

Balancing Innovation and Responsibility

Ethical Considerations of AI

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Principal*



Course Description

This session is a combination of lecture and round table discussion where participants will learn about how artificial intelligence (AI) COULD be used in architectural practice and discuss if we SHOULD and the ethical considerations that should be taken with a few of the many ways that AI may impact the way we work in the future. Artificial intelligence is being rapidly developed as we speak. Taking the time to understand how it works, where it will impact our industry, and what we need to consider to use AI responsibly is the best way for us to guide innovation responsibly.

Learning Objectives

At the end of this course, participants will be able to:

1. See how artificial intelligence could be applied in architectural practice
2. Discuss what ethical considerations need to be made when developing artificial intelligence
3. Discuss how information gained by AI should be used
4. Consider the liabilities of having information from AI

Agenda: 60 Minutes of AI



Introduction | 5 min.

Presentation | 10 min.

Discussion | 15 min.

Presentation | 10 min.

Discussion | 15 min.

Outro | 5 min.

WHAT ARE ETHICS?

Ethics is based on well-founded standards of what is morally **good** and **bad** and morally **right** and **wrong** for society

Ethics establish the rules that individuals need to follow for the **survival of the society**. Therefore, **ethics are subjective and communal**

An ethical behavior is an action that is following the rules of what is **considered correct in society**. On the contrary, a moral behavior is driven by the **desire to be good**.



Ethics & EDI

“Diversity is the ways people differ in an organization which can affect task or relationship of the employees. While ethics is the study of moral obligation, or separating right from wrong and includes acts such as ethical decisions and social responsibility acts.”

Published by Human Resource Management Academic Research Society

Ethics & Culture

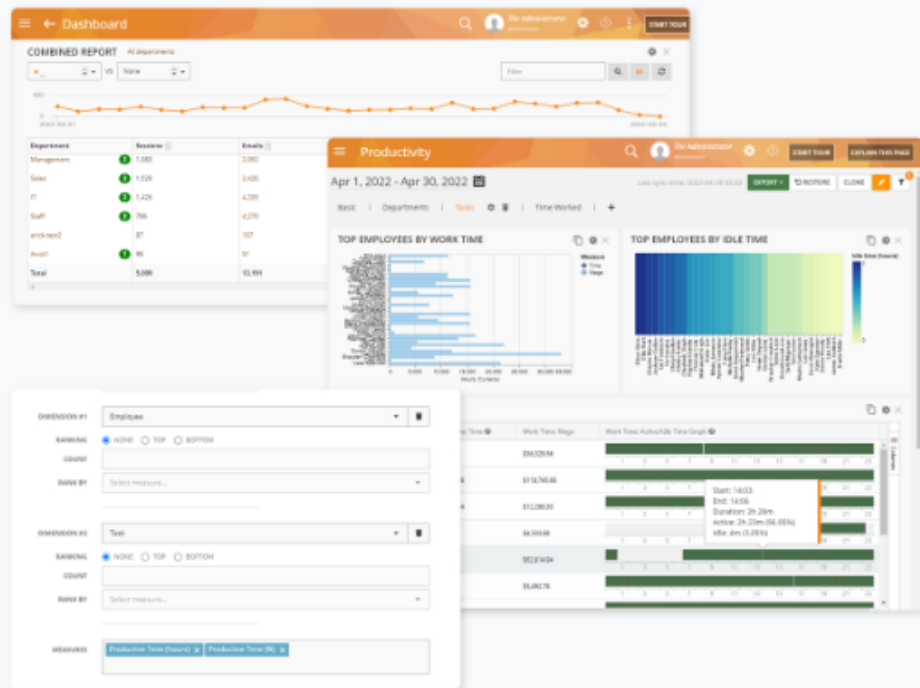


"MAYBE THE RONALD MCDONALD MAKEOVER WENT TOO FAR."

Ethics & Intent

Keylogging Features

Keep an eye on data and get alerted to malicious activity while promoting user privacy with keystroke logging features



- ✓ Visual and textual evidence exists for every keystroke and copy/paste operation
- ✓ Create anti-logging rules, such that key strokes won't be recorded when the user is checking their personal bank account or entering a credit card number
- ✓ Configure behavior rules that alert or lock out a user when certain keystrokes are pressed in certain websites or applications
- ✓ Full recording of both invisible and hidden characters

Dictionary

Definitions from [Oxford Languages](#) · [Learn more](#)



bi·as

/ˈbiːəs/

noun

1. prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair.
"there was evidence of **bias against** foreign applicants"

Similar: prejudice partiality partisanship favoritism unfairness ▼

2. **STATISTICS**
a systematic distortion of a statistical result due to a factor not allowed for in its derivation.

verb

1. cause to feel or show inclination or prejudice for or against someone or something.
"the search results are biased by the specific queries used"

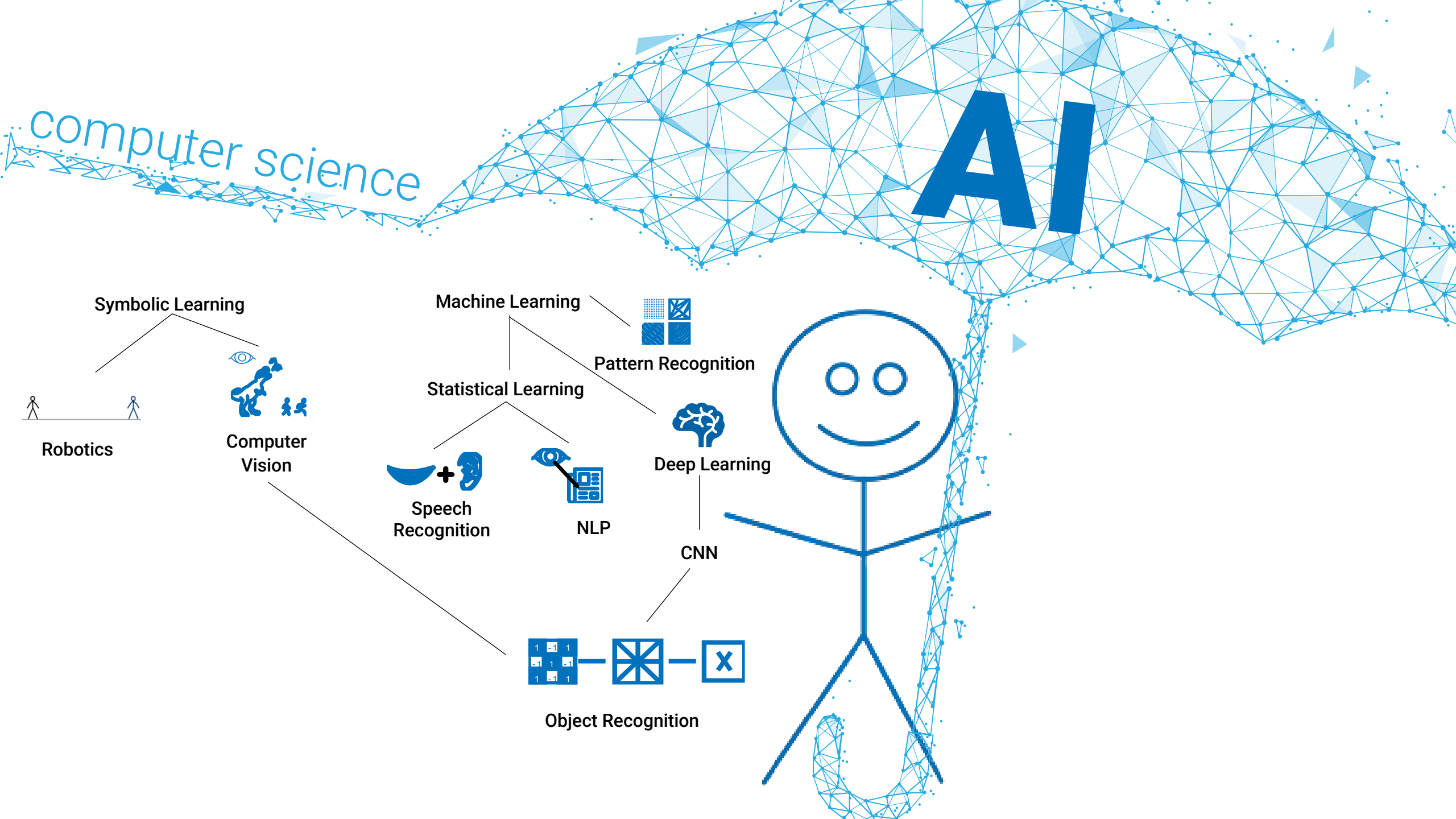
Similar: prejudice influence color sway weight predispose distort ▼

2. **STATISTICS**
distort (a statistical result); introduce bias into (a method of sampling, measurement, analysis, etc.).



