



# Responsible AI

An invitation to discuss interesting problems

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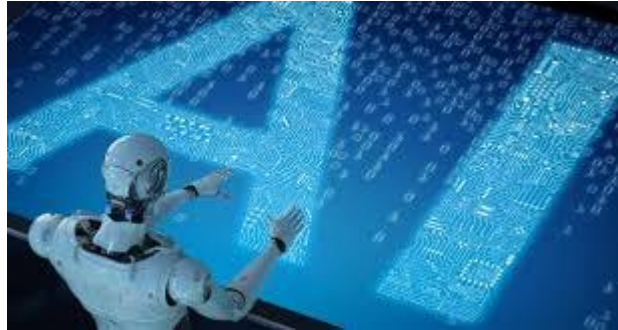
**Hinda Haned**

June 18<sup>th</sup> 2019

Ahold Delhaize

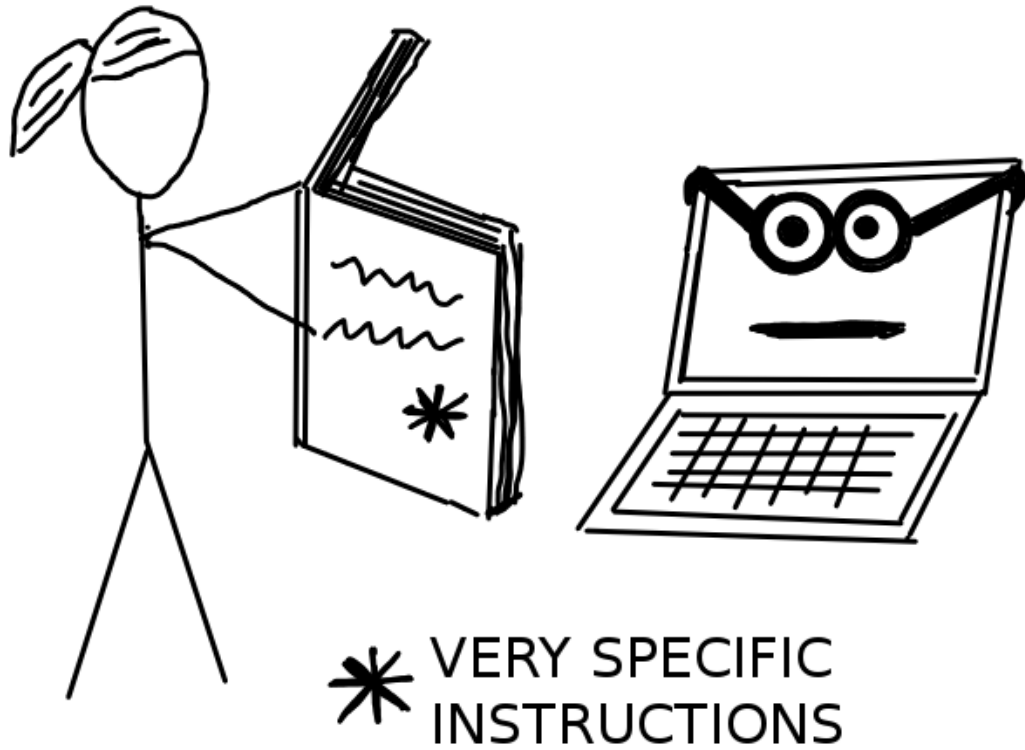
University of Amsterdam

# Artificial Intelligence (AI)

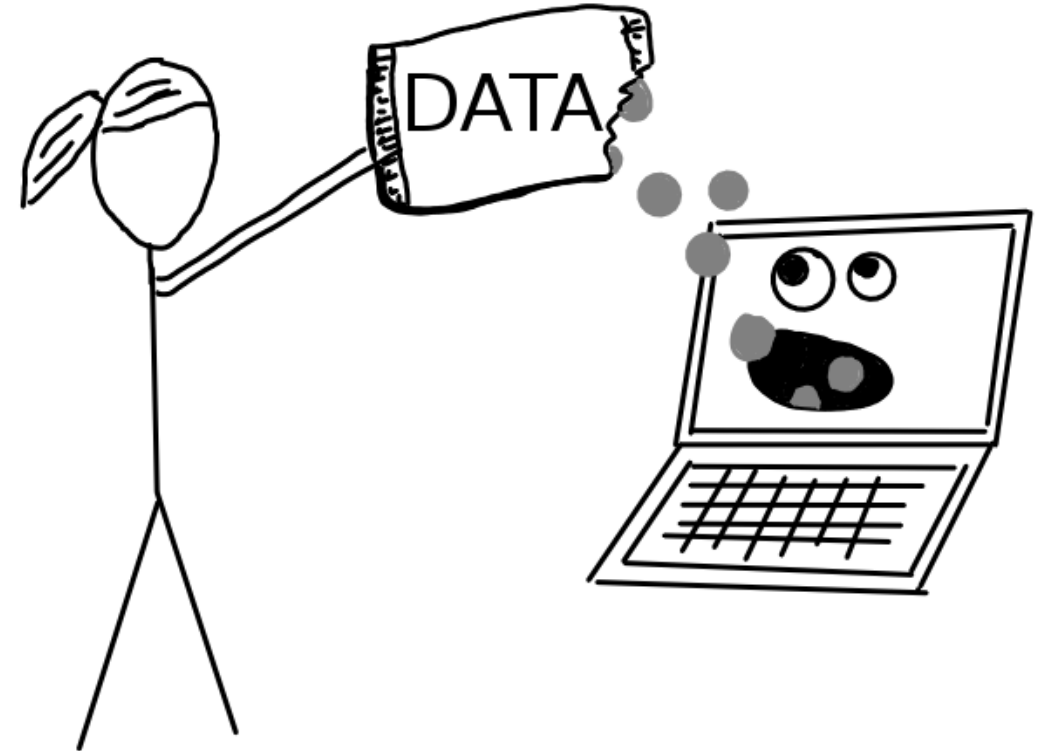


# Machine Learning (ML)

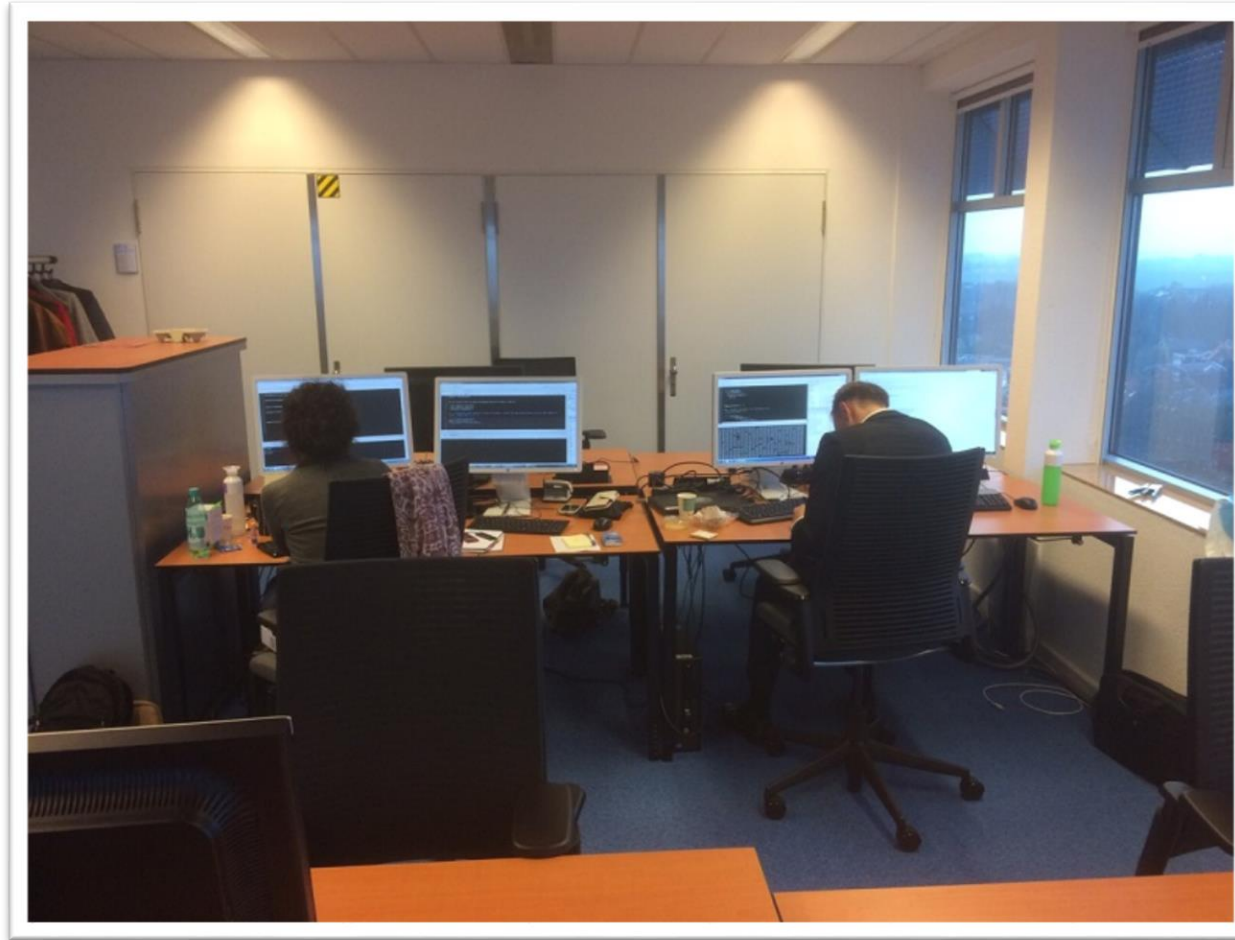
## Without Machine Learning



## With Machine Learning



# Machine Learning (ML)



# Responsible machine learning: why bother

- 'AI hype' pushed by vendors/consultants
- GDPR 2018: 'right to an explanation' & privacy restrictions
- Critical areas in retail, e.g. associate health, recruitment, replenishment, logistics, ...
- Media coverage

# Controversial “AI stories”



## Facebook’s ad-serving algorithm discriminates by gender and race

Even if an advertiser is well-intentioned, the algorithm still prefers certain groups of people over others.

by Karen Hao

Apr 5, 2019



# Bias in machine learning

$$f(\text{🗑️}) = \text{🗑️}$$

