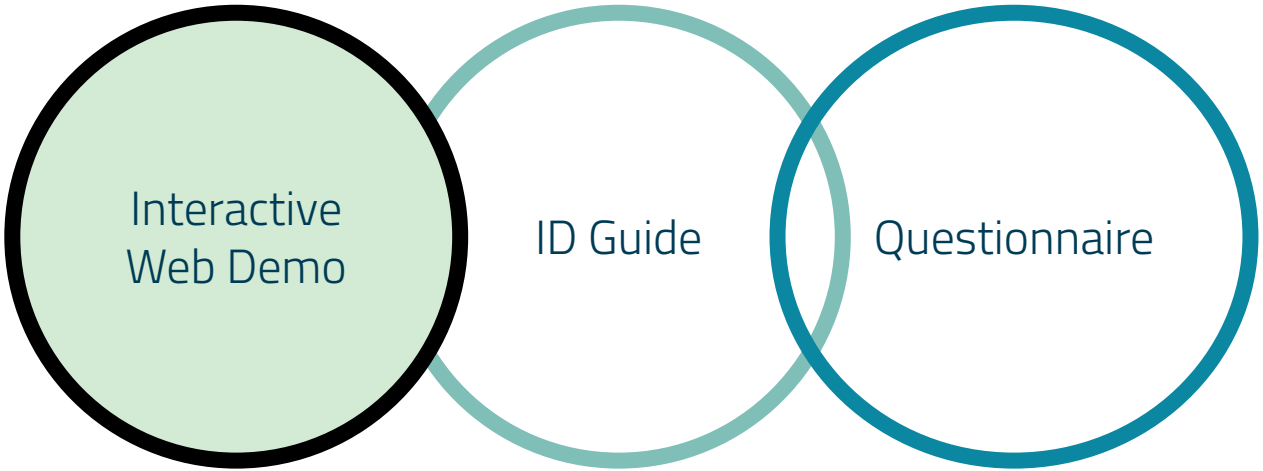
What laws exist to regulate the use of AI (ie, one example mentioned that Amazon recommends a 95% confidence interval when using its facial recognition tool, but there is no law dictating that law enforcement can only make decisions if the CI is reached)? To what extent should AI be used if it's so imperfect? In what situations is human judgment more accurate and in what situations is AI more accurate? How can you make AI less biased, and can that be programmed or will it have to be human judgment

none

Diverse Voices



Toolkit: Interactive Web Demo



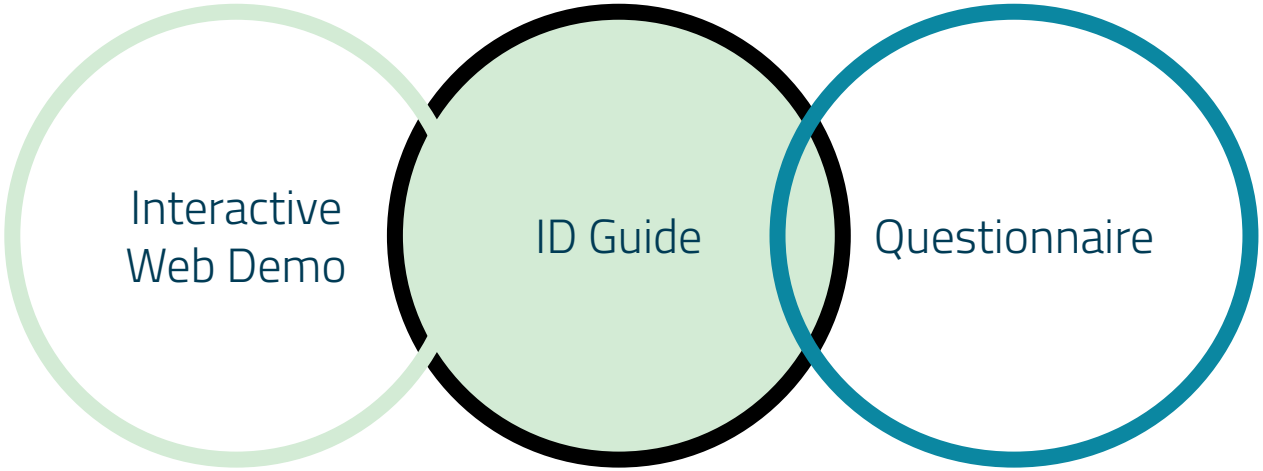
Fixing inaccuracies does not solve the problem

