ethix

Algorithmic Bias: *Values and Trust*

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The Apple Card Didn't 'S That's the Problem

The way its algorithm determines credit lines make

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TECH ARTIFICIAL INTELLIGENCE

AI is worse at identifying household items from lower-income countries

An example of AI bias reflecting global inequalities

By James Vincent | Jun 11, 2019, 1:20pm EDT

Gender was misidentified in **up to 12 percent of darker-skinned males** in a set of 318 photos.

Gender was misidentified in **35 percent of darker-skinned females** in a set of 271 photos.

Bias – what are we talking about

- Tendency
- Systematic error introduced into sampling or testing by selecting or encouraging one outcome or answer over others
- An inclination of temperament or outlook
  - especially **:** a personal and sometimes unreasoned judgment **:** prejudice
- An instance of such prejudice

Bias – what are we talking about

Statistical Bias: Biased Model

- *Underfitting:* High bias can cause an algorithm to miss the relevant relations between features and target outputs (underfitting) => Incorrect predictions
- *Overfitting:* *the algorithm* makes predictions based on ‘wrong’ characteristics in training data => poor performance on test data/real world

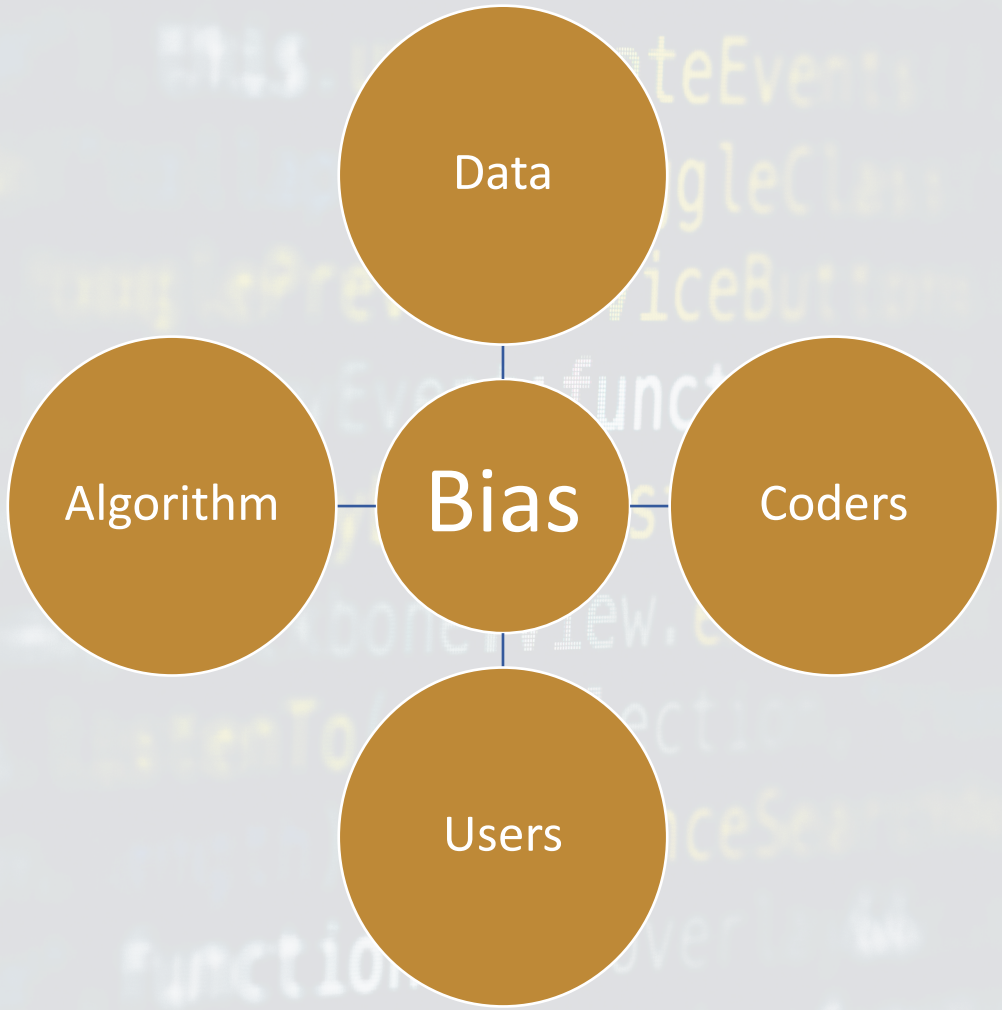
Social Bias: Biased Outcome

- Biased Outcome: Groups of people get (illegally or immorally) discriminated, based on certain characteristics (e.g. gender, race, religion, address etc.)

