

Algorithms are not only designed for convenience but also to be addictive which opens the doors for manipulation.



The Illusion of Free Choice in the Age of Augmented Decisions

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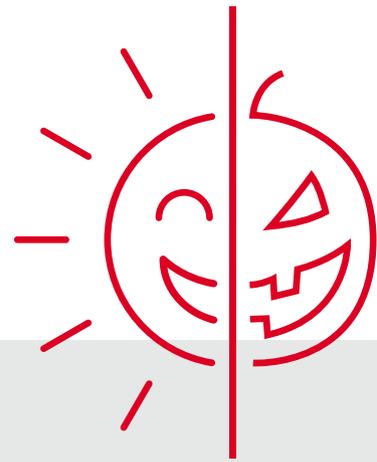
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The Age of Digital Convenience ✕ The age of digitalization has created new opportunities for individuals, organizations, local governments, and countries to cooperate and mutually benefit from each other. Technologies such as smartphones and mobile Internet have enabled global networks and extended opportunities for individual and collective engagement and cooperation. Further, tasks that formerly meant tedious, long-lasting work or that could not be accomplished at all have become possible and even trivial with the extensive use of constantly improving technologies. However, more convenience has led to a growing reliance on these types of technologies in human decisions. In the augmented world in which we live, a growing number of decisions are designed by smart technologies – with unforeseen consequences for individuals and societies. Augmented decision-making undermines the freedom of choice. This is the price we pay for convenience.

Human Decision-Making in an Augmented World ✕ The concept of augmentation or enhanced intelligence emphasizes cooperation between humans and machines, in contrast to the sometimes negatively evaluated concept of autonomous artificial intelligence (AI). While smart algorithms filter through data, identify patterns, and make recommendations, humans plan, think, and make the final decisions. Augmented intelligence is often considered as the future of decision-making for knowledge workers like doctors, managers, and pilots. However, in our everyday lives, examples of augmented decisions are already omnipresent. Who determines what you see in your social media newsfeed, which movies and series you watch, and which products you buy? And think about the first thing you do when you plan to travel to a new destination. Most likely, you are using the



BOX 1

The two sides of augmented decisions



> **Search engines** help users find what they need by filtering and sorting the online world. However, at the same time, search engine providers earn money by selling ads to businesses that nudge users to buy things that might not be optimal choices from the users' perspectives.



> **Price comparison portals** for all kinds of products and services allow users to find the lowest prices for products and services. However, they highlight offers or sort the results by default according to other criteria like commission optimization that may be more useful to the provider than to the customer.



> **Navigation apps** make it easy for users to find the places they want, from the best restaurants to shops and specific services. However, the information on the map is curated by the algorithm behind it. The first places users "find" on the map often have paid the provider for the placement. In addition, how do we know whether the routes we take are actually the best options and are not just maximizing the likelihood of walking past a shop that pays the app provider for more traffic?



> It is convenient when **streaming services** recommend movies we might like. But which criteria do they use? How do they, for instance, weigh their own productions compared to other content? What other considerations play a role when a movie or series is recommended?

map app on your smartphone and not a classic road map. Following the route that the app suggests is usually the most convenient option.

Augmentation provides clear benefits in decision-making processes: AI helps reduce information overload, filter relevant information, and limit an otherwise overwhelming abundance of choices. The algorithms behind the services create a convenient world, freeing humans for more enjoyable tasks than gathering information, framing options, and weighing alternatives for decisions. The recommendations and nudges of smart algorithms help humans to save time and still make choices that match their preferences. But this is only one side of the coin.

The dark side of digital convenience ✗ There is a darker and often invisible side of the coin as well.

> **Loss of freedom of choice** ✗ Augmented intelligence frees us from many chores, but it also limits free choice. We rely on our technologies, often unaware that we do no longer get the full picture but instead a reality that might be curated for a specific purpose. In such cases, freedom of choice becomes an illusion. Humans have become accustomed to "doing everything" on their smartphones, and this tendency is reinforced by the apps and services of organizations such as Facebook, Google, and Netflix. Tech companies use technology as a vehicle to construct individual subjective reality, the internal space that frames our decision-making. Most of the information that humans base their decision on is filtered and pre-sorted by algorithms, which use huge amounts of user data to produce highly individualized recommendations to nudge us towards certain options (see Box 1).