facial recognition technology would only contribute to this issue. Speaking specifically on the use of facial recognition technology to target undocumented immigrants, Mora-Villalpando emphasizes, 'We believe that Amazon is harming our communities if they continue with their push of selling this software [facial recognition] to ICE.'

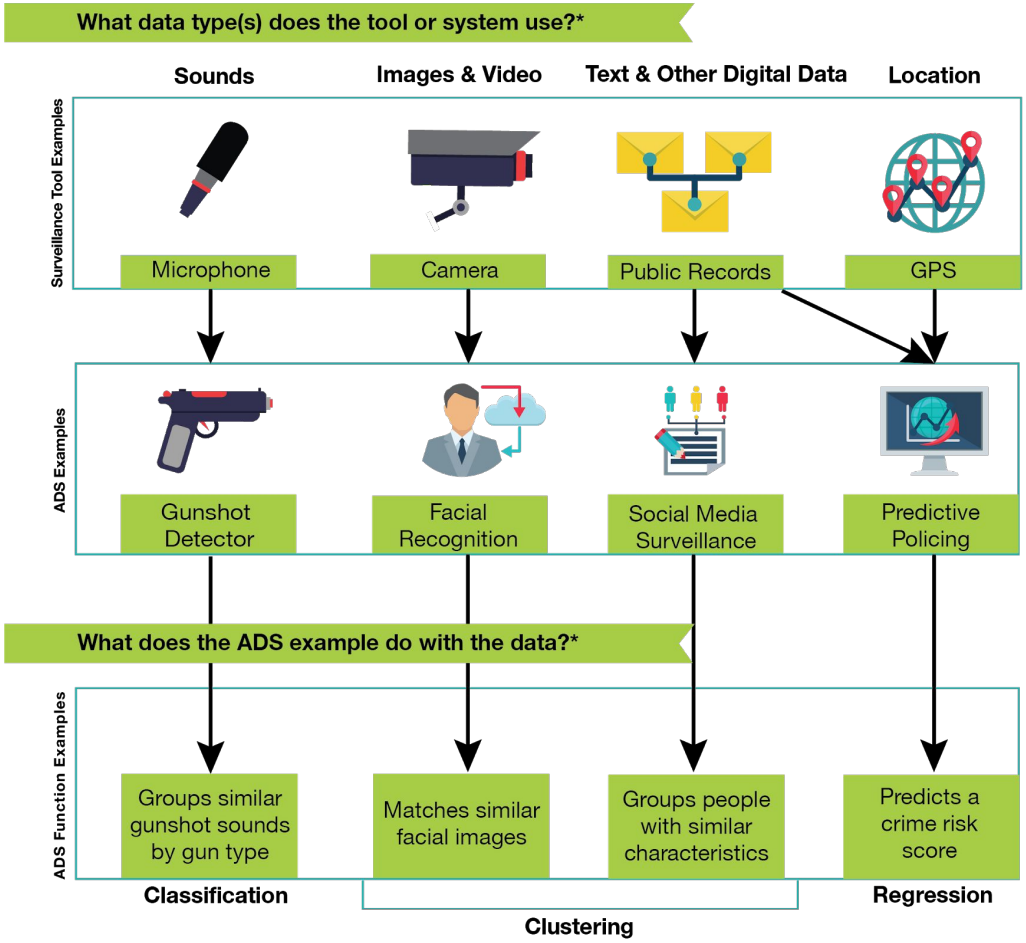
Case Studies:

ICE Uses Facial Recognition To Sift State Driver's License Record: In July of 2019, researchers at Georgetown University Law Center found that [illegible]on and Customs Enforcement (ICE) agents mined millions of driver license photographs in search of facial recognition matches to target undocumented migrants who have legally obtained driver licenses. ICE did this illegally, as they did not have congressional approval to access DMV databases of driver license photos. In

