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ERASMUS+ PROGRAMME - KA210 SMALL SCALE PARTNERSHIP

VIEWING THE FUTURE WITH AI

2023-2-IT02-KA210-SCH-000170888

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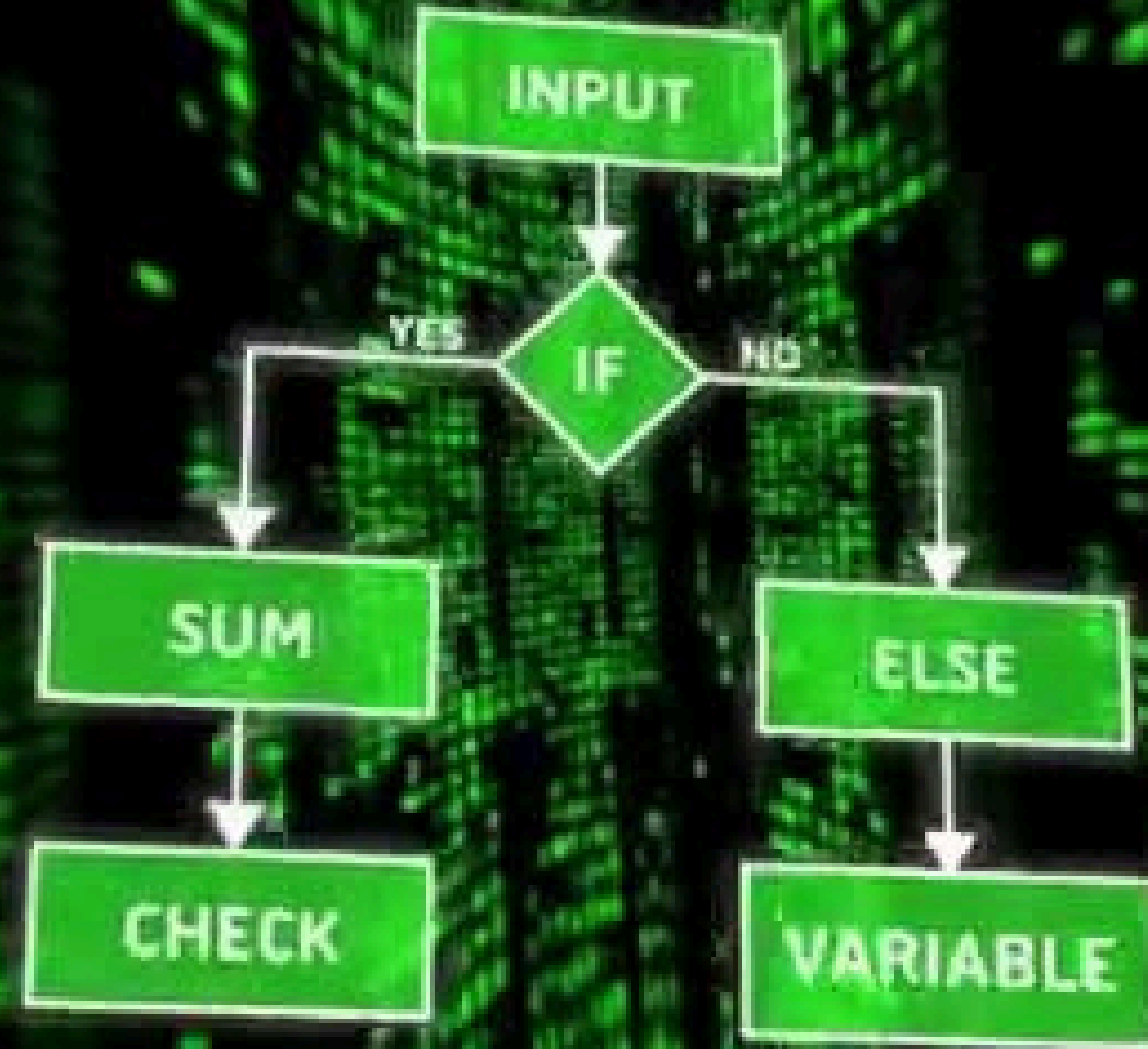
ALGORITHMS & ALGORITHMIC BIASES

