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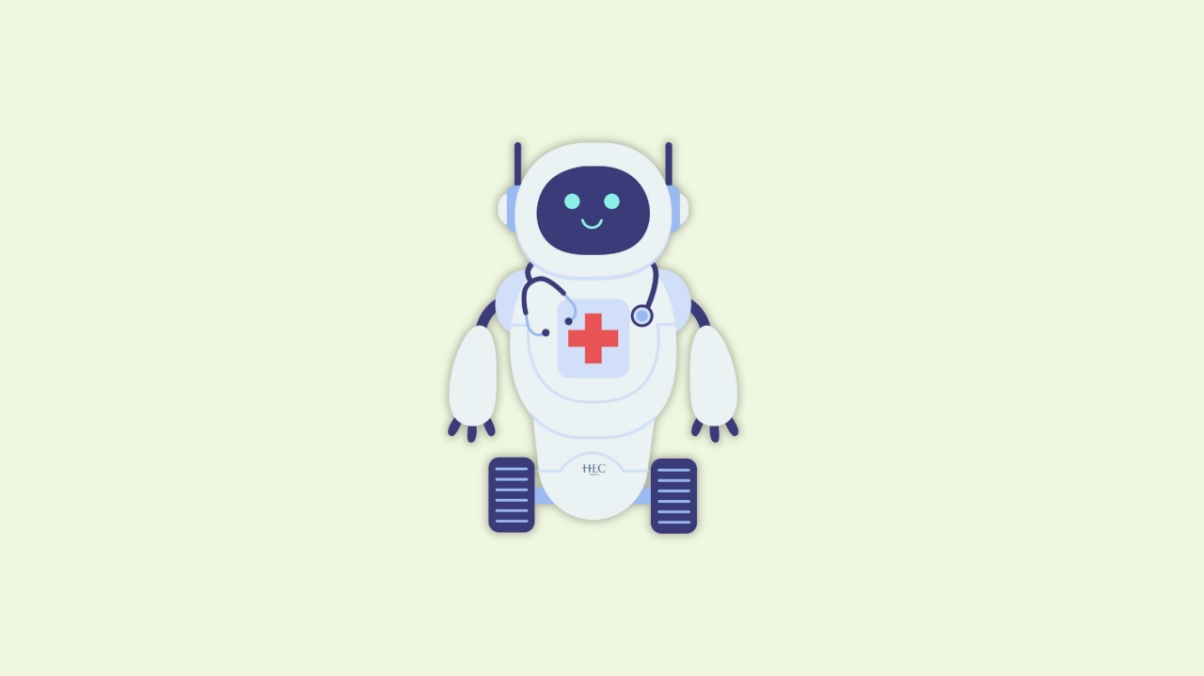

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When AI Meets Human Judgment: Optimizing Decision-Making To Save Lives and Boost Performance

HEC Paris

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What if AI tools could help hospital doctors reduce mortality rates by up to 20%, identifying high-risk patients before it’s too late? Artificial Intelligence (AI) has become an increasingly powerful tool in decision-making processes across various industries. To truly harness AI’s potential, leaders need to rely on robust models that reduce the risks of security vulnerabilities, manipulation, bias, lack of transparency and explainability. Yet, a blind spot remains. What if humans simply prefer their own judgment over algorithmic suggestions, relying on their expertise or contextual knowledge? Addressing psychological barriers and cultural resistance might be just as important as addressing safety risks for a trusted AI that drives real progress.

Research by HEC Paris Professor and Hi! PARIS Chair holder Julien Grand-Clément shows that algorithms designed to account for human deviations —by anticipating that recommendations might not be fully followed — **can significantly improve decision-making accross industries**. His work offers new ways to align AI recommendations with human behavior, leading to better outcomes.

In real-world scenarios, decision-makers - whether managers, doctors or policymakers - often ignore or only partially implemente AI recommendations. While algorithms can analyze vast amounts of data, humans often rely on context, intuition, and practicality. This gap between algorithmic advice and human behavior, known as partial adherence, can limit the effectiveness of AI systems.

Unlike traditional algorithms that assume full compliance, Julien Grand-Clement's research introduces adherence-aware algorithms (built on the Markov Decision Processes framework), which account for real-world human behavior. By analyzing patterns of when and why decision-makers deviate, **the model adjusts its recommendations to optimize outcomes, even if the advice is not perfectly followed**.

For instance, he applied this model to a common problem in operations management, deciding when to repair or replace a machine. **By considering varying levels of adherence (whether decision-makers followed the recommendations or not), the model significantly reduced performance losses compared to traditional approaches**. Aligning algorithmic designs with human behavior allows organizations to achieve better decision-making and higher performance.

This framework is all the more promising in industries where human judgment remains critical. In another related research Professor Grand-Clément explores how AI and adherence-aware decision rules can identify the patients whose health was most likely to take a turn for the worse, and then proactively send those patients to the ICU. Along with his research team he analyzed nearly 300,000 hospitalizations in Kaiser Permanente facilities in the U.S. The result? A proactive transfer policy based on this AI model could reduce ICU mortality rates by up to 20%.

In a word, this research proves that the best AI solutions are those that embrace human behavior rather than resist it. Organizations can learn from this research to design systems that don’t just rely on theoretical perfection but thrive in practical, human-centric environments and optimize performance.

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This article was published as part of our LinkedIn newsletter ‘HEC Research Shows’. Don't forget to sign up to receive regular academic insights to nurture your professional growth.

This article is based on two scientific papers:

Julien Grand-Clément and Jean Pauphilet, The Best Decisions Are Not the Best Advice: Making Adherence-Aware Recommendation, Management Science, June 10, 2024

Julien Grand-Clément, Carri W. Chan, Vineet Goyal, Gabriel Escobar, Robustness of Proactive Intensive Care Unit Transfer Policies, Operation Research, Volume 71, Issue 5, September-October 2023 Read also :

Saving Lives in Intensive Care Thanks to AI, Knowledge@HEC, January 29, 2025

And Knowledge@HEC Special Issue on AI Action Summit

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