Toolkit: ID Guide



Identifying a Surveillance Tool or Automated Decision System (ADS)



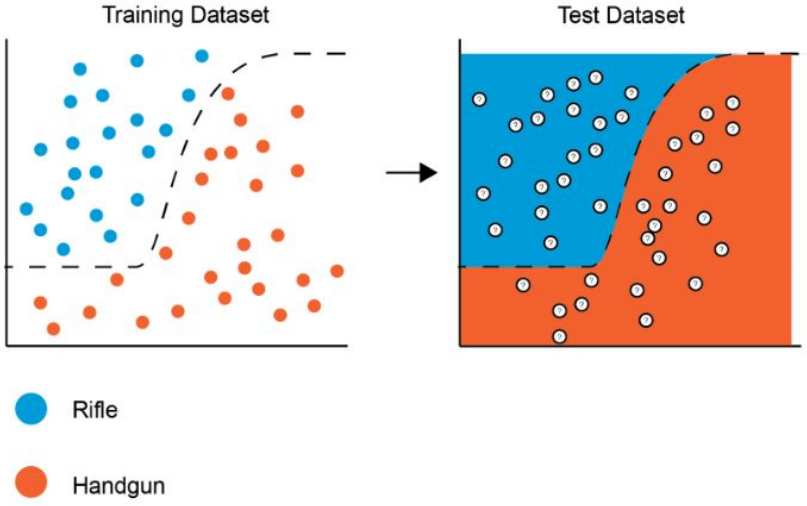
If the tool or system only collects, records, or stores data then it is a **Surveillance Tool.** *A surveillance tool is any electronic device, software program, or hosted software solution that is designed to be used for the purpose of surveillance.*

**Note: the data types, ADS examples, and functions in this guide are not exhaustive, and some tools may use a combination of different data types or ADS functions.*

If the tool or system also performs any of these functions with the data then it is an **Automated Decision System.** *An ADS is a computerized implementation of algorithms which are used to assist in making decisions.*

Gunshot detection

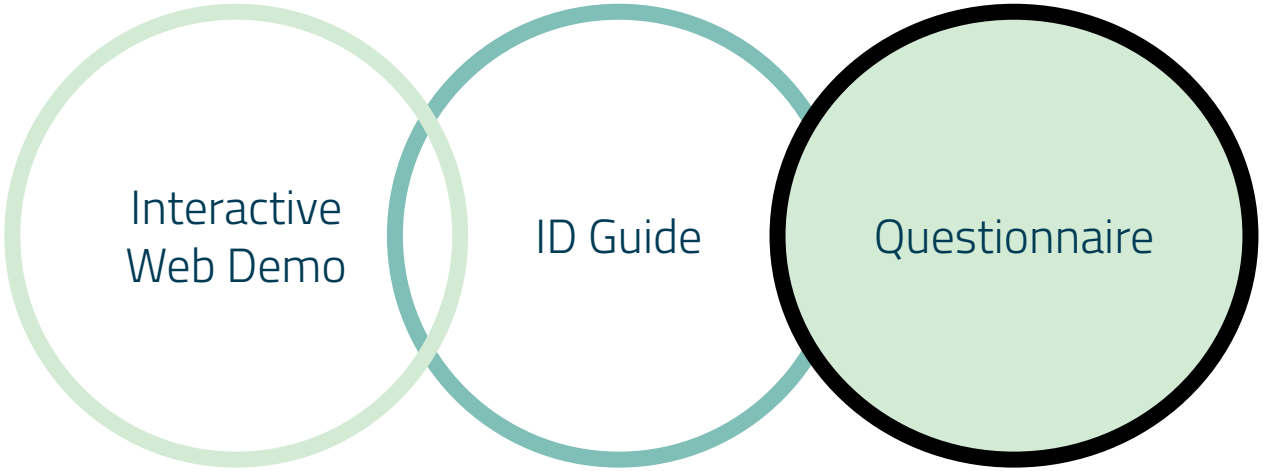
Background: Gunshot detectors recognize the sound of gunfire and can pinpoint its location. Originally developed in the mid-1990s, early gunshot detection tools quickly



A gunshot detection algorithm needs to be trained on human-labeled data before categorizing new gunshot sounds.