Algorithms & Data Market



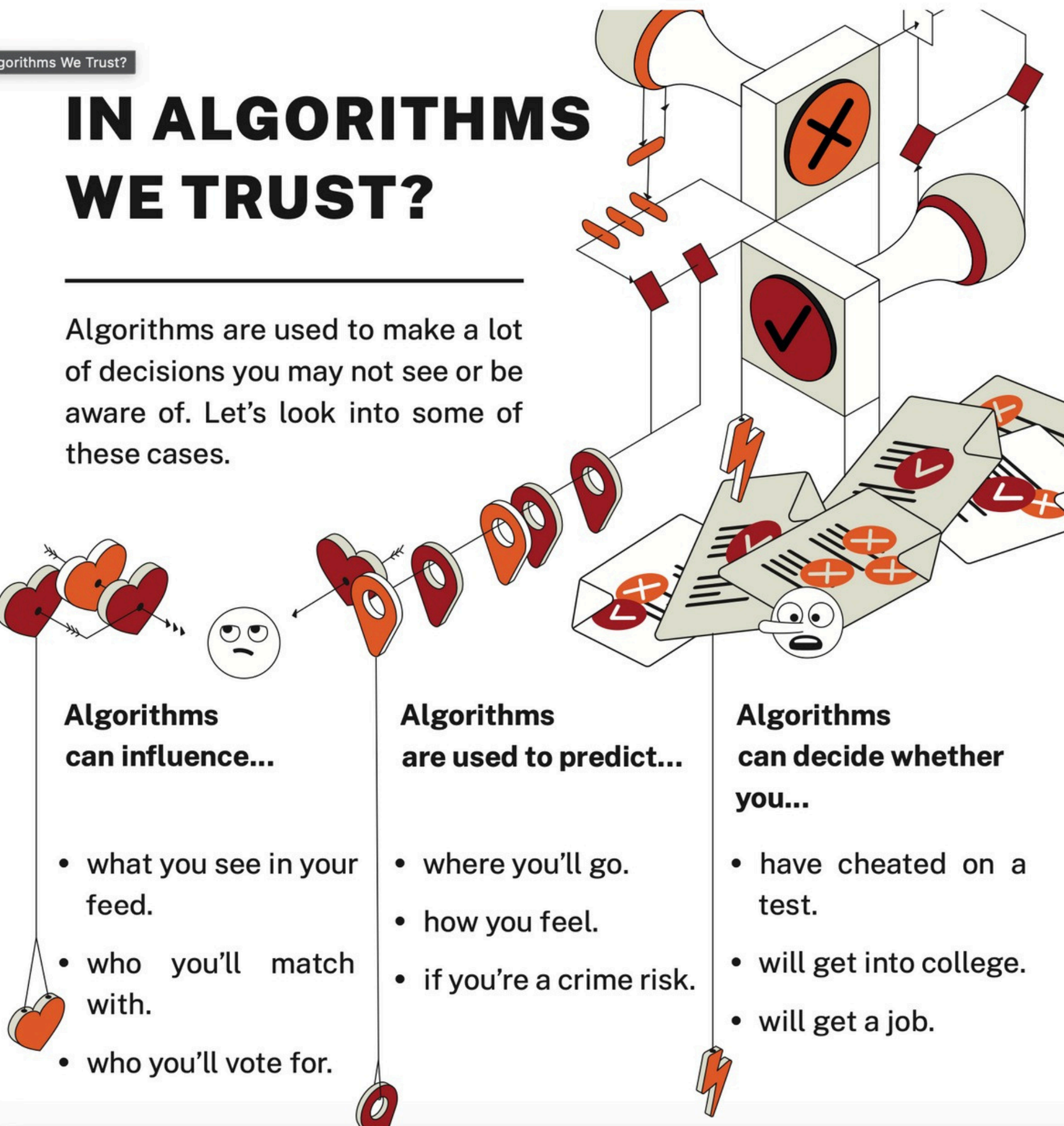
ALGORITHMS

Algorithms are sets of instructions given to computer programs to perform specific tasks. This can be as simple as classifying or sorting objects based on given criteria (for instance, sorting a set of numbers from smallest to largest or searching data for a particular value) to more complicated tasks such as mathematical formulae, through to extremely complex tasks such as those performed by artificial intelligence algorithms using machine learning, learning from the data sets given to the algorithms.



IN ALGORITHMS WE TRUST?

