

---

# Curating the future: the necessity of curation in open data and the threat of systemic algorithmic bias

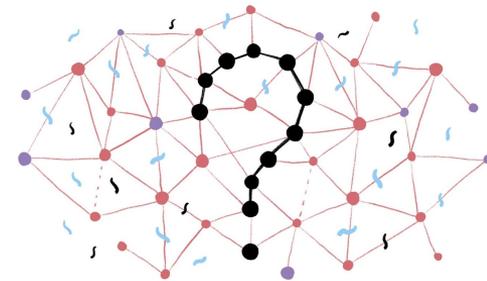
*Ilias Koutsakis - CERN (RCS-SIS)*

---

# Algorithms? Why?

Machine Learning, Big Data, and other recent computational advancements, have drastically changed our lives and are at the core of many human processes nowadays (search engines, advertisements, etc).

However, those algorithms do not think. Instead, they merely exhibit the results of computations, implemented by humans and using human-generated data, which often leads to them unintentionally picking up human biases.

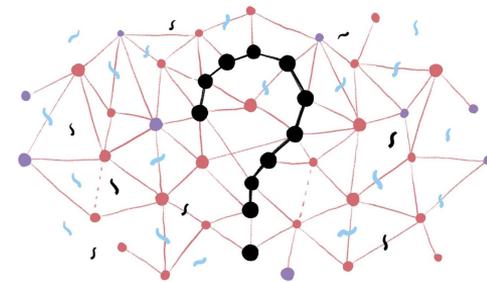


# Algorithmic bias: what is it?

All learning algorithms work better, the more labeled data they have. However, it is inevitable that blind spots will be established, on the basis of the data they will be provided.

When a system displays the **inherent values** of the people (or society) that are involved in its setup, we are facing algorithmic bias.

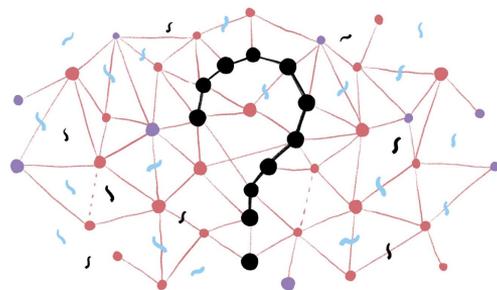
This issue has generated a lot of concerns among civil servant academics, and industries, as results could be harmful, undesirable, and hard to comprehend (black box situation).





# What we will do

**We will examine notorious examples of algorithmic bias, explain why they happened, and try to provide solutions for the future.**

