Unlocking the Language of Genomes and Climates: Anima Anandkumar on Using Generative AI to Tackle Global Challenges

Top NVIDIA researcher speaks on generative AI providing opportunities to get ahead of the curve on challenges like drug development and extreme weather.

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Generative AI-based models can not only learn and understand natural languages — they can learn the very language of nature itself, presenting new possibilities for scientific research.

Anima Anandkumar, Bren Professor at Caltech and senior director of AI research at NVIDIA, was recently invited to speak at the President's Council of Advisors on Science and Technology .

At the talk, Anandkumar said that generative AI was described as "an inflection point in our lives," with discussions swirling around how to "harness it to benefit society and humanity through scientific applications."

On the latest episode of NVIDIA's AI Podcast , host Noah Kravitz spoke with Anandkumar on generative AI's potential to make splashes in the scientific community.

It can, for example, be fed DNA, RNA, viral and bacterial data to craft a model that understands the language of genomes. That model can help predict dangerous coronavirus variants to accelerate drug and vaccine research.

Generative AI can also predict extreme weather events like hurricanes or heat waves. Even with an AI boost, trying to predict natural events is challenging because of the sheer number of variables and unknowns.

"Those are the aspects we're working on at NVIDIA and Caltech, in collaboration with many other organizations, to say, 'How do we capture the multitude of scales present in the natural world?'" she said. "With the limited data we have, can we hope to extrapolate to finer scales? Can we hope to embed the right constraints and come up with physically valid predictions that make a big impact?"

Anandkumar adds that to ensure AI models are responsibly and safely used, existing laws must be strengthened to prevent dangerous downstream applications.

She also talks about the AI boom, which is transforming the role of humans across industries, and problems yet to be solved.

"This is the research advice I give to everyone: the most important thing is the question, not the answer," she said.

Jules Anh Tuan Nguyen Explains How AI Lets Amputee Control Prosthetic Hand, Video Games A postdoctoral researcher at the University of Minnesota discusses his efforts to allow amputees to control their prosthetic limb — right down to the finger motions — with their minds.

Overjet's Ai Wardah Inam on Bringing AI to Dentistry Overjet, a member of NVIDIA Inception , is moving fast to bring AI to dentists' offices. Dr. Wardah Inam, CEO of the company, discusses using AI to improve patient care.

Immunai CTO and Co-Founder Luis Voloch on Using Deep Learning to Develop New Drugs Luis Voloch talks about tackling the challenges of the immune system with a machine learning and data science mindset.

The AI Podcast is now available through Amazon Music .

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