Algorithms are used to make a lot of decisions you may not see or be aware of. Let's look into some of these cases.



DISCUSSION

01

Would you make different choices without the algorithm?

02

What is the relation between past and future for algorithms?

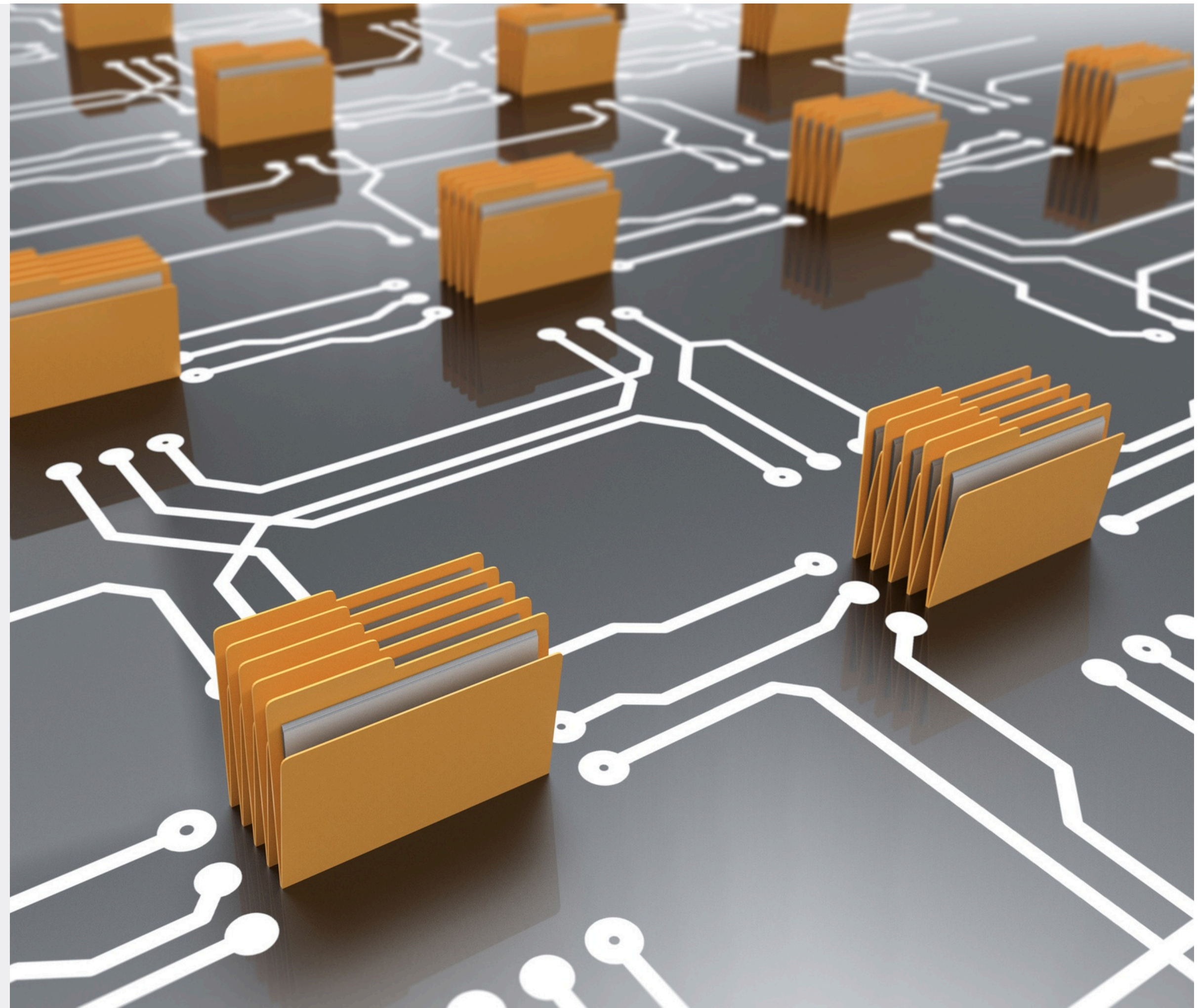
03

In which cases should we not use algorithms at all?



DIGITAL AGE

Digital technologies gather data. It is predicted that the world will have 175 zettabytes of data by 2025. If you downloaded that onto DVDs, the resulting stack of discs would stretch round the planet 222 times. The data trail we leave behind builds our digital identity/profile/footprint.