What really is AI





TIMELINE

ARTIFICIAL INTELLIGENCE

Any technique which enables computers to mimic humans

MACHINE LEARNING

The computer is given the ability to learn without being explicitly programmed to do so

DEEP LEARNING

Mimics the human brain by learning in a multi-layered neural network



1950's



1960's



1970's



1980's



1990's



2000's



2010's



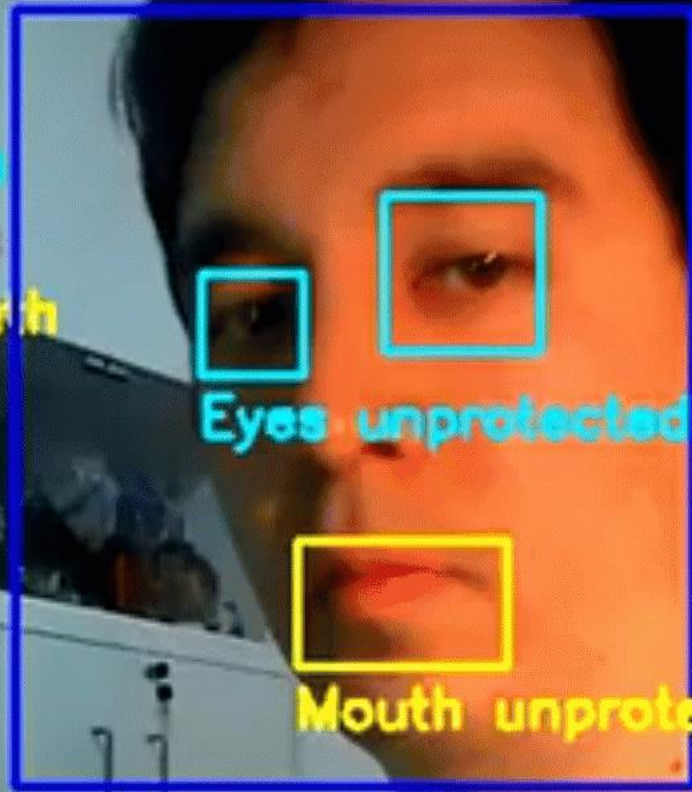




Artificial Intelligence (AI) detecting safety hazards

Andre Kuramoto

- (X) Frontal face
- (X) Hardhat
- (X) Unprotected eyes
- (X) Unprotected ears
- (X) Unprotected mouth



Eyes unprotected

Mouth unprotected

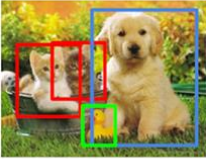


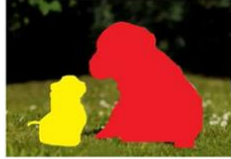
Frontal face

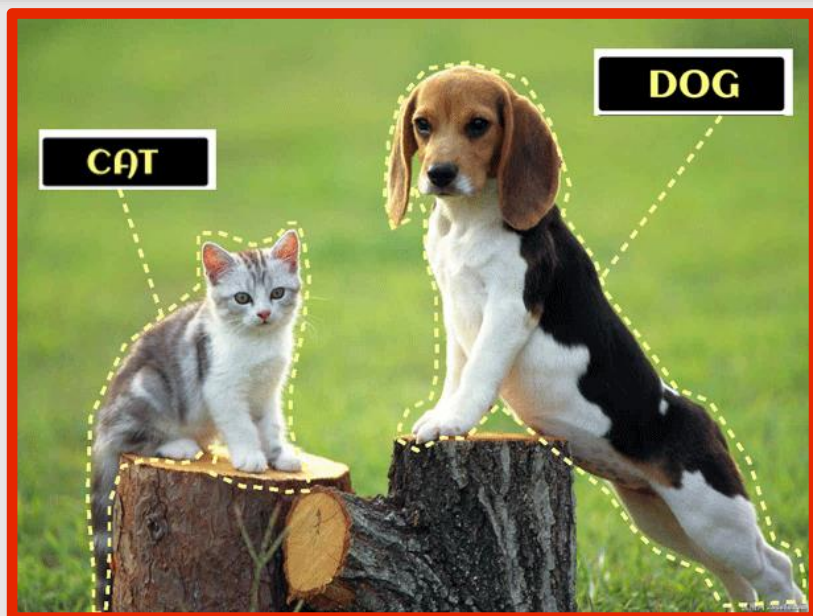
Speed

Versus

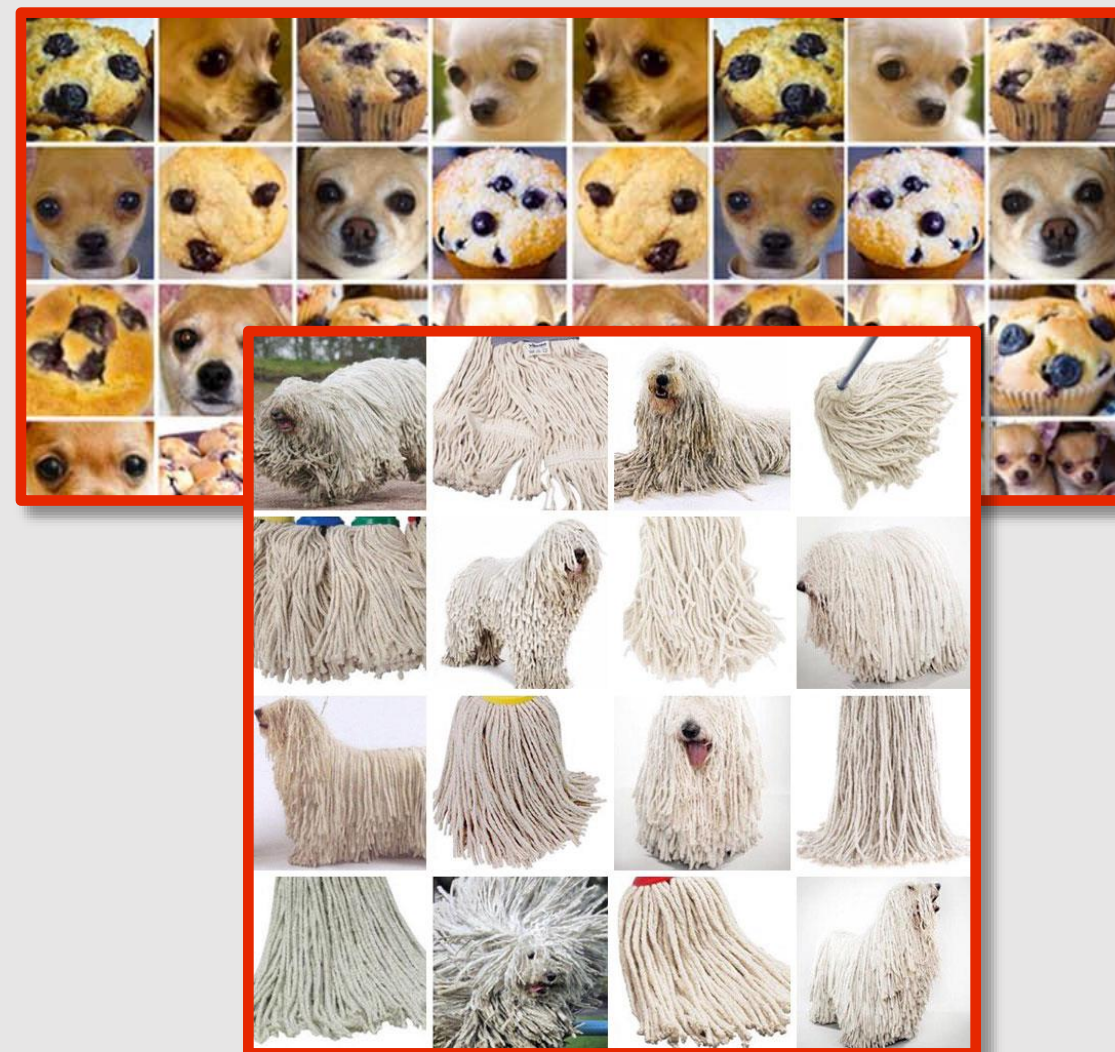
Accuracy

Label what you want

<p>How many animals are there in this image?</p>  <p>CAT, DOG, DUCK</p> <p>Multi-label image classification</p> <p>Classify multiple objects</p>	<p>Is this a dog?</p>  <p>Image classification</p> <p>Classify object</p>	<p>Where are the animals in this image?</p>  <p>Object Detection</p> <p>Bounding Box</p>	<p>Which pixels belong to which object?</p>  <p>Image Segmentation</p> <p>Outline of the object</p>
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Or let it guess



