The AI Attack on Human Decision-Making: Can machines become better decision-makers?

A Special Issue Proposal

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Algorithms are much broader and older than computers and were used by humans long before machines. The term "algorithm" was derived from the name of the Persian mathematician Al-Khawarizmi, whose 9th-century book, "Al-jabr wa al-Muqabala", provides the origin of "algebra". Humans used algorithms even before that. For example, a 4000-year-old Sumerian clay tablet near Baghdad described a scheme to do long division (Christian & Griffiths, 2016). Although humans have always made decisions, with the unprecedented penetration of artificial intelligence (AI) into our lives, businesses, and societies, algorithms have moved from the invisible to the unavoidable. Algorithmic decision-making, a.k.a. data-driven, automated, or augmented decision-making, is the term used to refer to decision situations where AI algorithms are used to make decisions. However, since "*there is no AI without data*" (Gröger, 2021: p.98), combining AI algorithms and data sets the stage, masterminded by humans, for different modes of decision-making. With the coded bias in algorithms and the shortage of relevant training datasets, we firmly believe that the attack on human decision-making requires further research to understand the implications of these emergent decision-making constellations. On a practical level, this enables us to avoid a future situation where humans passively observe algorithms manipulating our future without even understanding why things happen!

Relying on algorithms running on top of data reveals an exciting phenomenon referred to as *the idolatry of data* (Christian & Griffiths, 2016). While religions have warned believers from idolatry, the worshipping of statues, and other tangible artifacts, AI algorithms represent a new religion to some. To explain, there can be errors in how the data were collected, processed, or represented, and certain phenomena, e.g., happiness, satisfaction, etc., are complicated to define or measure! Even the most complex models, such as deep learning, can fit any patterns that appear in the data, but this means that they will also do so even when those patterns are phantoms or noise in data. Deep learning

models, when trained sufficiently on massive datasets, can understand the shape of a dog, recognize a dog, and, more recently through generative AI, draw a dog. Still, they do not understand the concept of a dog.

The integration of human decision-making and AI in decision-making processes requires further exploration. Consequently, in this special issue, we invite original scientific contributions, both theoretical and empirical, that address the challenges outlined below, encompassing, but not limited to:

- Strategies to address the AI attack on human decision-making
- Understanding the AI attack on human decision-making from an Information systems field perspective
- How can the known IS theories explain the intertwining relationship between AI algorithms and human decision-makers
- The manifestation of emergent sociotechnical biases in (hybrid) decision-making, and optimize the use of hybrid intelligence
- The human, organizational, and societal impact of making AI decisions
- The degree of trust in AI decisions, data, and algorithms combined, compared to the trust in human decisions
- The challenges facing AI decisions and how to address them
- The situations in which human decisions can be supported with AI
- Decision evaluation in situations combining humans and AI
- Characterizing and preserving the decision-making quality of humans (in critical decision contexts)
- Research informing a proactive regulatory framework for data-driven decision-making
- What is the order in which a decision should be made, e.g., do we start with algorithms and then humans, or vice versa? Why? When?
- How to maintain the balance between individual human rights and the collective interest in efficiency and transparency from a public sector perspective
- Theorizing the attack of AI on human decision-making
- Theoretical perspectives to better explain the AI attack on human decision-making
- Responsible AI to support efficient decision-making processes
- Ethical considerations encompassing transparency and fairness issues to prevent discriminatory decision-making.

Why is this Important?

In the current age of machine learning and AI-based decisions, the more data we collect, i.e., more intelligence, the better the decision. However, this raises the question of how many features or variables should be considered. That represents the heart of a knotty problem that statisticians and machine learning researchers know as overfitting. While a too-simple model cannot capture essential patterns in the data, a too-complex model will excel in capturing existing data but will fail dramatically in predicting the behavior of unseen data. Moreover, complex models cost more to build, maintain, administer, and even make worse predictions (Christian & Griffiths, 2016). Accordingly, AI decision-making has promised better quality decisions, but it also brings numerous challenges, such as the below:

- *Hybrid intelligence*: As outlined in (Elgendy et al., 2021), the collaboration between humans and machines towards decision-making could be complex and needs a framework of reference. Hybrid intelligence, where humans and AI collaborate and learn together to achieve better outcomes (Petrescu & Krishen, 2023), is gaining research interest by initiating many new research programs and centers across Europe, e.g. Finland[1], Netherlands[2][3], and Denmark[4]. Further research and solutions are required to address the challenges and considerations for human-machine collaboration in decision-making and its implication on decision outcomes.
- *Regulatory limitations*: Automated decision-making is currently regulated, e.g., in European states by proxy, through other regulations such as the GDPR. None of the EU states explicitly regulates automated data-driven decision-making, although these states are mandated to make "data-driven" public-sector decisions. This leaves uncertainty regarding the role of humans (e.g., public sector case officers), how these decisions are evaluated, and how to protect the rights of the individuals for whom the decision is made while maintaining the collective interest in transparency. The implications of the new EU's AI act on organizations are still unclear.
- *Algorithmic aversion*: Not all decision-makers can augment the output of algorithms appropriately. Therefore, some decision-makers must be more careful with algorithmically generated insights in data-driven decision-making. When decision-makers cannot decide when to augment analytics output into decisions discriminately, they are averse to using algorithms (Burton et al., 2020).
- *Sociotechnical biases:* With a long chain from sourcing data to making a decision, the AI-driven decision-making process is susceptible to various biases: some about humans (e.g., unintentional priming or anchoring) and some about AI (e.g., overfitting or representation bias). Some forms of bias emerge in the interaction between humans and algorithms (e.g., automation and acquiescence biases). Recent literature suggests that other emergent context-specific biases must be measured and mitigated in various domains (Dobbe et al., 2018). An empirical investigation to map these different forms of biases is essential to counter their adverse effects.
- *Societal impact*: Analysis should be undertaken as to whether any loss, reduction, or change of human skills is due to the use of AI algorithms in decision-making.

Timeline

- Submissions due: June 30th, 2025
- Initial screening decisions: August 30th, 2025
- Round 1 decisions: October 30th, 2025
- Revisions due: January 15th, 2026
- Round 2 decisions: March 31st, 2026
- Second revisions (if needed): May 31st, 2026
- Anticipated publication date: September 1st, 2026

[1] https://www.oulu.fi/en/research/strengthening-human-capabilities-digital-era/hybrid-intelligence-human-ai-co-evolution-and-learning-multi-realities-hi
[2] https://www.hybrid-intelligence-centre.nl/
[3] https://www.tudelft.nl/ai/onderzoek-innovatie/onze-onderzoeksthemas/machine-learning/hybrid-intelligence
[4] https://hybridintelligence.eu/

Further information

Please include a cover letter with your submission explaining that you submit to the special issue about "The AI Attack on Human Decision-Making"

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