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Code carries the power to affect how we perceive the world. Every time we use a search engine, digital assistant, news app, social media platforms, we let others shape our outlook. Digital systems propel issues to the top of the public agenda, or make them disappear. They frame the way we see ourselves and each other. They influence our norms and customs, what we regard as true or false, real or fake, right or wrong.

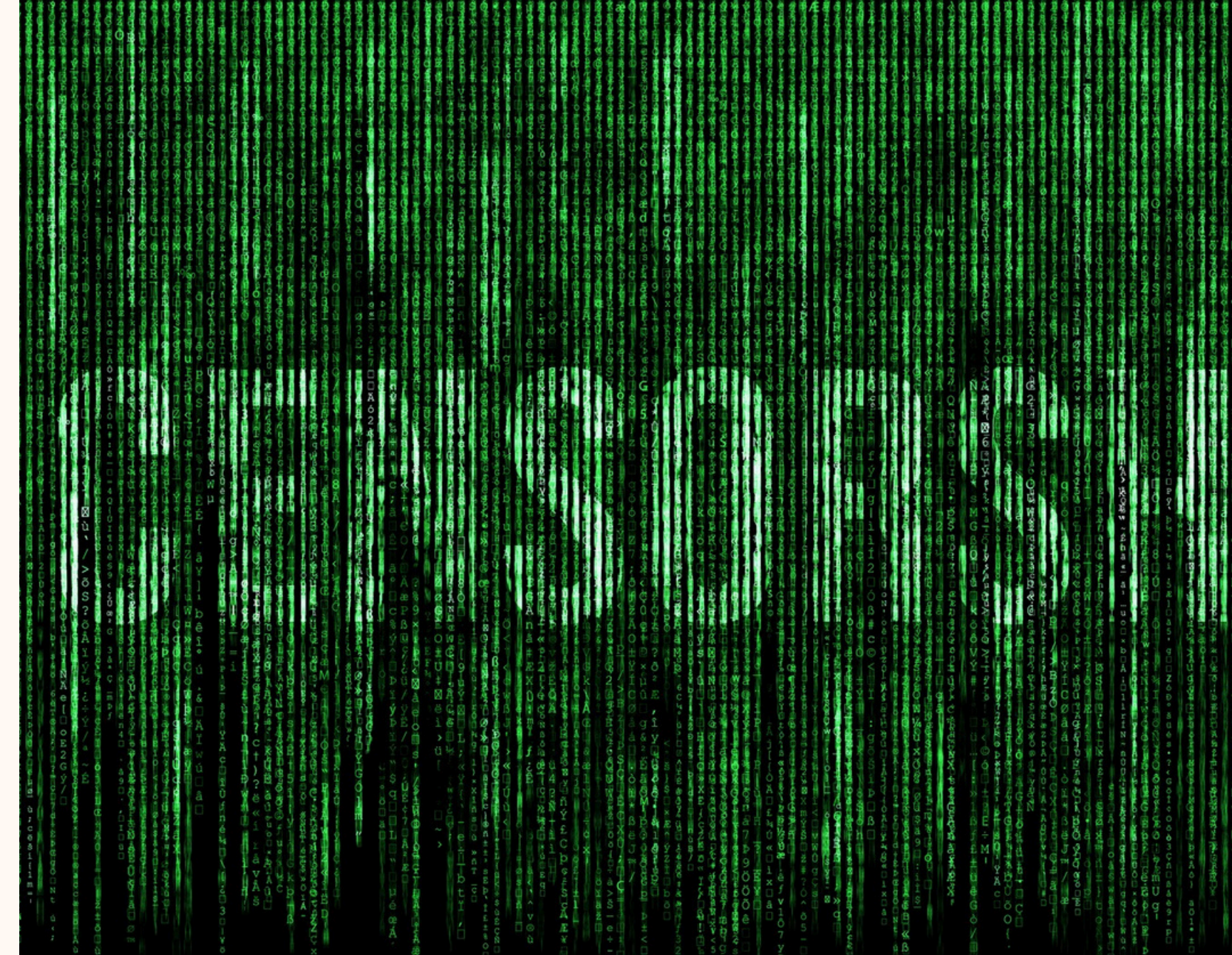
Algorithmic biases



The platforms rank, sort and order the ideas of others. They censor. They block. They boost. They silence. They decide who is seen and who remains hidden.