ML approach vs DL approach

INPUTS

OUTPUTS

AND MODELS

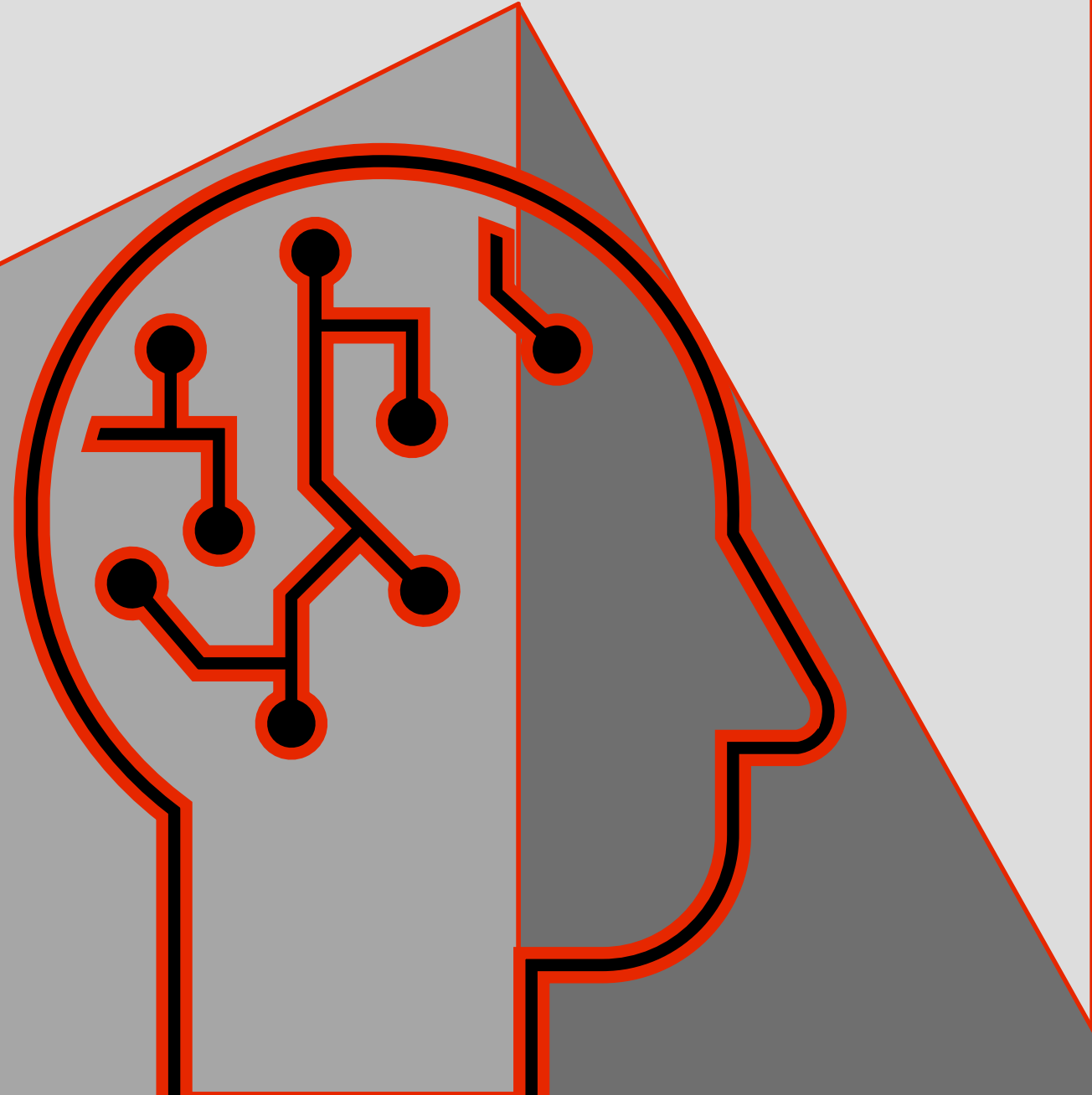
AI

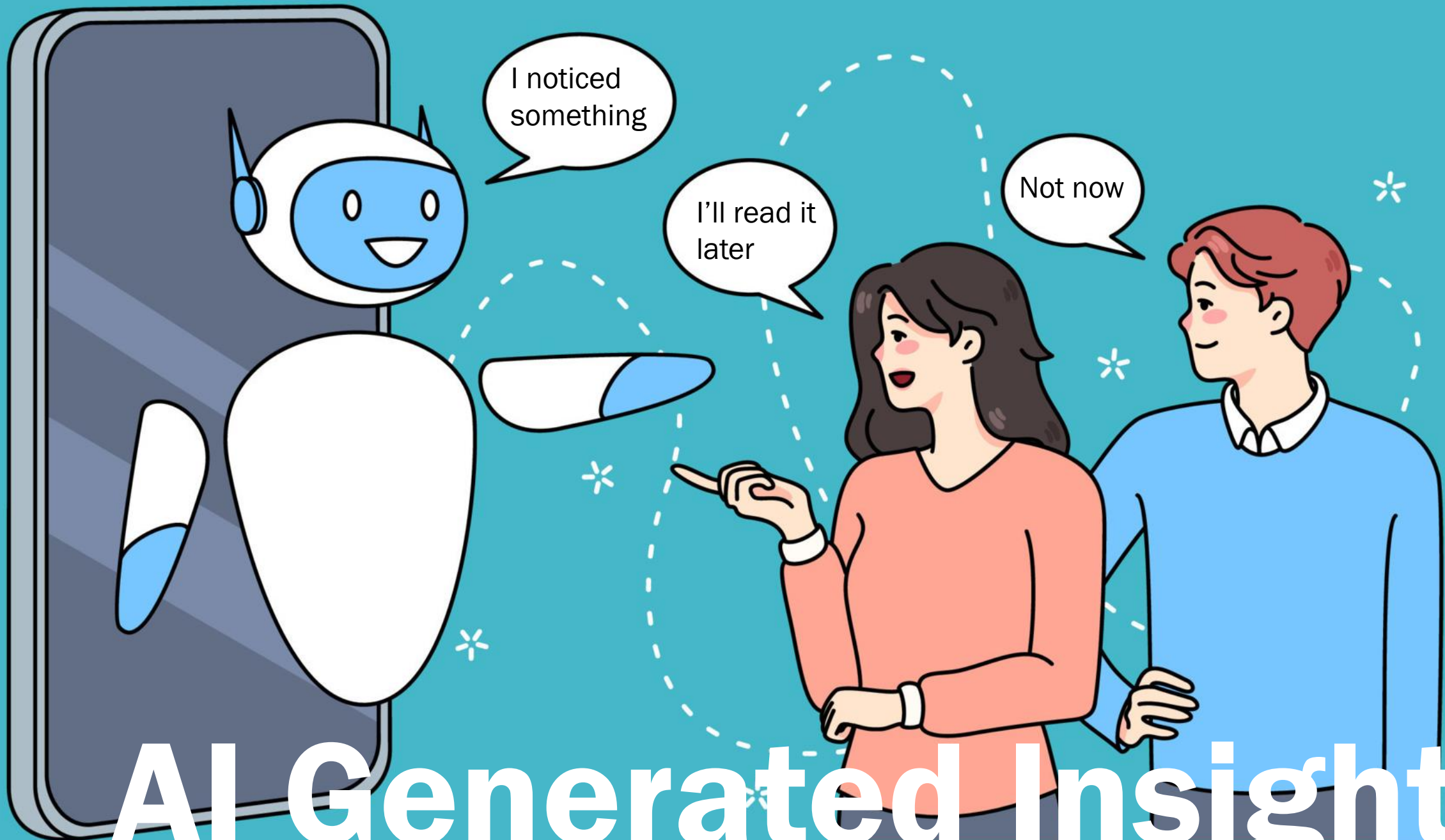
PRODUCES

A GUESS...