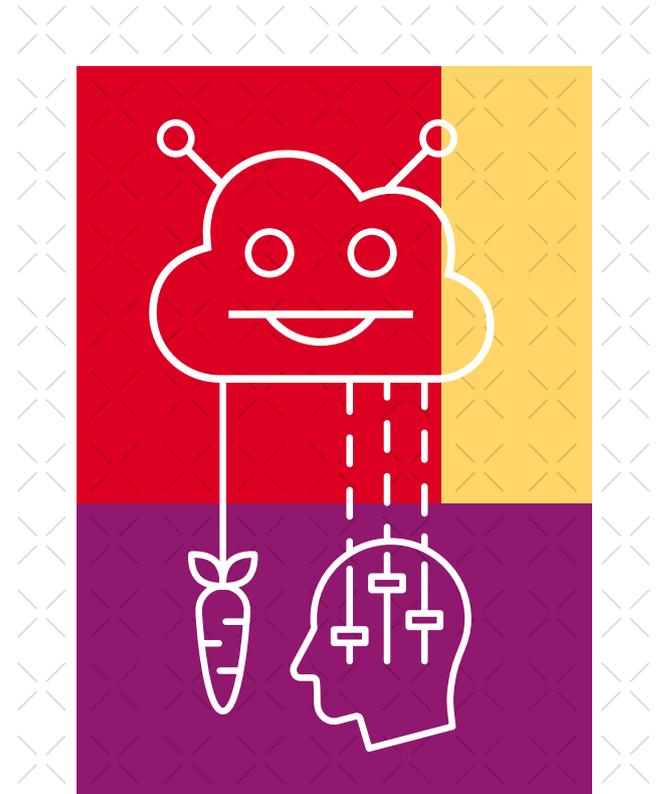


Whenever we opt for convenience, we should take into account its dark sides as well.



While such algorithms make our lives more convenient, they also fulfill various organizational objectives that users may not be aware of, and that may not be in their best interest. We do not know whether algorithms augmenting human decisions truly optimize the benefit to their users or rather the return on investment for a company. In other words, producing a positive user experience is often a means to an end, not an end in itself.

