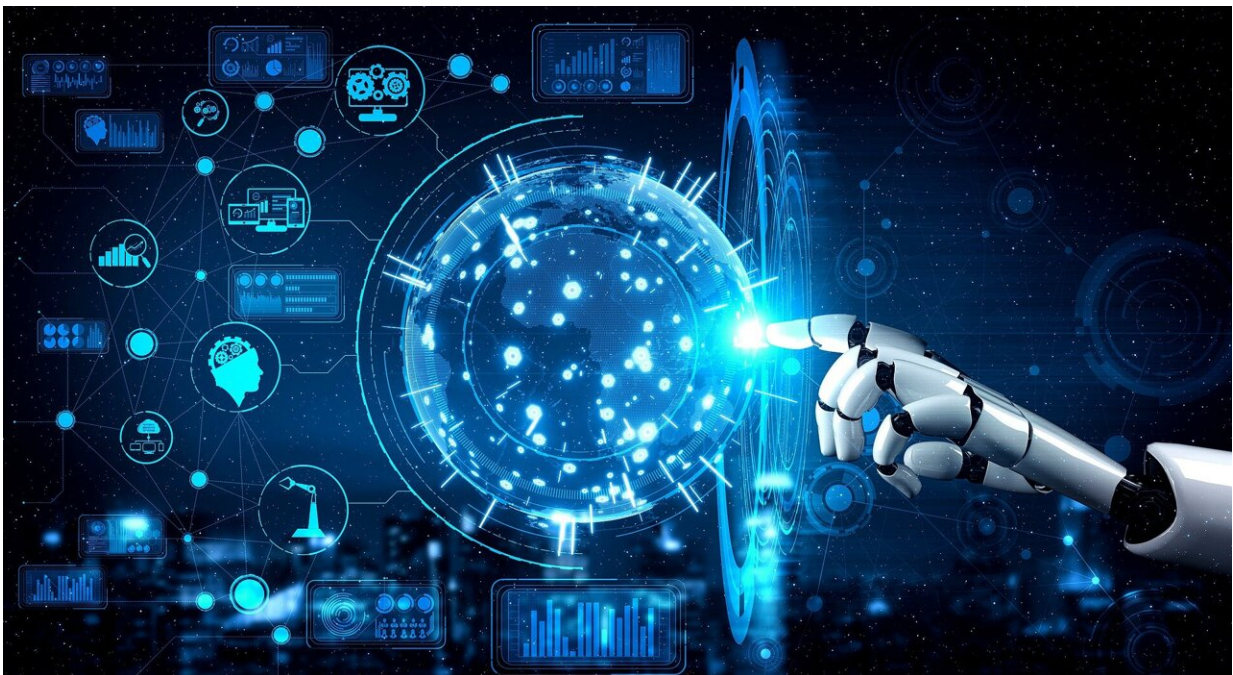


Researchers discuss how AI could change the nature of social science research

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In an article published June 15 in *Science*, leading researchers from the University of Waterloo, University of Toronto, Yale University and the University of Pennsylvania look at how AI (large language models or LLMs in particular) could change the nature of their work.

"What we wanted to explore in this article is how social science research

practices can be adapted, even reinvented, to harness the power of AI," said Igor Grossmann, professor of psychology at Waterloo.

Grossmann and colleagues note that large language models trained on vast amounts of text data are increasingly capable of simulating human-like responses and behaviors. This offers novel opportunities for testing theories and hypotheses about human behavior at great scale and speed.

Traditionally, social sciences rely on a range of methods, including questionnaires, behavioral tests, [observational studies](#), and experiments. A [common goal](#) in social science research is to obtain a generalized representation of characteristics of individuals, groups, cultures, and their dynamics. With the advent of advanced AI systems, the landscape of data collection in social sciences may shift.

"AI models can represent a vast array of human experiences and perspectives, possibly giving them a higher degree of freedom to generate diverse responses than conventional human participant methods, which can help to reduce generalizability concerns in research," said Grossmann.

"LLMs might supplant human participants for [data collection](#)," said UPenn psychology professor Philip Tetlock. "In fact, LLMs have already demonstrated their ability to generate realistic survey responses concerning consumer behavior. Large language models will revolutionize human-based forecasting in the next three years. It won't make sense for humans unassisted by AIs to venture probabilistic judgments in serious policy debates. I put an 90% chance on that. Of course, how humans react to all of that is another matter."

While opinions on the feasibility of this application of advanced AI systems vary, studies using simulated participants could be used to generate novel hypotheses that could then be confirmed in human

populations.

But the researchers warn of some of the possible pitfalls in this approach—including the fact that LLMs are often trained to exclude socio-cultural biases that exist for real-life humans. This means that sociologists using AI in this way couldn't study those biases.

Professor Dawn Parker, a co-author on the article from the University of Waterloo, notes that researchers will need to establish guidelines for the governance of LLMs in research.

"Pragmatic concerns with [data quality](#), fairness, and equity of access to the powerful AI systems will be substantial," Parker said. "So, we must ensure that social science LLMs, like all scientific models, are [open-source](#), meaning that their algorithms and ideally data are available to all to scrutinize, test, and modify. Only by maintaining transparency and replicability can we ensure that AI-assisted [social science research](#) truly contributes to our understanding of human experience."

More information: Igor Grossmann et al, AI and the transformation of social science research, *Science* (2023). [DOI: 10.1126/science.adi1778](https://doi.org/10.1126/science.adi1778)

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