Let's talk Ethics and AI

Time for Discussion Topic Part 1

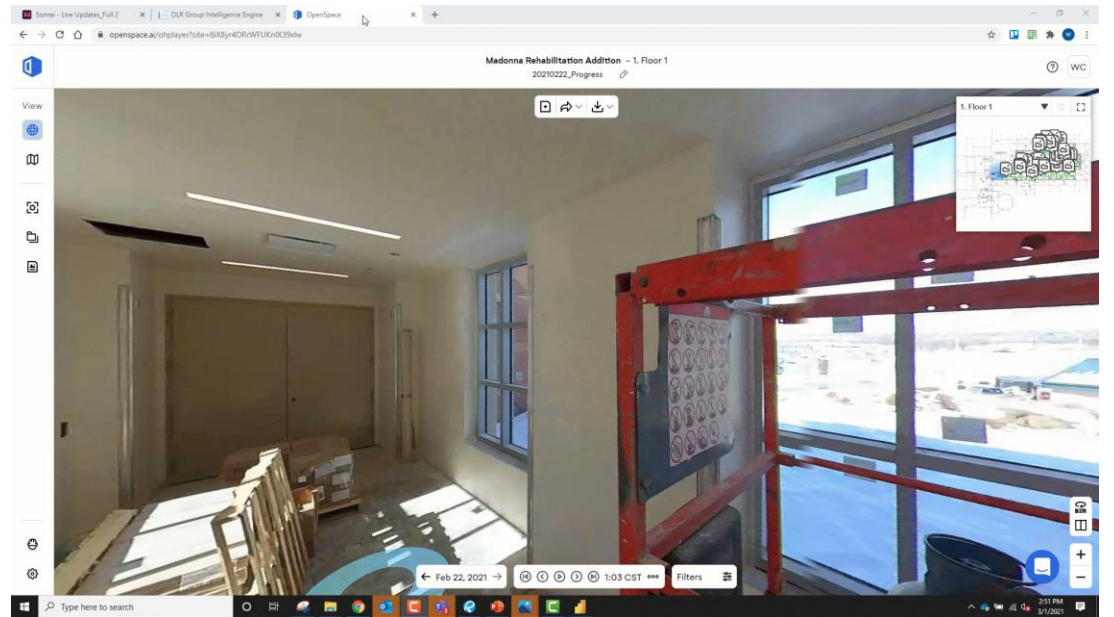
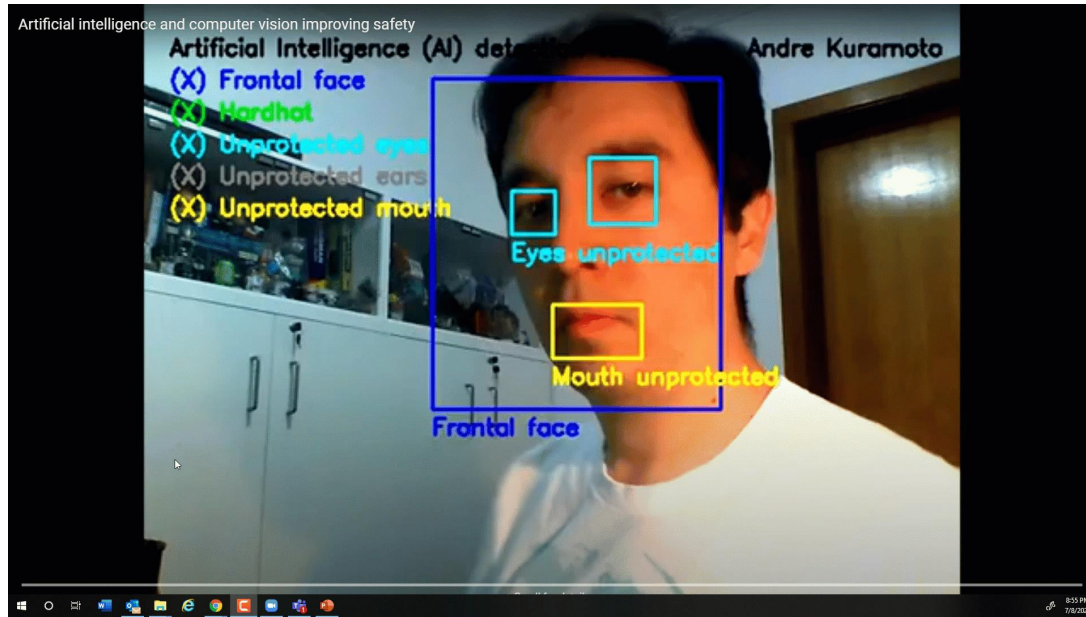




AI Generated Insights

AI can spot a lot if we let it

Object Detection



Upcoming Features



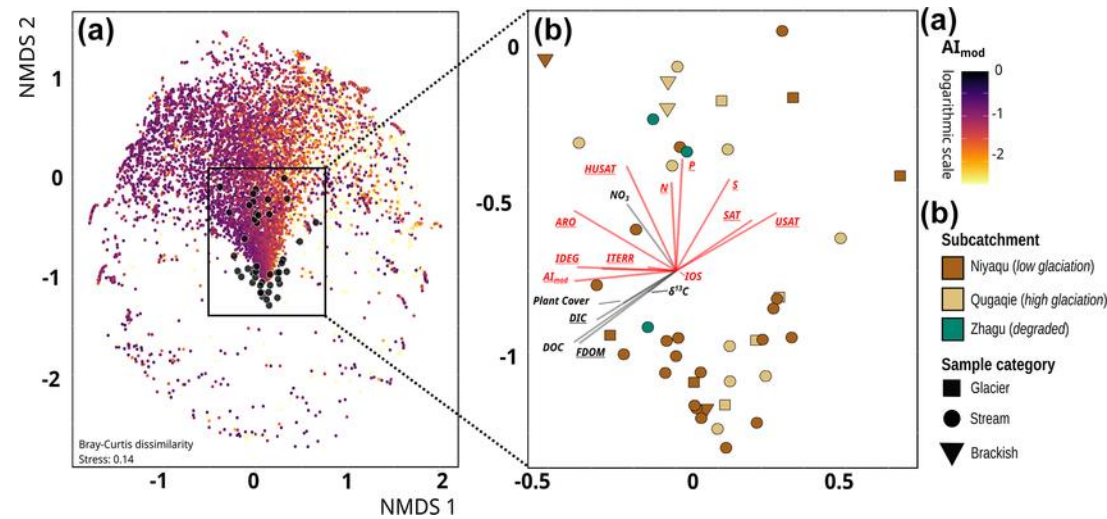
Once images have been processed, aligned, located and segmented, they can be analyzed to deliver **Progress Tracking**. Items located using object detection or classified using semantic segmentation can be located in 3D space using the point cloud and tracked over time. The result is a quantitative map of project activity that can be used to verify work in place, maintain trade coordination and benchmark productivity.

Object Search is the process of isolating and identifying a particular item in an image and is commonly used to find a specific item (the “target”) within a noisy background (the “detractors”). OpenSpace has adapted object search to enable easy site-wide search. Simply select an object of interest in an image and OpenSpace technology finds other similar objects in your project. We then can track how many times this object appears in the images across time and on which floors.



AI Considers lots of things at once

Multidimensional Analysis



- Work hours
- Performance
- Response Sentiment
- Difficulty of work
- In-Work interactions
- Outside influences

Discuss the liabilities we have with the information we gain from AI

Discuss the liabilities we have with the information we gain from AI



Conversation Starters:

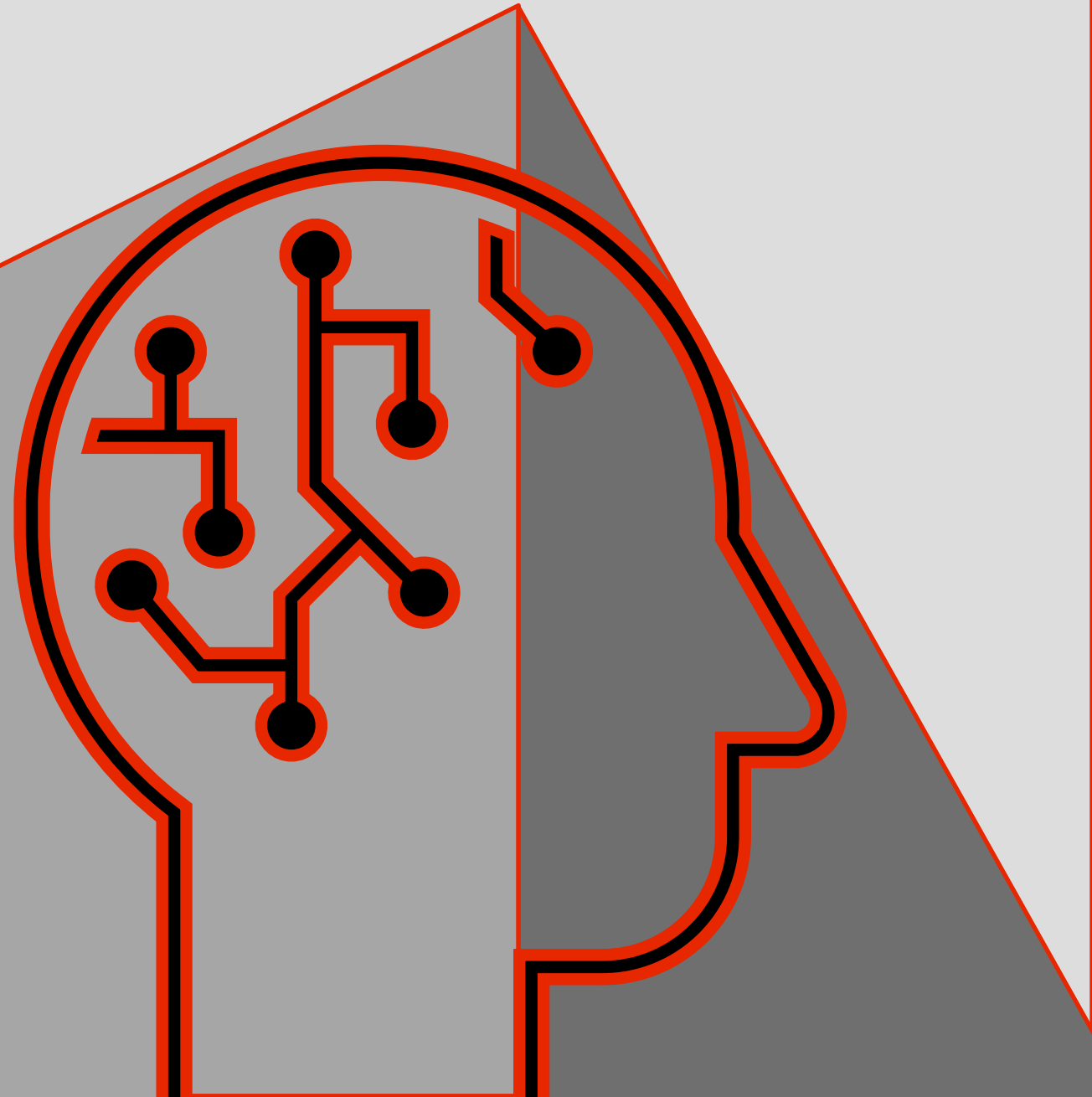
- What are strategies you would employ to de-risk your firm from AI insights that you do not react to?