Data is a social mirror: perpetuating and promoting (historical) biases



# Responsible ML research

- **Avoid bias** Algorithms must be designed to avoid biased outcomes
- **Fairness** Algorithms must produce fair outcomes
- **Transparency** Algorithmic outputs must be interpretable and transparent



# Example: fair recruitment algorithm

- Task binary classification
- Outcomes hire/don't hire
- Sensitive attribute known and protected
- Fairness goals
  - Group fairness subjects in protected and unprotected groups have equal probability of being assigned to the positive prediction class
  - Individual fairness similar people experience similar outcomes

# Fair recruitment algorithm: questions

- Group or individual fairness?
- What is the tradeoff between utility and fairness?
- What is the cost of a fair version of the current algorithm?
- How to avoid harm of representation?

# Responsible ML: AI for retail Lab



The AI for Retail (AIR) LAB conducts foundational AI research in close collaboration with academia –embedded within our brands.



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Replenishment



Search  
Recommend



Responsible  
AI



In Store  
Robotics



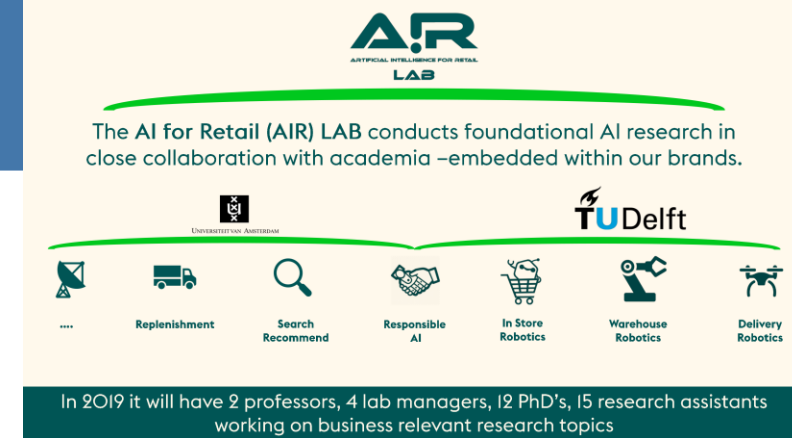
Warehouse  
Robotics



Delivery  
Robotics

In 2019 it will have 2 professors, 4 lab managers, 12 PhD's, 15 research assistants working on business relevant research topics

# Responsible ML



Topic	Projects examples
Algorithmic bias discovery & mitigation	What does it mean to be fair? <i>e.g. introducing a taxonomy for fairness in retail applications</i>
Transparency in ML	ML models that provide explanations to the end-users <i>e.g. Why did the model make an error?</i>

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explore & develop

The goal of our worldwide network of **AIR LABS** is to explore and develop new tech solutions, and attract, develop and retain talent. The Labs conduct foundational AI research in close collaboration with academia and provide rapid innovative tech solutions through collaborations with incubators.



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