How it uses classification: The gunshot detector algorithm uses a "training dataset" of

Toolkit: Questionnaire



Up Next:

Vivian Guetler

2019 DSSG Fellow

On questionnaire component & harms

Use case example: *How Law Enforcement Uses Facial Recognition Software*

Questionnaire

- Purpose: community members to use it to ask questions about technology and potential harms
- Sample questions & use case example
- Appendix: additional questions and example cases

C. TRANSPARENCY & ACCOUNTABILITY - *the extent to which the algorithms (codes, data) used are available to community members/ data subjects.*

1. Does the tool or system provide documentation about its design and functions, such as when the training was collected? How the data was collected? Who was included in the sample population?
2. How is the tool or system accountable and answerable to individuals and communities affected by its use?
3. Were members of affected communities involved in the design of the tool or consulted about its features and predicted effects?
4. Is there any documentation about the assumptions, models, and algorithms used for the technology?

Use Case Example: How Law Enforcement Uses Facial Recognition Software

Use case scenario: you have attended a meeting held by the local police officials about the use of facial recognition technology. Law enforcement mainly use facial recognition technologies for two purposes: **Facial verification,** to confirm someone's identity and **Facial identification,** to identify an unknown face. They then tell you how they perform facial identification for different tasks using facial recognition software.

Types of Face Identification

Stop & Identify

On patrol, an officer can take a photo of someone who refuses or cannot identify themselves, then compares the photo to their facial recognition database. The photo is also added to the database.

Arrest & Identify

When a person is arrested, their mug shot is taken. The mug shot is then added to the facial recognition database and shared with other agencies such as the FBI.

Real-time video surveillance

When police are looking for an individual, they upload the image of that person to a "hot list". A facial recognition system then runs images taken from live feed cameras and compares it to the hot list. Everyone walking past the security cameras are subjected to this process.

Source: https://www.perpetuallineup.org/background

Sample questions you can ask the officials about facial recognition technologies:

Impact: who is most likely to be affected by the use of the technology? what are the effects?
Appropriate Use: what is the primary use of the facial recognition tool? is the technology compatible for its intended use?
Transparency & Accountability: is there information about the data used for the facial recognition software? how was the software's algorithm designed? who should be held accountable? what are the accuracy rates for age, gender and race?

Use case example: *How Law Enforcement Uses Facial Recognition Software*

The Questions

Category	Example questions
Impact	Who is most likely to be affected by the technology? What are the effects of using this technology?
Appropriate use	What is the primary intended use of the technology?
Transparency and accountability	How does the tool or system provide documentation about its design and functions, such as when the training was collected? How the data was collected? Who was included in the sample population?

The Questions

Category	Example questions
Data privacy and security	How does the technology address privacy concerns? How will data be stored, disposed and when?
Interpretability	Is there documentation that explains the decisions made by the technology?
Operability	Have users been trained how to operate the technology correctly? Are there non-technical explanations that describe the technology, its use, inputs, and outcomes?

Potential Harms

- Privacy violations
- Unwarranted surveillance
- Racial bias and profiling
- Disparities in policing
- Gender bias

Key Takeaways

- Surveillance and ADS systems may be effective but have negative impacts on communities
- Next steps:
  - Further research
  - Implement feedback from Diverse Voices
  - ACLU - distribute toolkit to stakeholders/community organizations

THANK YOU!

Any questions?

