DURING A CAMPUS EVENT, FACULTY PANELISTS (RIGHT TO LEFT) STEPHEN BACH, SURESH VENKATASUBRAMANIAN AND ELLIE PAVLICK DISCUSS ARTIFICIAL INTELLIGENCE WITH UNIVERSITY PROVOST FRANCIS J. DOYLE III.

Making Sense of AI

By Debra Bradley Ruder '80

Brown leaders say the University is well positioned to innovate and lead in the fast-changing world of artificial intelligence.

How do we harness the benefits of artificial intelligence (AI) without harming people? When can we trust AI-generated answers? What guardrails are needed to protect people's data and prevent systems from amplifying biases and inequities? How should Brown prepare students, faculty and staff to succeed in a data-driven society?

Brown is well positioned to address questions like these and to lead in the rapidly evolving realm of AI, thanks to the University's distinctive cross-field collaborative ethos, along with its size and breadth of expertise, according to Provost Francis J. Doyle III.

"Brown is an ideal place to pull together the disparate perspectives needed to make sense of, and propose innovations and safeguards to build trust in, this increasingly AI-enabled world," Doyle says. "We'll prioritize serving people and communities and then imagine how the technology can assist us."

Scholars across campus, from engineering, public health, medicine, the humanities and social sciences, as well as policy leaders and technologists, have been incorporating AI — technology that enables computer systems to simulate human capabilities such as reasoning and problem solving — into their work, with some exciting results, Doyle notes.

They are also pondering potential risks of AI around misuse, biases, privacy and the like, especially with the emergence of generative AI tools such as ChatGPT, which can produce text, images, code and more. To that end, Brown entities that include the Data Science Institute and Brown University Library are crafting guidelines for proper AI use.

In the classroom, Brown students can study such AI-related topics as pattern recognition and machine learning, fairness in automated decision making and a forthcoming collaborative humanities seminar on AI, language and literary art.

Research Pursuits

Among the innovative AI research projects underway is "bigAI at Brown," the Brown Integrative, General Artificial Intelligence project. Launched in 2021, the initiative brings together faculty and students to realize their collective vision of building "the world's first truly generally intelligent robot" with human-level problem solving and communication skills.

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In the biomedical realm, a team of Brown scientists developed a technique that uses machine learning to rapidly predict the multiple changes in shape that protein molecules make and holds promise for uncovering many more targets for new treatments. In addition, Associate Professor of Medical Science Hamish Fraser and his lab have been studying the accuracy and safety of AI-powered "symptom checker" apps and ChatGPT in helping patients diagnose and manage their conditions.

Malik Boykin, meanwhile, is an assistant professor of cognitive and psychological sciences whose lab worked with a machine learning engineer to build a software platform to measure people's preferences around AI decision support systems. Their goal is to increase marginalized groups' participation and perspectives in the development of AI algorithms.

A cross-discipline project led by Michael Frank, a professor of psychology and brain science, and Ellie Pavlick, an assistant professor of computer science and linguistics, revealed that large language models like ChatGPT can adopt some of the same strategies as the human brain to accomplish a task.

"To see the ChatGPT-like model … specializing in this surprisingly brain-like manner is really exciting," Pavlick says.

Cautious Optimism

Still, Pavlick and others stress there is much more to discover about AI, which has been evolving since at least the 1950s and now permeates our daily lives.

"I always like to emphasize how little we understand the technology right now," Pavlick said during one of several campus conversations the Office of the Provost convened in 2023-24 on the impact of AI. "The science has not caught up to the technology."

Suresh Venkatasubramanian, a professor of data science and computer science who helped develop the White House's Blueprint for an AI Bill of Rights, believes humans have the ability to build AI technology that helps society flourish.

"AI is not magic," he said during the first provost's event. "Its progress and direction are not inevitable. And we have the power and the skill to design the world we want to live in. We don't have to sit helplessly by."

To that end, the Brown community can serve as leaders in analyzing AI's promises and shortcomings and devising solutions, notes Doyle. "It's an exciting time, and I think we have a critical role to play."

HIGHLIGHTING BROWN'S DISTINCTION

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