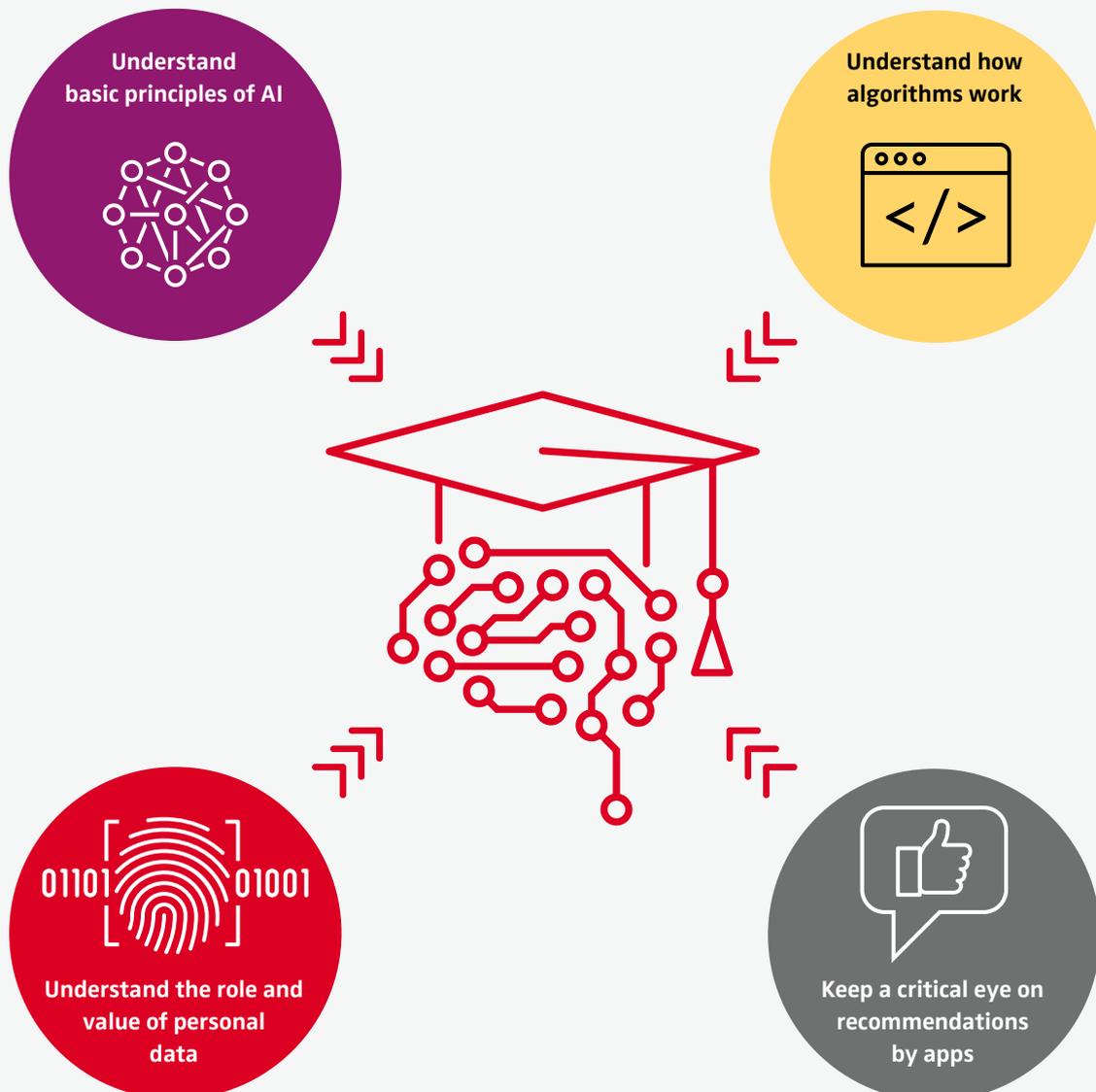
- > **Polarization of beliefs** ✕ A potential cause of harm to societies and democracies is the emergence of information bubbles, enabling and strengthening the polarization of beliefs. Biased outcomes shape our identities, our view of the world, our social relationships, and most importantly, the decisions we make. For instance, YouTube alone accumulates in total more than one billion hours of watchtime a day, and 70% of this time comes from watching recommended videos. Smart algorithms instantaneously and simultaneously recommend millions of videos to its users. At the same time, they test how to best retain user attention. Once a user continues to view another video, the recommendation was successful, and the algorithm has controlled the user's decision-making process. Under these carefully designed circumstances, humans may lose the ability to consciously choose between freely exploring or stopping to explore the content on the platform. Free choice is competing against smart algorithms that track and use individual preferences, while the user cannot control or does not fully understand the purpose and functionality of these algorithms. If such an algorithm learns that conspiracy videos are optimizing user attention, it may continue to recommend such videos until even radical conspiracy theories become a kind of shared reality for users. What they consume affects how the users think and behave. Even though users decide what they watch, YouTube's algorithms, and also Facebook's and Twitter's, have a large influence on what content – and what ideas and opinions – get amplified or silenced.