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Surveillance

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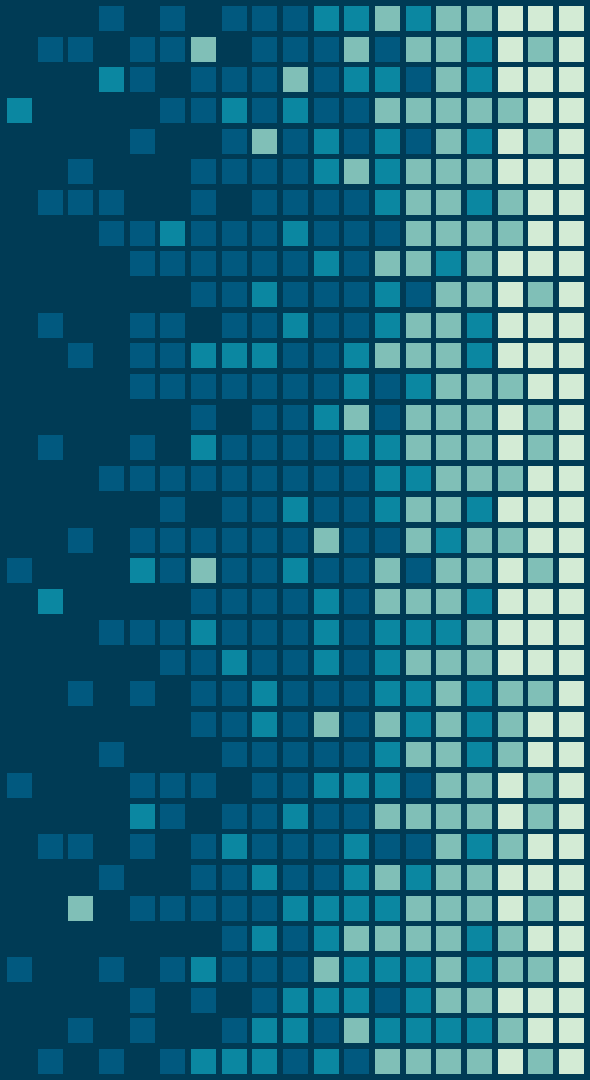

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You can find me at @username

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THIS IS A SLIDE TITLE

- Here you have a list of items
- And some text
- But remember not to overload your slides with content

Your audience will listen to you or read the content, but won’t do both.

BIG CONCEPT

Bring the attention of your audience over a key concept using icons or illustrations

YOU CAN ALSO SPLIT YOUR CONTENT

White

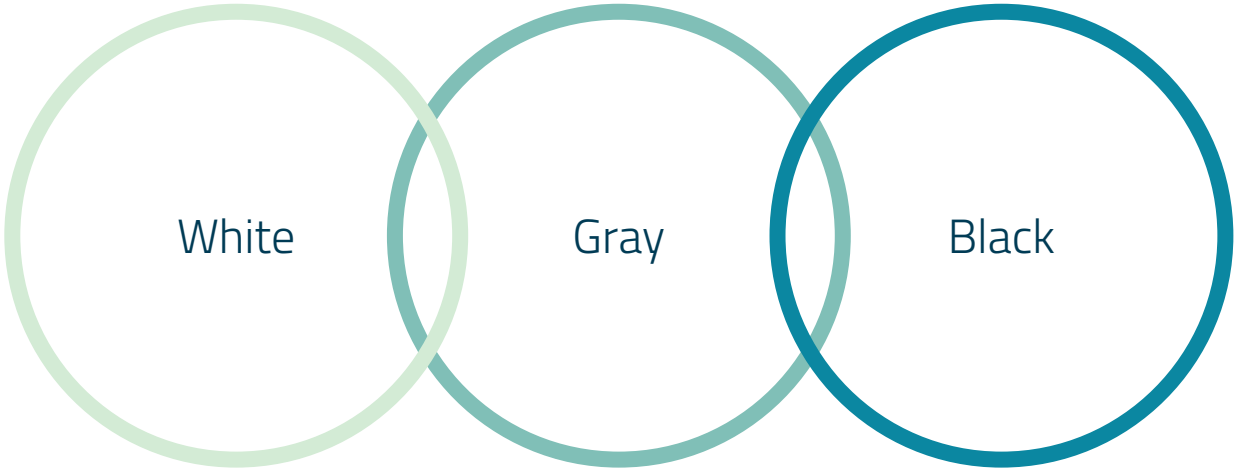
Is the color of milk and fresh snow, the color produced by the combination of all the colors of the visible spectrum.