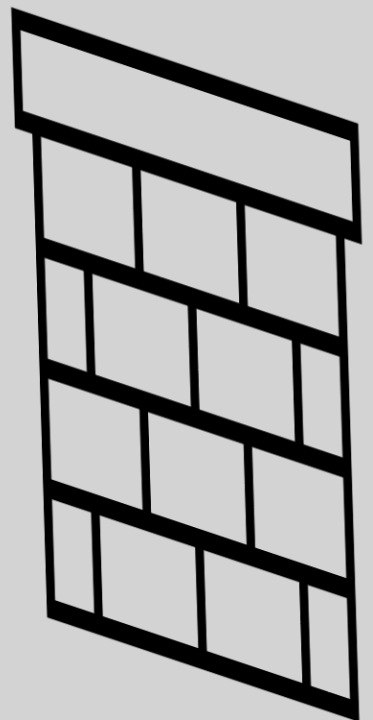
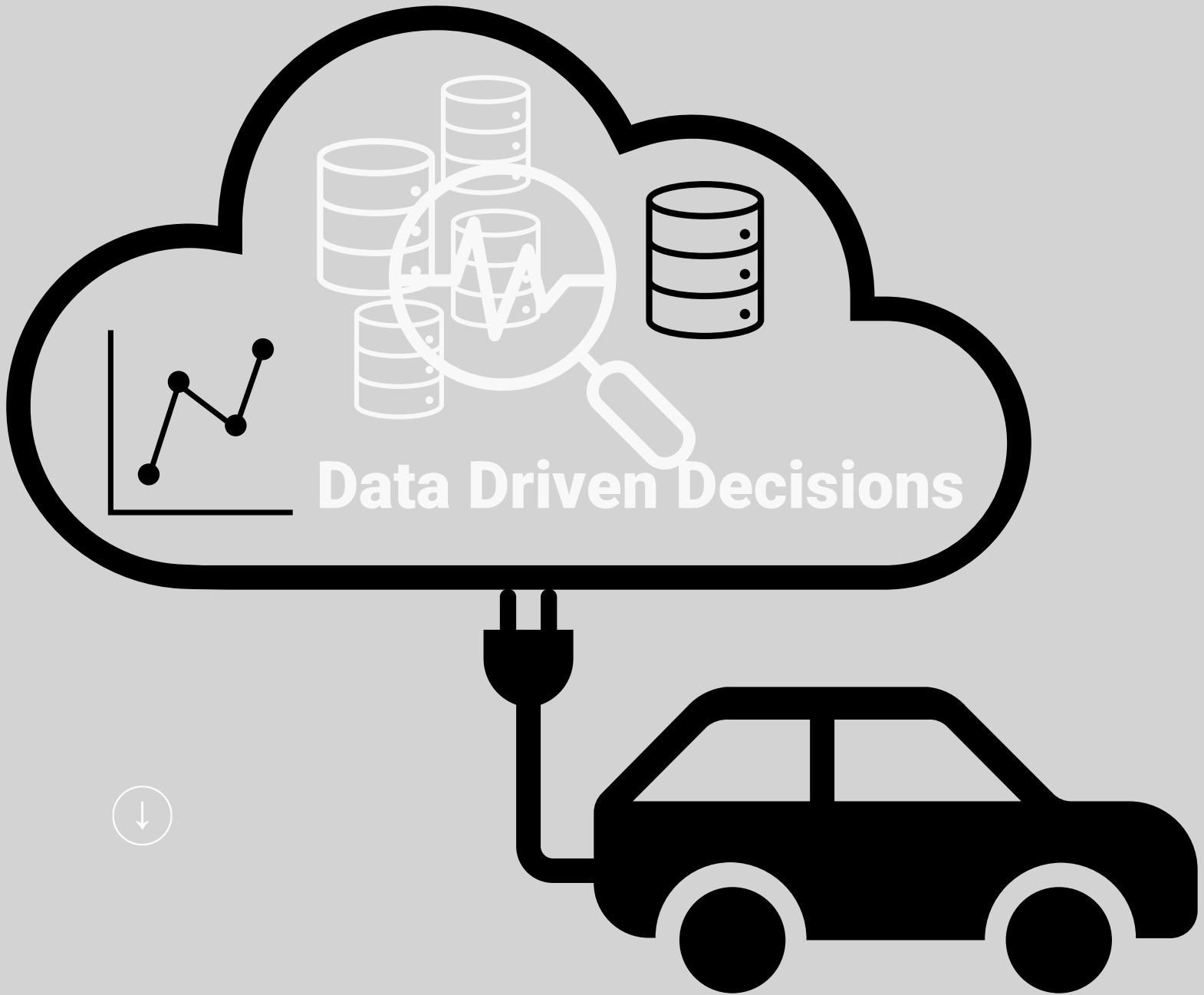
In the future, DLR Group uses AI to process its field reports and meeting transcripts. In a field report, AI reported to the design team a major health concern resulting in a tragic death.

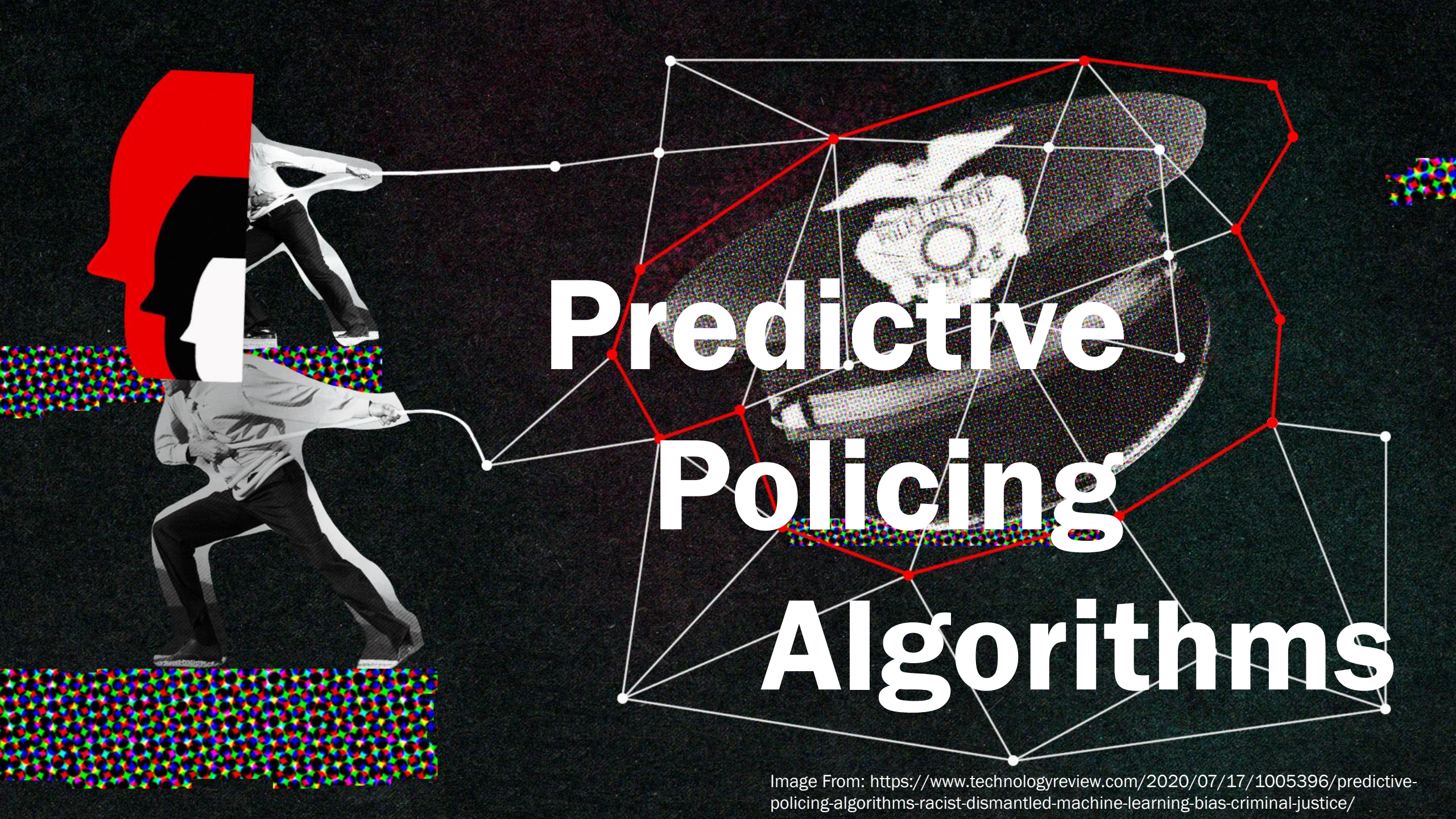
- If you were the plaintiff accusing DLR Group in a court of law for not reacting to AI insights that could have avoided the death, in a DLR Group designed building, how would you argue that DLR Group **is** liable?
- If you were defending DLR Group in a court of law for not reacting to AI insights that could have avoided the death, in a DLR Group designed building, how would you argue that DLR Group is **NOT** liable?