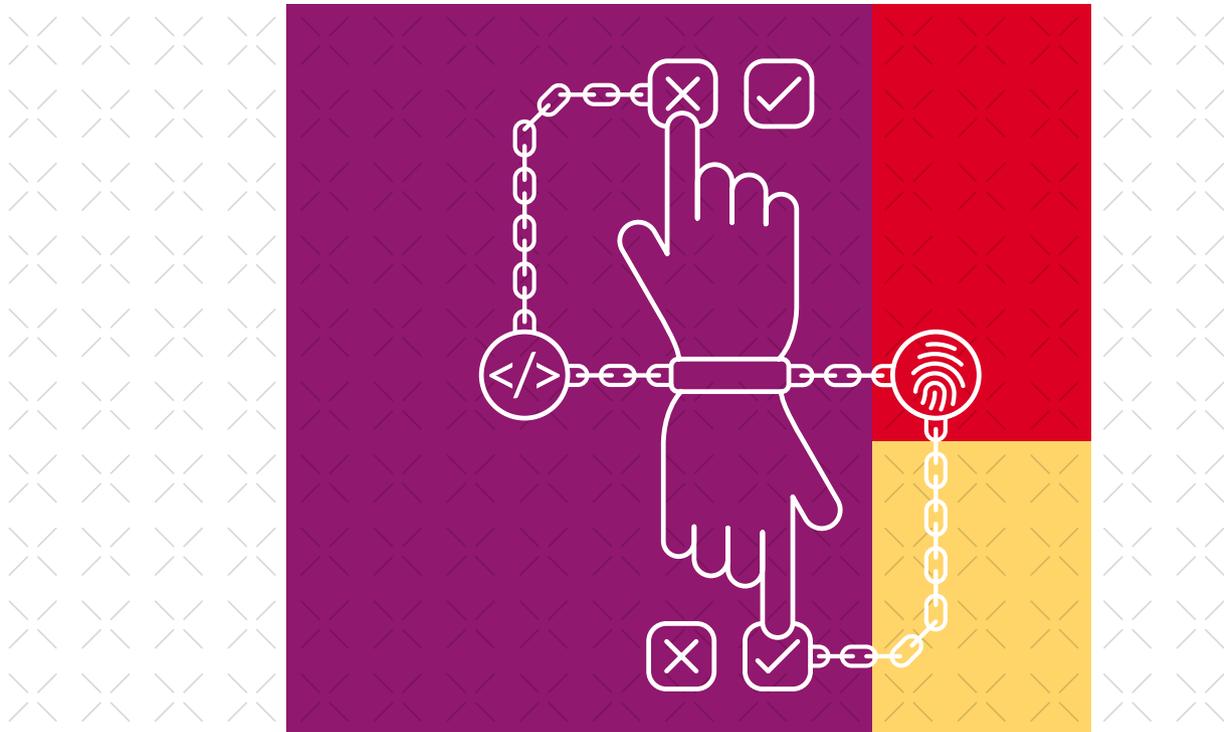


- > **Addiction and manipulation** ✕ As we have become accustomed to the quick, entertaining, and convenient services offered by digital platforms, we have also adopted a practice of unintentionally fueling the process. We allow the collection of huge amounts of personal data that is used to personalize the user experience of digital platforms. From an individual perspective, this may seem innocuous. Being nudged by an algorithm to pay too much for insurance or to occasionally buy a rather unnecessary product may seem to be a fair price for the convenience of the digital services. However, from a holistic perspective, it seems more harmful, and the consequences go way beyond creepy personalized ads. The main purpose of new technologies is no longer enabling engagement, growth, and connection but instead is capturing and retaining user attention for monetization and profit maximization. To reach these goals, algorithms are not only designed for

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FIGURE 1 > How to develop algorithmic literacy





convenience but also to be addictive, and this opens the doors for manipulation even wider. The experience they provide is simultaneously utopian and dystopian.

Strategies to Increase freedom of choice ✕ Augmented intelligence fueled with personal user data has created a world of convenience, and in exchange, humans have sacrificed freedom of choice. There are, however, some measures we can take to counteract the dark sides and keep freedom of choice less illusionary.

- > **Develop algorithmic literacy** ✕ In an AI dominated world, everybody needs to develop what is called “algorithmic literacy.” It involves a basic understanding of AI and how algorithms work in the background. Algorithmic literacy also requires that users understand the role and value of the personal data they sacrifice in exchange for decision augmentation. This understanding should enable humans to be critical towards the outcomes of AI-driven recommendations and to information preselected by algorithms (Figure 1).
- > **Make decisions more consciously** ✕ Most decisions involve some level of risk, but risks differ between fully automated, augmented, and purely human decisions. Individuals should develop an awareness of their risk tolerance toward the different options when they want to reach certain goals and make more conscious decisions about what to share, watch, and consume.

Smart technologies will play an even greater role in a world where the Internet of Things makes every object a sensor and part of the network. Imagine, for example, how evolving smart personal assistants – the future descendants of today’s Alexa and Siri – may one day automate everyday decisions like which products to purchase for us. Or imagine how augmented and virtual reality may change the way we interact with information. There will be even fewer options to check and question what we see and consume. A growing number of devices will make us even more dependent on algorithms. Whenever we opt for convenience, we should, therefore, take into account its dark sides as well. ✕



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