Black

Is the color of coal, ebony, and of outer space. It is the darkest color, the result of the absence of or complete absorption of light.

Want big impact?
Use big image.

USE CHARTS TO EXPLAIN YOUR IDEAS



AND TABLES TO COMPARE DATA

	A	B	C
Yellow	**10**	**20**	**7**
Blue	**30**	**15**	**10**
Orange	**5**	**24**	**16**

MAPS

89,526,124

Whoa! That’s a big number, aren’t you proud?

89,526,124$

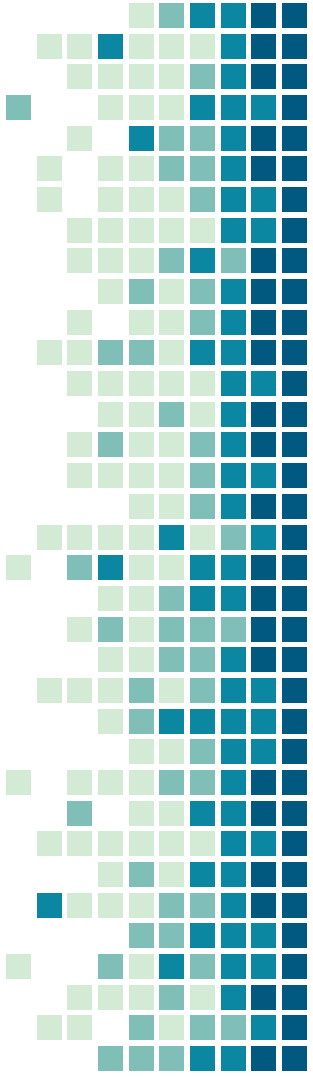
That’s a lot of money

185,244 users

And a lot of users

100%

Total success!



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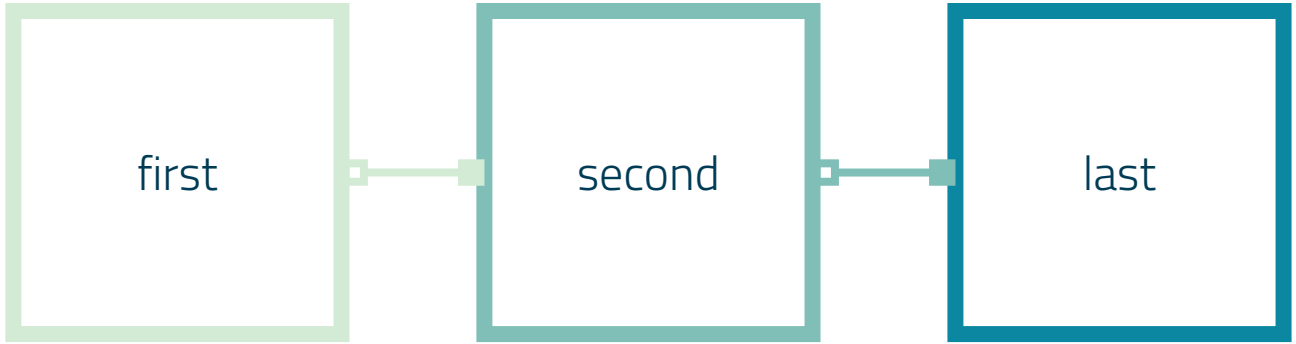

LET'S REVIEW SOME CONCEPTS

Yellow

Is the color of gold, butter and ripe lemons. In the spectrum of visible light, yellow is found between green and orange.

Blue

Is the colour of the clear sky and the deep sea. It is located between violet and green on the optical spectrum.

Red

Is the color of blood, and because of this it has historically been associated with sacrifice, danger and courage.