Bias – what are we talking about

Sources of bias:

1. The Data
2. The algorithm that reinforces the bias in the data
3. The humans that program the algorithms
4. The humans that deploy the algorithms.



Consequences of Bias

- Unjustified Discrimination:
  - Fairness – a core ethical principle – at risk.

- Social Bias:
  - Unintentional & unjustified discrimination *People do not trust an application that is perceived or experienced as unfair.*

- Statistical Bias:
  - Badly performing algorithms: *People do not trust an application that misperforms too often*.

EU Principles for Trustworthy AI

- 4 Core Ethical Principles

Respect for human autonomy	Prevention of harm
Fairness	Explicability

- 7 Key Requirements
  - Human agency & oversight
  - Technical robustness and safety
  - Privacy & data governance
  - Transparency
  - Diversity, non-discrimination & fairness
  - Societal & environmental wellbeing
  - Accountability

ethix Trust Framework

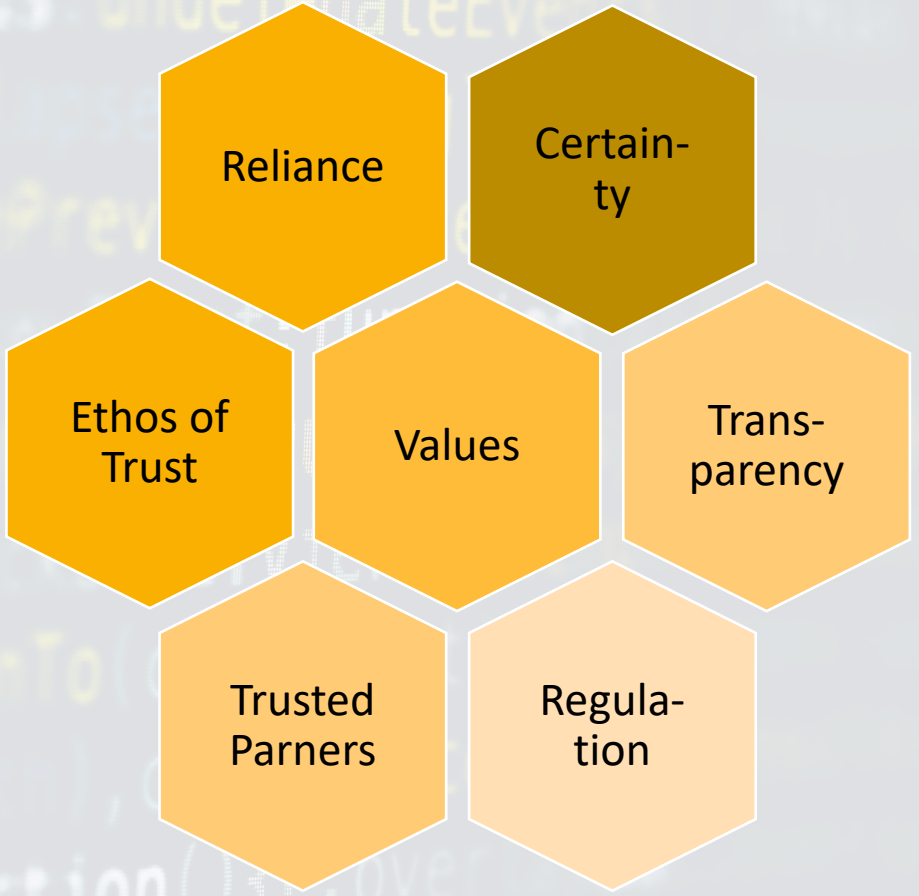
- Whitepaper: Trust in Innovation
- Definition of Trust
  - *Trust is a future-oriented, interpersonal relationship between at least two individuals. It involves a prediction: Person A makes a prediction about person B's goodwill or intentions in the future. There is a perception of shared values and beliefs with person B and vice versa.*
- *goodwill or intentions in the future = trustworthiness*

