Generative AI (GenAI) for Research and Science

May 1st, 2024
3:00-4:30 PM ET

Moderator

Elizabeth Bruce, Microsoft
Roundtable Format

• Welcome & CRA-Industry Overview
• Introduction
• Moderated Q&A
• Audience Q&A
• Logistics:
  • Please type questions in the Zoom Q&A
  • Note that this event is being recorded and posted on the website
CRA-Industry Overview

Mission: Convene industry partners on computing research topics and connect them with constituents for mutual benefits and improved societal outcomes.

- **Who**
  - Companies of all sizes and industries engaged in computing research
- **What**
  - Convene members to share perspectives and form consensus on emerging topics in computing research
  - Coordinate with other CRA stakeholders
- **How**
  - Interview stakeholders
  - Convene roundtables & workshops
  - Produce white papers and reports
A brief history of AI

1943 – 1950s
**Artificial Intelligence**
the field of computer science that seeks to create intelligent machines that can replicate or exceed human intelligence.

1959-1997
**Machine Learning**
subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions.

2011-2017
**Deep Learning**
a machine learning technique in which layers of neural networks are used to process data and make decisions.

2020–Present
**Generative AI**
create new written, visual, and auditory content given prompts or existing data.
300 million full-time jobs worldwide could be impacted by generative AI systems, with administrative and legal roles being some of the most at risk.

In the U.S., 80% of the workforce could have at least 10% of their work tasks impacted by generative AI, as predicted by researchers.

19% of workers worldwide could see at least 50% of their tasks impacted by generative AI.

Generative AI could contribute to adding as much as $4.4 trillion worth of value to the global economy, indicating potential new opportunities and wealth creation that may affect people’s livelihoods and well-being.

However, generative AI could automate 60 to 70% of a typical worker’s day, altering how a significant portion of people spend their working hours.

More than 70% of survey respondents said that they have already implemented or are planning to implement generative AI within 3 years.

By 2030, generative AI is projected to necessitate around 12 million job switches and potentially automating 30% of the hours worked in the U.S. economy.
Novel and Accelerated Research with Generative AI
>25% of researchers use AI to help them write manuscripts

>15% of researchers use AI to help them write grant proposals

Goals for Today’s Roundtable

• Discuss examples of new frontiers of GenAI in both academia and industry

• Consider the impact on scientific discovery and the R&D community

• Discuss how to ensure responsible use and development
Panelists

Travis Johnson
Indiana BioScience Research institute

Jing Liu
University of Michigan

Vijay Murugesan
Pacific Northwest National Lab (PNNL)

Neil Thompson
MIT FutureTech
Audience Q&A

Please add your questions to the Zoom Q&A
Thank you for attending!

Please fill out our post roundtable survey!
Questions

- How are your institutions enabling researchers to leverage GenAI?
- Accessing compute continues to be a bottleneck - how are you experiencing this in your work or at your institution?
- What are other key bottlenecks?
- How should we be thinking about addressing responsible AI for researchers and the research community?
- Thoughts on what this means for the next generation of researchers? And what we should be doing now to prepare them?