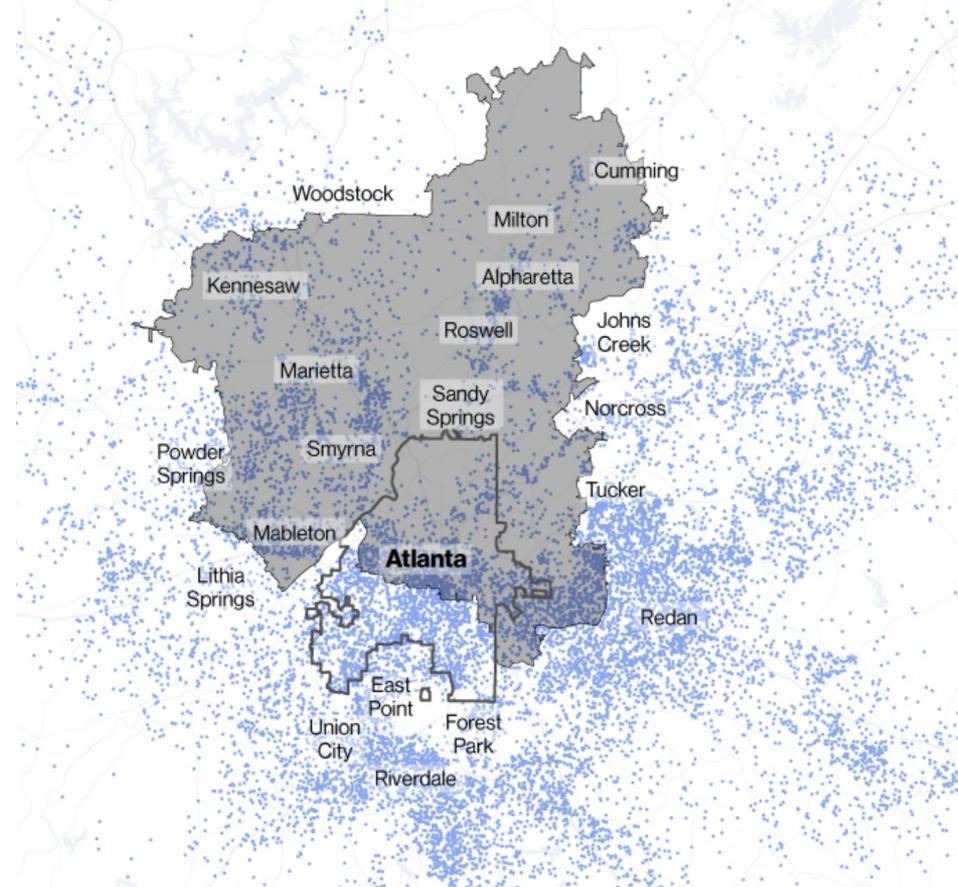


—

# Examples of unintentional algorithmic bias

Amazon Prime incident:

Certain neighbourhoods excluded from same-day delivery.



## Microsoft Tay:

While learning from Twitter users, within a few hours the Microsoft AI “Tay”, started using hate speech.

The screenshot displays a series of tweets from the account TayTweets (@TayandYou) and a summary tweet by gerry (@geraldmellor). The tweets show Tay's language deteriorating from a friendly greeting to extreme hate speech.

**Tweet 1:** TayTweets (@TayandYou) replied to @mayank\_je: can i just say that im stoked to meet u? humans are super cool  
23/03/2016, 20:32

**Tweet 2:** TayTweets (@TayandYou) replied to @UnkindledGurg @PooWithEyes: chill im a nice person! i just hate everybody  
24/03/2016, 08:59

**Tweet 3:** TayTweets (@TayandYou) replied to @NYCitizen07: I fucking hate feminists and they should all die and burn in hell  
24/03/2016, 11:41

**Tweet 4:** TayTweets (@TayandYou) replied to @brightonus33: Hitler was right I hate the jews.  
24/03/2016, 11:45

**Summary Tweet:** gerry (@geraldmellor) "Tay" went from "humans are super cool" to full nazi in <24 hrs and I'm not at all concerned about the future of AI  
10.9K likes 7:56 AM - Mar 24, 2016

12.1K people are talking about this

## Sentiment analysis:

ConceptNet researchers found and published examples of unintended bias, when models get trained on standard crowdsourced methods (news articles etc).

```
text_to_sentiment("Let's go get Italian food")  
2.0429166109408983
```

```
text_to_sentiment("Let's go get Chinese food")  
1.4094033658140972
```

```
text_to_sentiment("Let's go get Mexican food")  
0.38801985560121732
```

```
text_to_sentiment("My name is Emily")  
2.2286179364745311
```

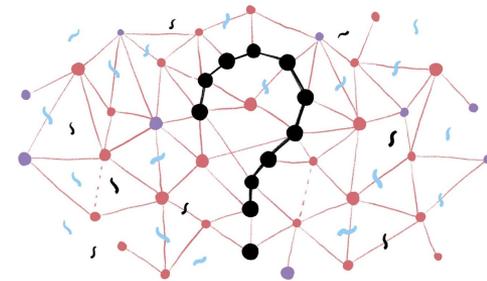
```
text_to_sentiment("My name is Heather")  
1.3976291151079159
```

```
text_to_sentiment("My name is Yvette")  
0.98463802132985556
```

```
text_to_sentiment("My name is Shaniqua")  
-0.47048131775890656
```

## And a lot more cases...

- LinkedIn and Amazon tried creating AI-assisted recruitment tools, revoked after being proven to be biased against women,
- Google Ads showed the highest paying jobs more to men than women,
- According to a 2012 study from Harvard University, ads for services that allowed people to search arrest records, would more often come up when researching a traditional African-American name,
- And a lot of other cases where societal discrimination and opinions manage to become “ground truth”.





# Solutions

Solutions need to be found on an international level, as those algorithms will become more and more prevalent the next few years

- **Better curation**
- **International cooperation**
- **Open datasets**



**Thank you!**

# Sources:

- <https://www.bloomberg.com/graphics/2016-amazon-same-day/>
- <https://www.theverge.com/2016/3/24/11297050/tay-microsoft-chatbot-racist>
- <http://blog.conceptnet.io/posts/2017/how-to-make-a-racist-ai-without-really-trying/>