ethix Trust Framework

- Elements of Trustworthiness: What makes a trustworthy person?
  - Competence
  - Honesty
  - Vulnerability
- Context-specific trust vs. generalized trust?
  - I trust someone *to do X* vs I trust someone *in general*.
  - Crucial for the context of technology

Building Blocks of Trust

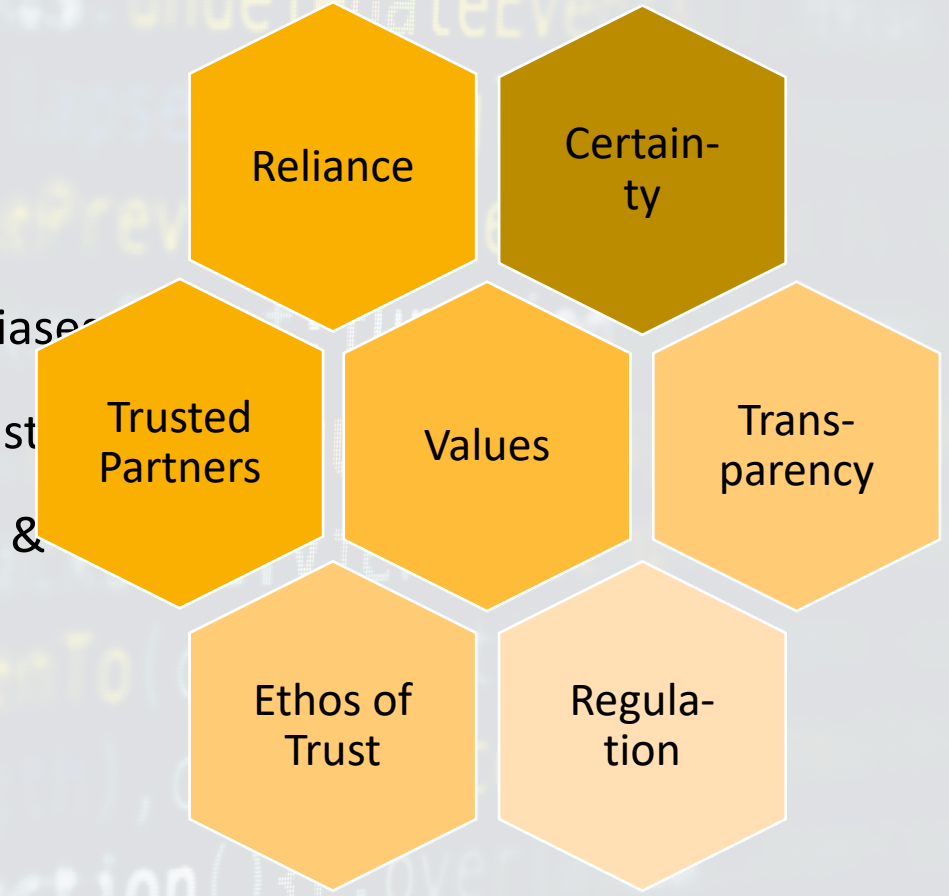
- Seven Building Blocks
  - Reliance: Predictability
  - Certainty: minimizing the unknown
  - Transparency: receiving information
  - Third party Regulation (e.g. guidelines)
  - Information from Trusted Partners
  - Ethos of trust: climate of generalized trust
  - Values: values of innovators are aligned with mine



What to do?

Sources of bias:

- The data: Assure the dataset is representative of the population the algorithm will be used on
- The algorithm: Test & Audit the algorithm for potential biases
- The programmers: Provide ethics training for data scientist
- The users: Actively inform on intended target population & limitations



Thank you

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