In the future, “search” will look less like typing words into a box and more like an ongoing conversation with a digital personal assistant.

Every choice to provide a user with one piece of information is a choice to deny them a different piece of information.



The paradox of digital technologies:
They offer freedom, but only in exchange
for some surrender of control.

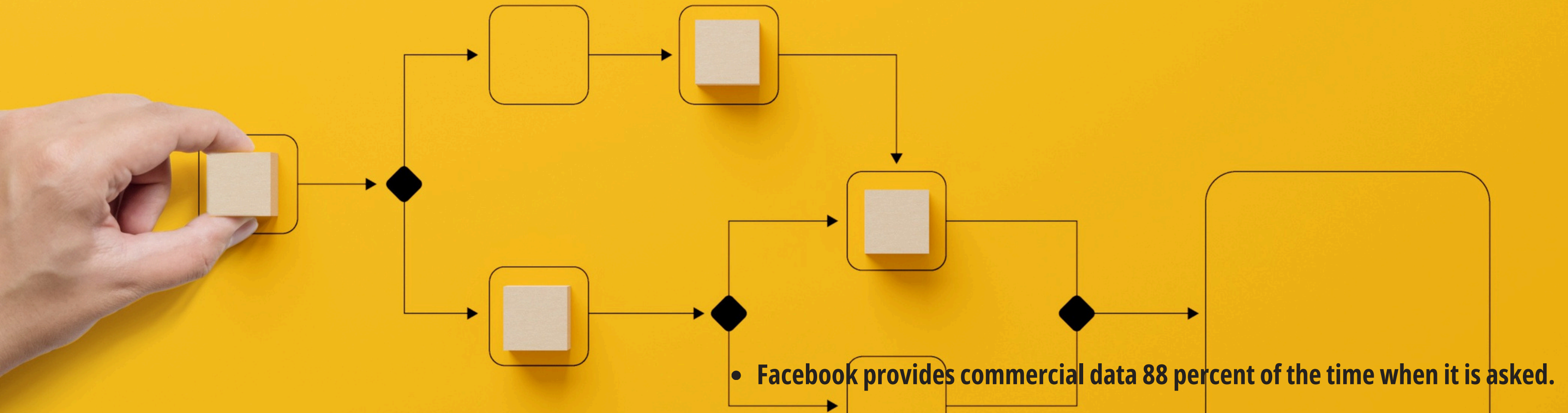


The subtler effect is that it degrades our ability to decide what we want in the first place. Often it changes our perception and our behaviour in a manner closer to manipulation than influence.

Digital systems are not morally neutral or objective with our digital identity, but rather treat and feed it with biases, and prejudices and prioritize our news feed, notifications, and ads according to principles of the data market.

We are encouraged to purchase or consume, to surrender time or attention, to offer our personal information. Every time we click, search, like, we leave a trail. Our digital trail leads to an algorithmic offer.





- Facebook provides commercial data 88 percent of the time when it is asked.
- Facebook “likes” can be used to predict a person’s political preferences 85 percent of the time, their sexuality 88 percent of the time, and their race 95 percent of the time.

- Amazon’s systems chide workers who fail to pack their boxes quickly enough and terminate those who underperform.
- Uber’s software deactivates the accounts of drivers whose ratings fall below a required level.

Algorithmic Facts



Didi Chuxing, a Chinese rideshare platform, expanded into personal finance by analyzing passenger data, where they live, whom they live with, where they work, etc. to predict their financial status, enabling the provision of loans and insurance without customer questionnaires.

The content curated by TikTok is partly done by algorithms and partly by humans. In 2020, it was revealed that TikTok instructed human curators to block images of individuals deemed "chubby," with abnormal body shapes, seniors, and those with "ugly facial looks" from the "For You" page. Additionally, curators were directed to avoid promoting videos filmed in shabby environments.

Where Algorithms are Used

There are many other ways that data sets can lead to bias in algorithms and AI systems.

Healthcare

Underrepresentation of women and minority groups leads to lower accuracy in diagnostic systems trained on such data.

Job applications

Hiring algorithms have been found to favor language used by men in their resumes, due to the way in which language processing algorithms operate.