Let's talk Ethics and AI

Time for Discussion Topic Part 2



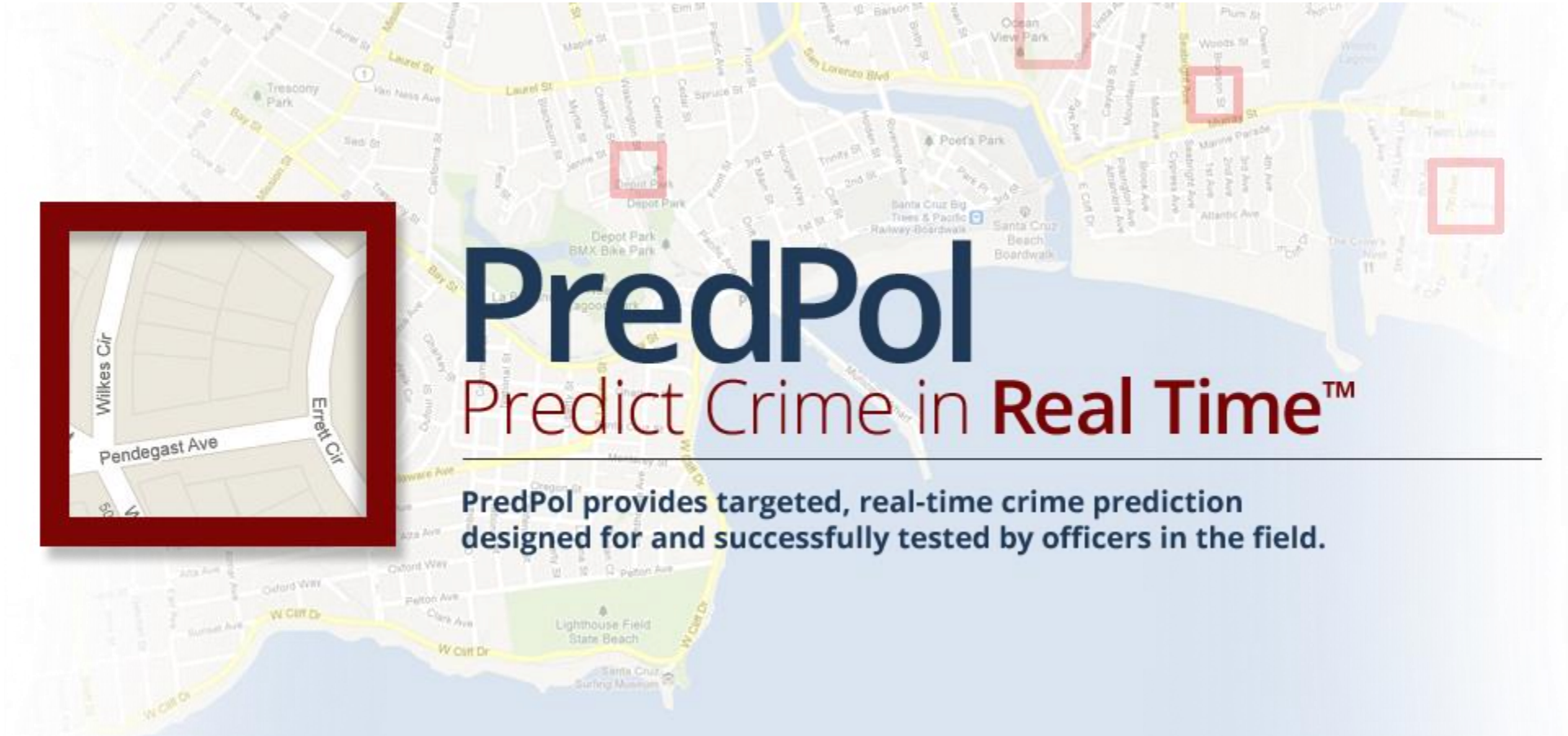




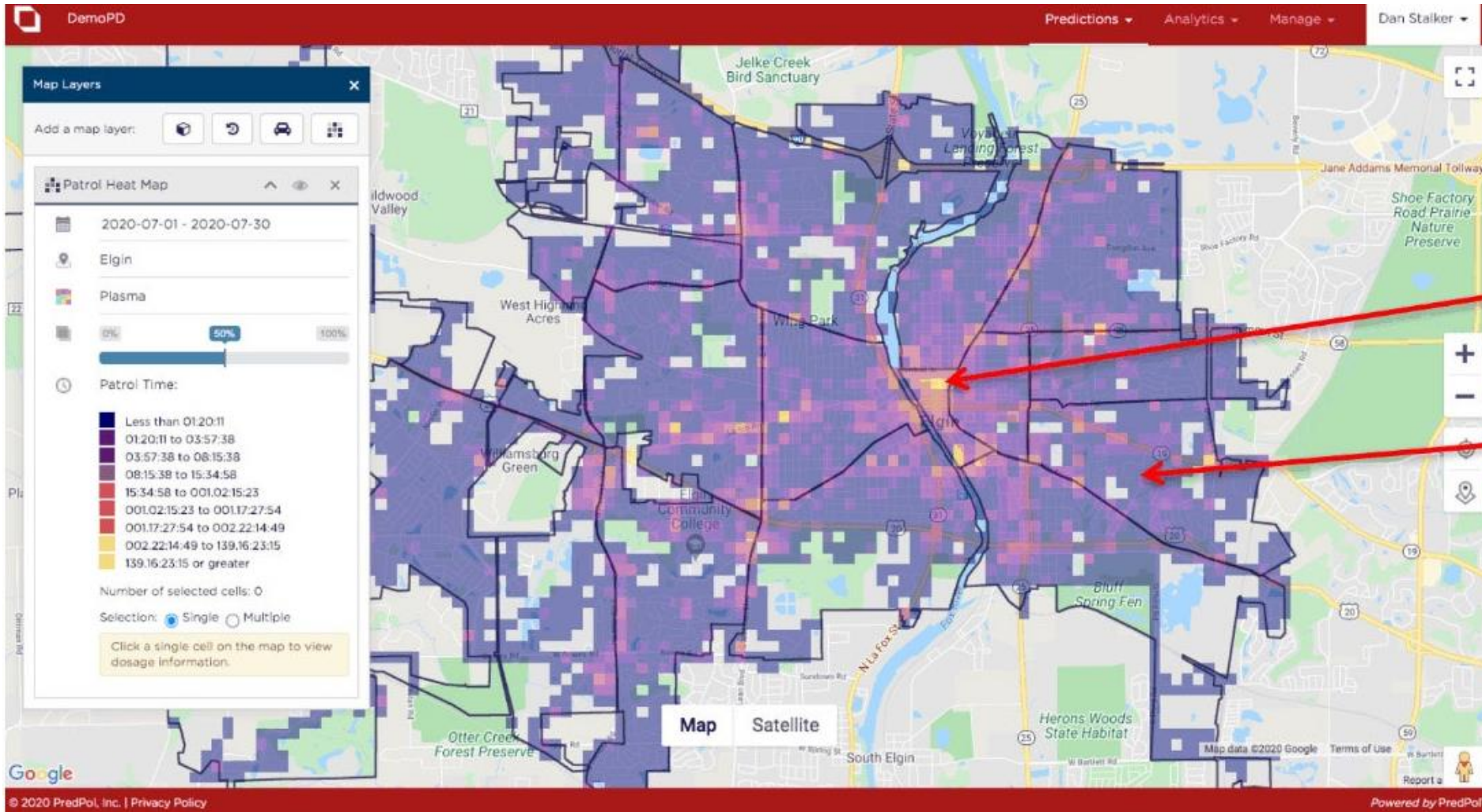
Predictive Policing Algorithms

Image From: <https://www.technologyreview.com/2020/07/17/1005396/predictive-policing-algorithms-racist-dismantled-machine-learning-bias-criminal-justice/>

PredPol



PredPol



more patrolled

less patrolled

Does history really repeat itself?

