

Overview: NCI and Artificial Intelligence (AI)

*Warren A. Kibbe, Ph.D., FACMI
NCI Deputy Director for Data Science and Strategy*

168th Meeting of the National Cancer Advisory Board

Agenda

1. Introduction
2. Overview of NCI and AI
3. NCI AI Working Group
4. CCR Artificial Intelligence Resource (AIR)
5. Discussion

Today's Session: Topics and Speakers



Overview of NCI and AI

Warren Kibbe, PhD
Deputy Director, Data
Science and Strategy



NCI AI Working Group

Juli Klemm, PhD
Program Director in the
Center for Strategic
Scientific Initiatives

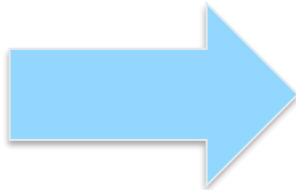


CCR AI Resource (AIR)

Ismail Baris Turkbey, MD
Senior Clinician, Molecular
Imaging Branch

About My Role

- NCI's first Deputy Director for Data Science and Strategy
- Started June 30, 2024
- What does this role entail?



- Advise NCI director and other senior leaders on the **utilization, stewardship, and sharing of data**
- Provide **strategic direction to CBIT** and oversee all aspects of data science for NCI
- Lead NCI's **implementation of the NIH Strategic Plan for Data Science**
- Provide strategic counsel for **key NCI data science initiatives**
- Serve as **senior data science liaison** on NIH and other government committees

My (Recent) Background

2013 - 2017
Director, Center
for Biomedical
Informatics and
Information
Technology
(CBIIT), **NCI**

2016 - 2017
Acting Deputy
Director, **NCI**

2017 - 2024
**Duke University School
of Medicine**

- Chief, Translational
Biomedical Informatics
- Vice Chair,
Department of
Biostatistics and
Bioinformatics,
Duke Cancer Institute
- Chief Data Officer

2024 - Present
Deputy Director,
Data Science
and Strategy,
NCI

Rise of Artificial Intelligence

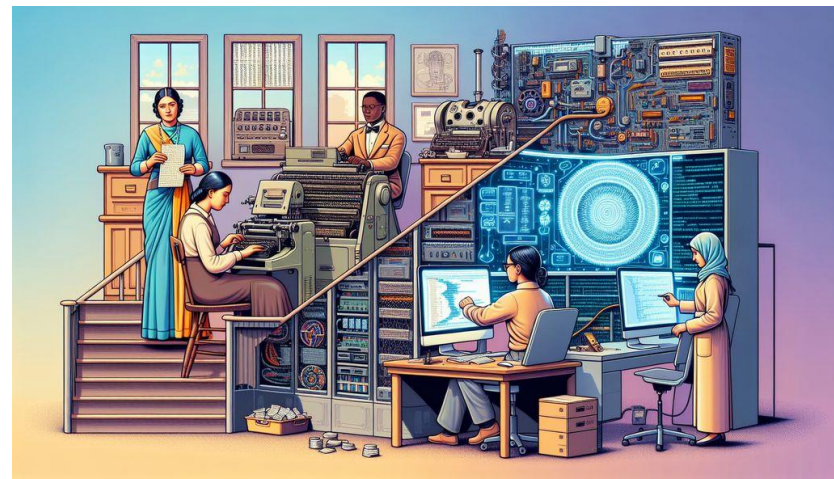


Image generated by AI (DALL·E3)

Key AI milestones throughout history



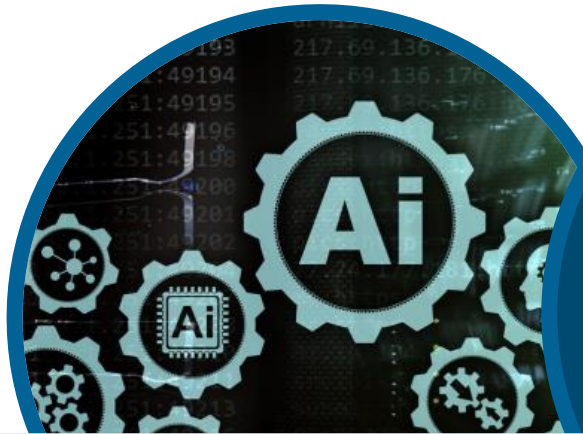
Pre-digital computers;
conceptual / **math**
models of how people
think

Beginnings of **modern**
AI; more math models
(not yet computing
power)

Researchers at Google
introduce **BERT models**
(Bidirectional Encoder
Representations from
Transformers)

Launch of ChatGPT (and
other **large language**
models); huge opportunity
to embed AI in cancer
research

Principles for thinking about AI



AI
READY



TRUSTWORTHY
& ETHICAL



DIVERSE
WORKFORCE

Leveraging the Investment in AI – Opportunities

- **Integrate generalist AI models** and tools to benefit cancer research and care
- **Coordinate** AI research activities, **integrate training, workforce development, adoption of AI** into cancer research



Image from beyond prompting

Thank You



**NATIONAL
CANCER
INSTITUTE**

cancer.gov

cancer.gov/espanol

Questions for NCAB members

How do we make sure we aren't **leaving researchers behind**?

What are the opportunities to **integrate data science and AI** in basic research, lab research, clinical research to do those things more effectively?

What is the role of data science in your **scientific programs**?

How do we make sure we aren't **leaving populations in the U.S. behind** as we think about access to data?

How are you thinking about integrating AI into **training programs**?

How do we use data to **validate models and knowledge** we extract from basic science systems or the clinic?