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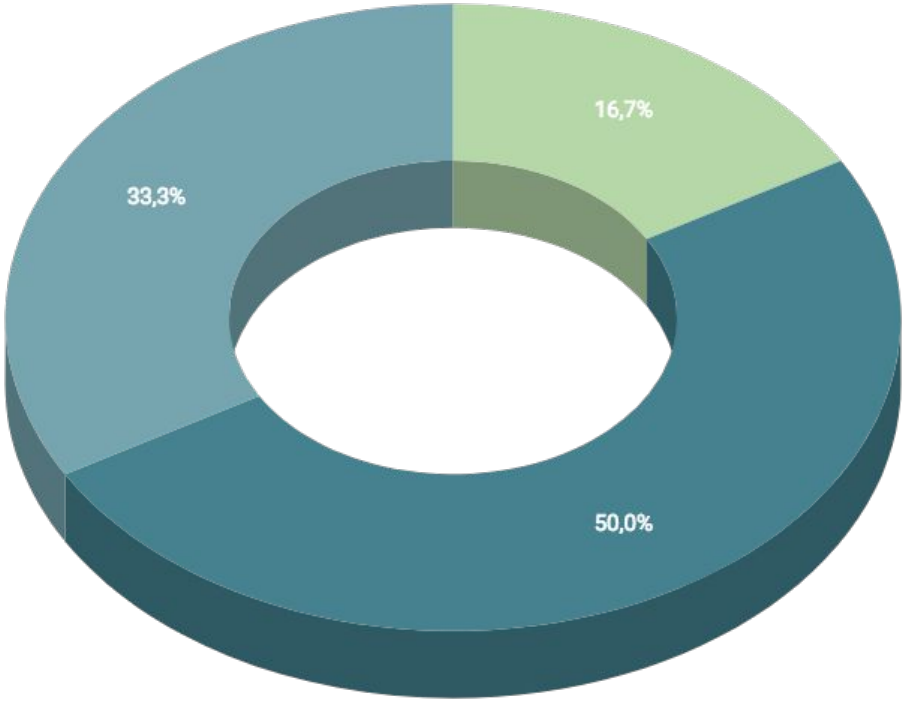

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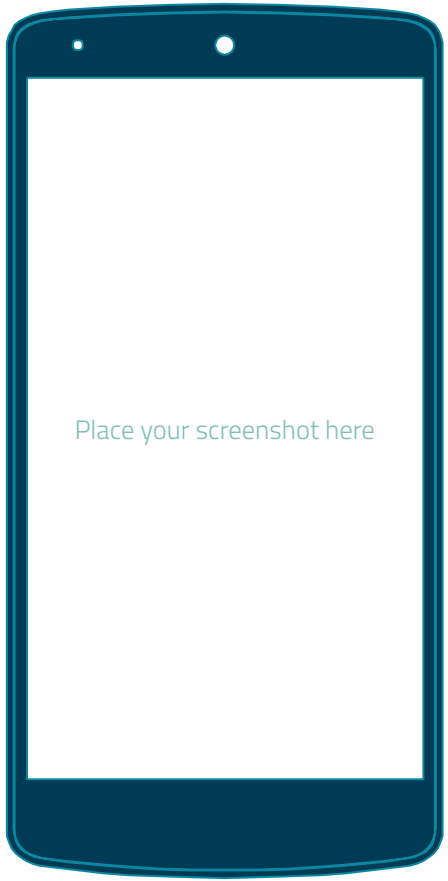

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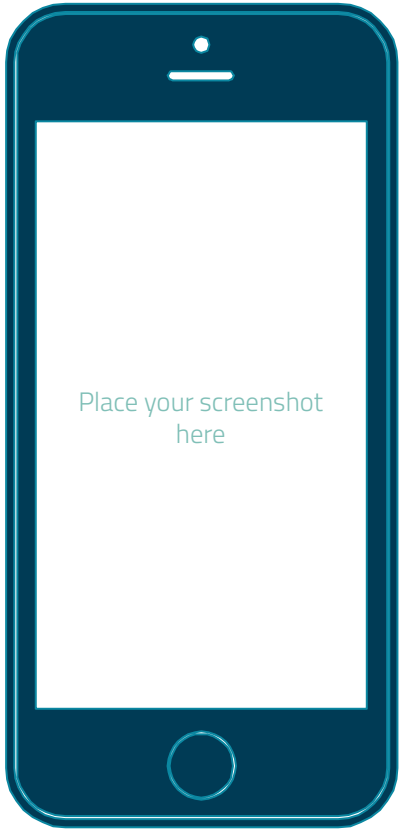