Issues with AI Predictive Policing

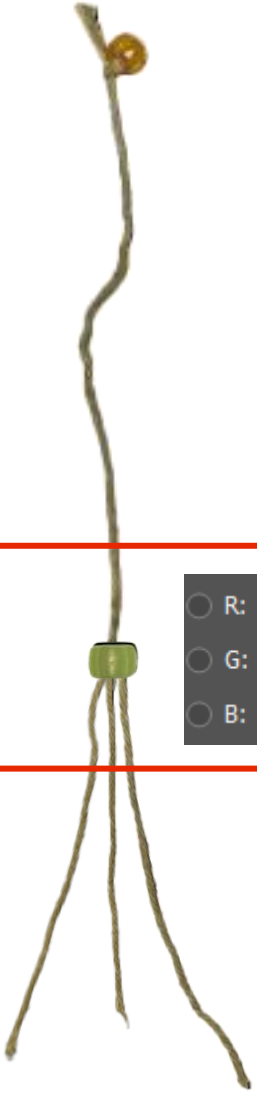


- Bias and Discrimination
- Lack of Transparency
- Erosion of Public Trust

Image From:

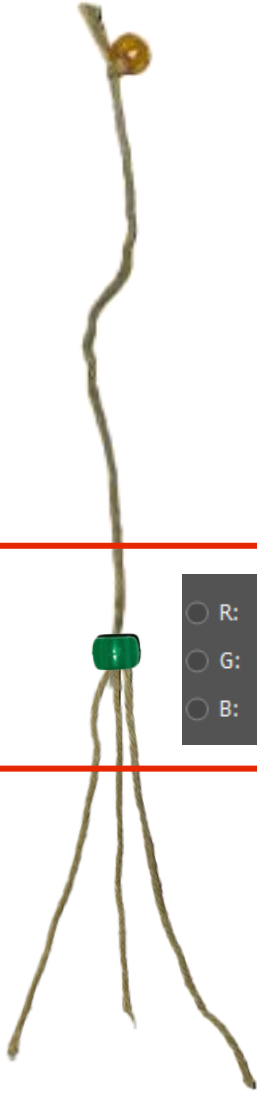
<https://naacp.org/resources/artificial-intelligence-predictive-policing-issue-brief>

RGB: R=Region, G=Sector, B=Disciplines



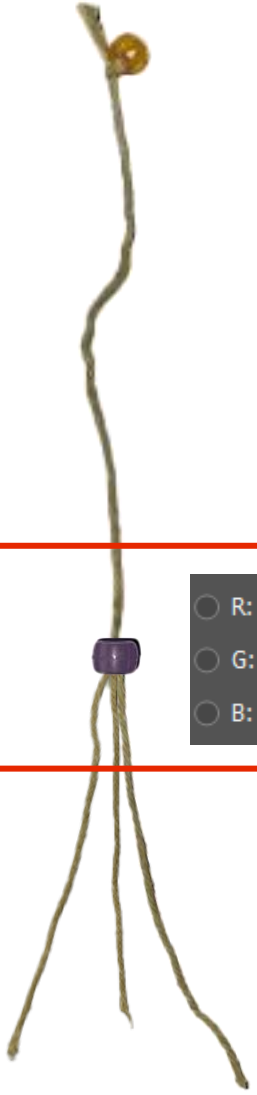
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<input type="radio"/> G:	132
<input type="radio"/> B:	63

A



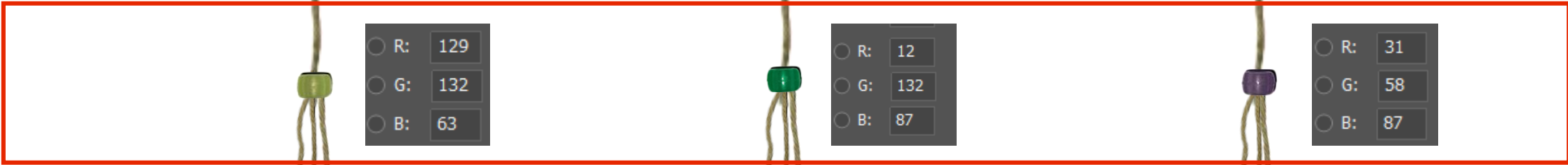
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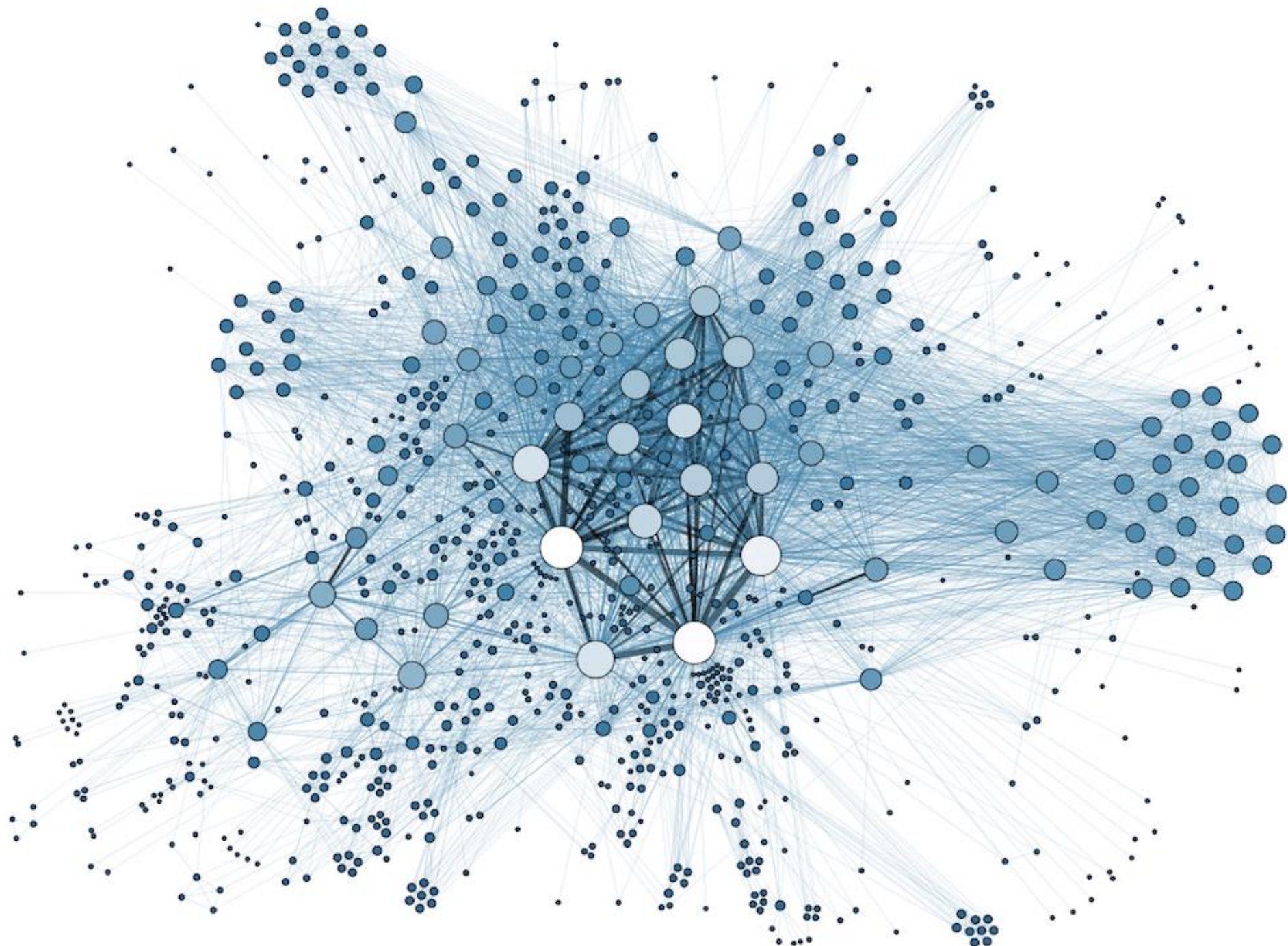
B