Online advertising

Search engine algorithms can display higher salary job adverts to men over women.

Image generation

Generative AI images have been found to reinforce gender bias in relation to profession, class bias, racial bias, and more.

Predictive policing

Predictive policing tools often rely on historical crime data to predict levels of crime in a given area, further reinforcing biases in racial profiling and stereotypes around minority communities



The risks of Algorithms



01

Exposure to inappropriate or harmful content

02

Exposure to misinformation

03

Exposure to targeted adverts

04

Persuasive design

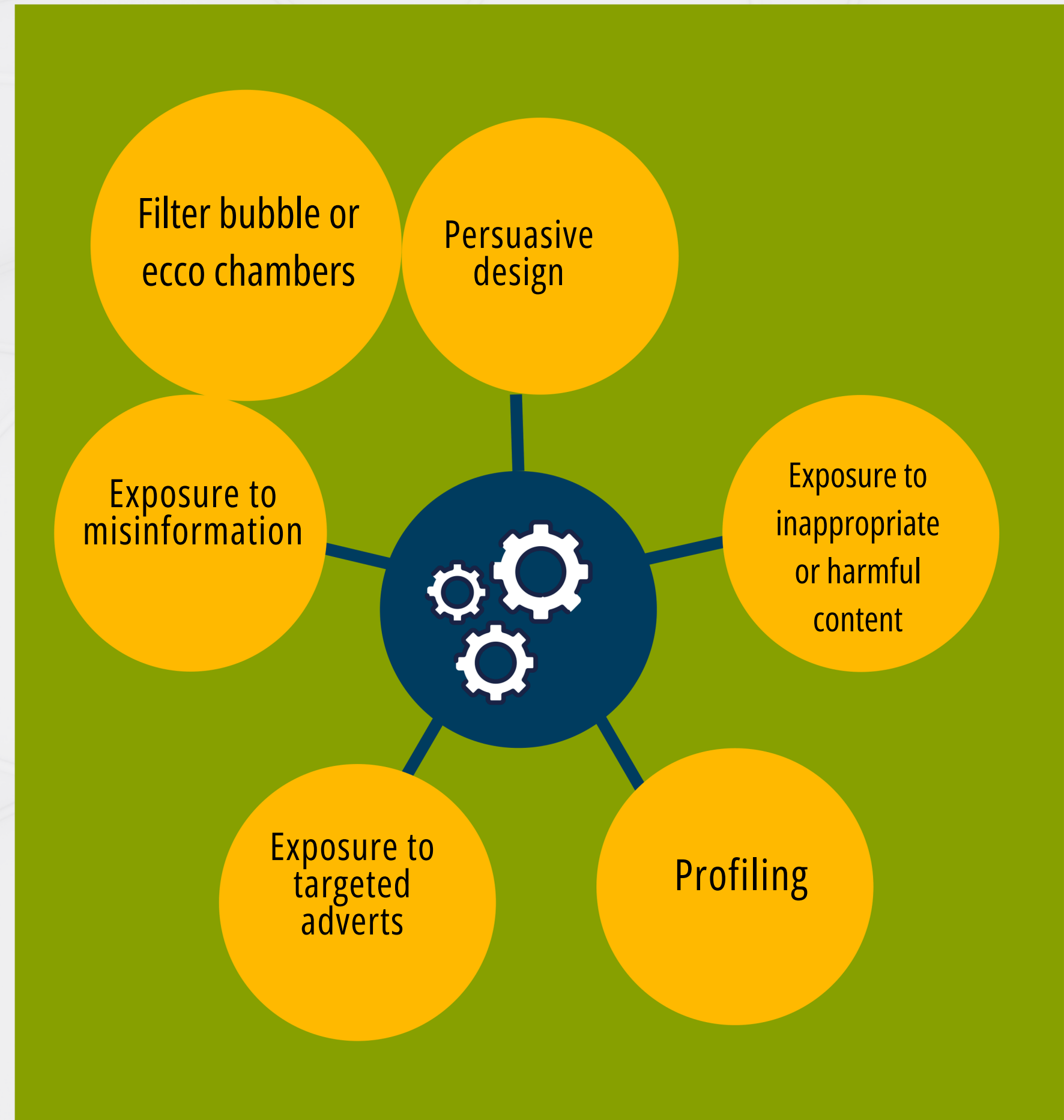
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Filter bubbles and echo chambers

06

Profiling

The future is not Big Brother, in the sense of one government monolith watching us all at once. It is, instead, a “big brotherhood” of hidden, unblinking eyes, some belonging to the state but countless others belonging to private parties who watch us while remaining unseen.