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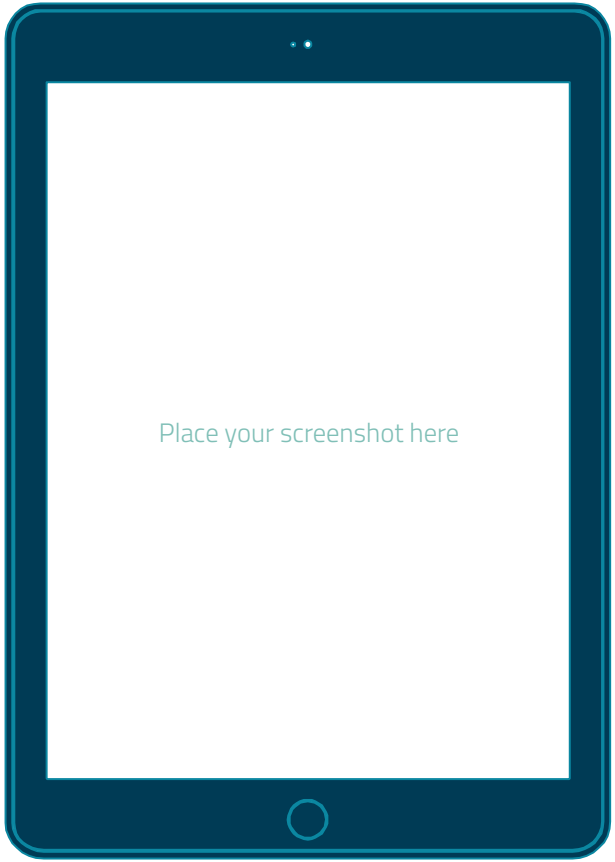

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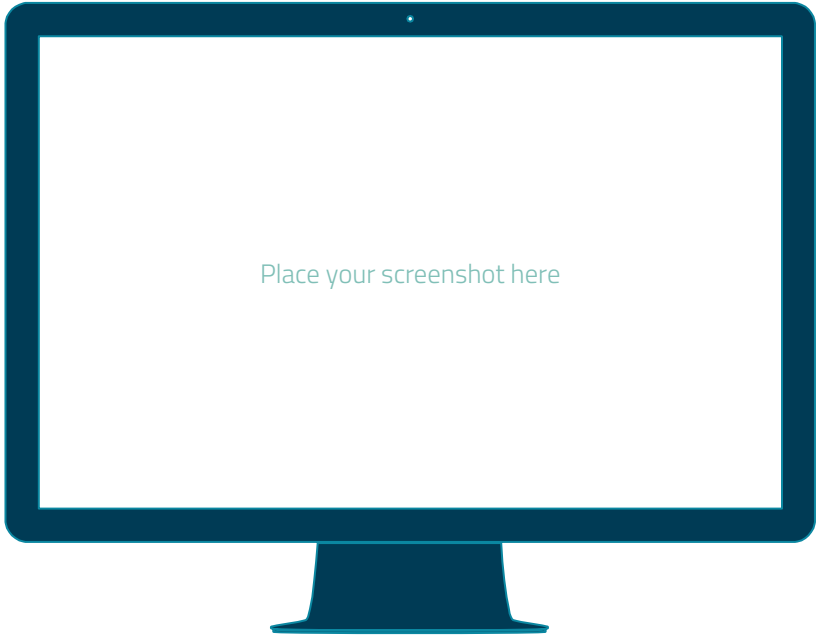

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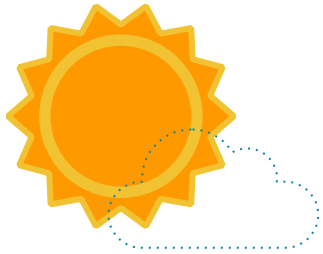

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