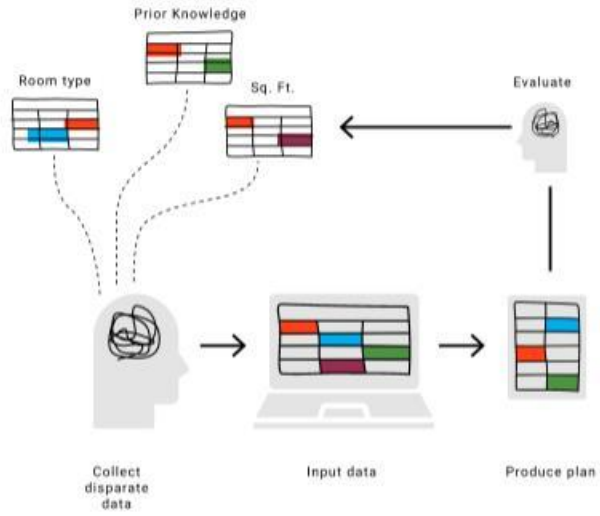


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C

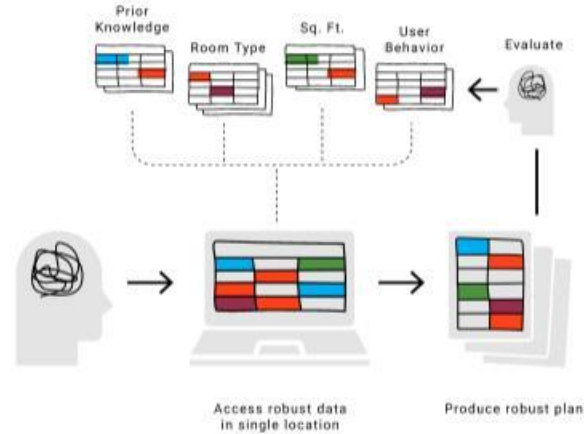






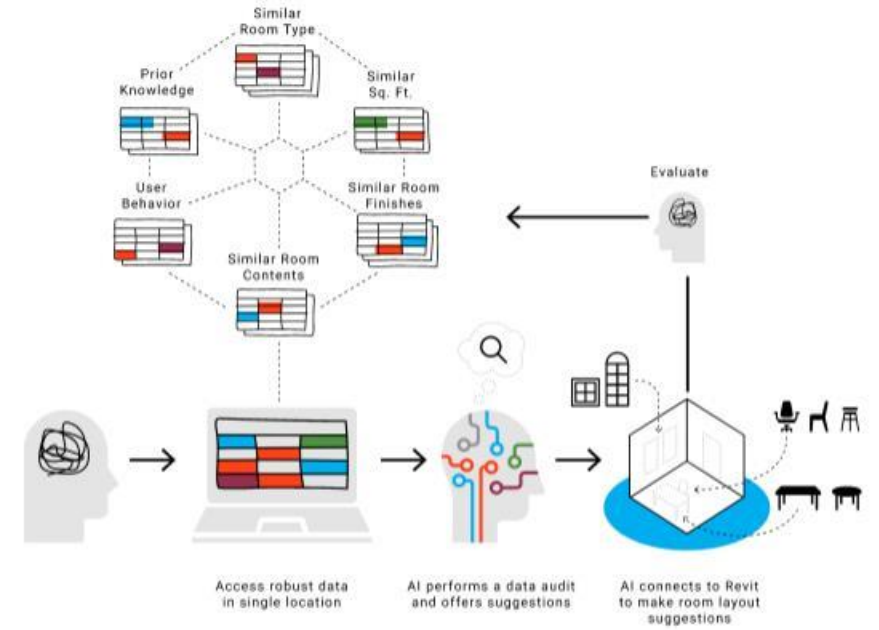
Today | Limited Data + Tedious Process

Planners rely on data that is based on their knowledge and experience. They have limited access to relevant information they can utilize to make recommendations.



Tomorrow | Vast Data + Efficient Process

Planners gain access to vast amounts of data in a single place. Their expertise and intuition are supported by orderly data that pulls from many places.



Future | Vast Data + Efficient Process + Faster Design

Planners access expansive, centralized data and Machine Learning to generate room space templates directly in BIM—providing the Planner with more insights and options.



A

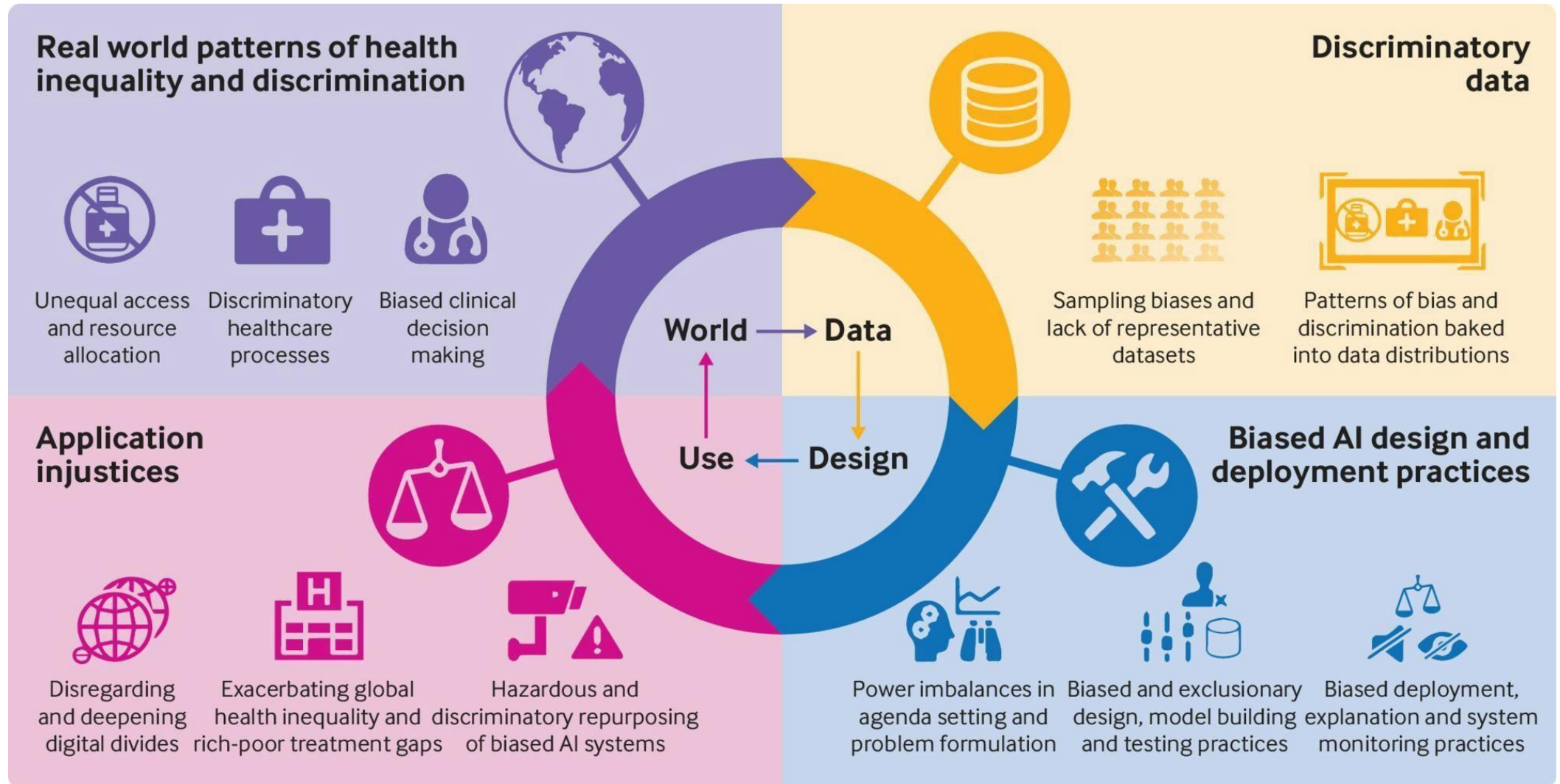


B



C

Examples Bias in development of AI



Discuss what ethical considerations need to be made when developing artificial intelligence

Discuss what ethical considerations need to be made when developing artificial intelligence



Conversation Starters:

- Similar to Zip Code and Socio-economic, what metrics in planning hold bias or contribute to bias when developing AI?
- What are data sources you would include in a planning project to offset bias when developing AI?
- Similar to Policing with AI, what are other uses of AI for planning or forecasting that could negatively reinforce biases or create non-inclusive results?

Outro



THE BEATLES

NOW AND THEN
THE LAST BEATLES SONG



“So when we came to make what will be the last Beatles record, it was a demo that John had that we worked on,”

“We were able to take John’s voice and get it pure through this AI so then we could mix the record as you would do. It gives you some sort of leeway.”...



INVITED

Ethical Considerations in Art



- Artistic Integrity and enhancements
- Avoiding Bias and Upholding Inclusion
- Protecting Privacy and Consent
- Crediting in the age of AI

1986 Art Print by Andy Warhol "Detail of The Last Supper"

**Most Companies own
“their Work”**

**Where is your line on
reproducing your work?**

Where do you stand today

And

Where do you think you will stand tomorrow?

This concludes The American Institute of Architects
Continuing Education Systems Course



Contact Information