Algorithmic literacy



In the same way that information and digital literacy are key life skills, algorithmic literacy is also important. This doesn't necessarily require an in-depth understanding of how algorithms operate, but having an awareness of how algorithms are used to target advertising and content to an individual is important to be aware of.

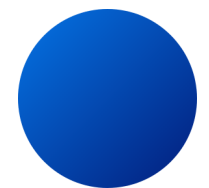
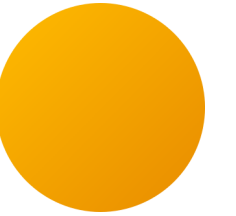


Students need to learn strategies for discerning what is accurate, inaccurate, or false in the content they experience online. Developing these skills is key to help them manage situations where they encounter misleading or potentially hateful or harmful content.

COMPUTATIONAL IDEOLOGY

group work

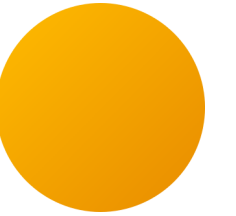
A few years ago, Amazon developed (but apparently never used) a recruitment system to find correlations between (a) the most successful employees at Amazon and (b) the contents of their CVs. Once it had identified those correlations, the system was supposed to screen job applicants to decide whether they should progress to the next stage. The idea was that those with CVs that contained similar attributes to those of Amazon's successful employees would get through; those whose CVs did not would be rejected. This probably seemed like a logical approach, embodying the kind of scientific detachment for which the tech industry is often praised.





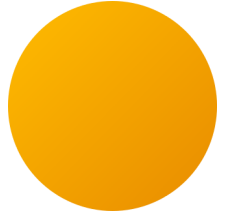
COMPUTATIONAL IDEOLOGY

But there was a problem. Amazon had historically been a male-dominated company, and so its system ended up concluding that a strong indicator of likely success at Amazon was being a man. Thus, CVs that contained the words 'women's soccer team' or the names of all-women colleges would be sent to the bottom of the pile. The designers of this system did not set out to discriminate against women, but the data embodied a legacy of injustice and the system amplified it.

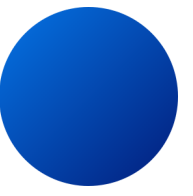
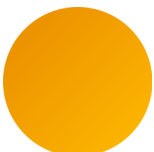


COMPUTATIONAL IDEOLOGY

group work



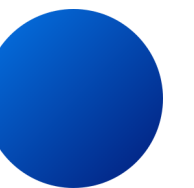
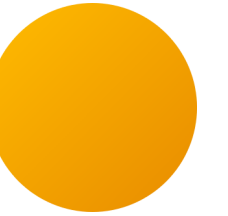
In 2020, because of the pandemic, British schoolchildren were unable to sit public examinations, and so were given grades based on their past work. For lazy but bright students who had planned to idle all year before cramming furiously in the last two months, this policy was a disaster. They were to be judged on their past performance, not their future excellence. Then, to make matters worse, the government adjusted students' grades using a simple algorithm that took into account the performance of previous students at the school from which each pupil came. This had the (apparently unintended) effect of downgrading 39 per cent of results, with poorer pupils seeing the greatest downward adjustment because schools in less prosperous areas had previously underperformed.' Three days later, young people took to the streets of London with placards reading "Fuck the Algorithm".



COMPUTATIONAL IDEOLOGY

group work

IA machine learning system was recently used to analyse a very large body of text from the internet. It looked for words that are closely associated. It found, for instance, that musical instruments are more commonly associated with pleasant terms than weapons. No surprise there. But it also found that European American names like Harry, Josh or Roger are 'significantly' more associated with pleasant terms than African American names like Leroy, Lamont or Tyrone. And men are more associated with words like executive, management, professional and corporate, while women are more associated with home, children and family.¹⁰ Studies like these show society its reflection. They reveal the injustices embedded in our language. But when we 'train' systems to read or speak using datasets like these, we reproduce and amplify injustices rather than rectify them.





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Thank
you! 😊