Artificial Intelligence Primer for CHCANYs Members
March 2024

The Promise of Artificial Intelligence

Artificial intelligence ("AI") promises to provide significant benefits to the health care system by improving products and services, refining data analytics, reducing manual tasks, and increasing overall performance and efficiency. However, there are many misconceptions about the nature of AI, its risks, and the current legal landscape governing AI.

Artificial intelligence combines complex computer processing systems with large data sets to produce results that mimic human logic and learning to make recommendations and draw conclusions as well as predict future behavior. "AI is not a single piece of hardware or software but rather a constellation of technologies that gives a computer system the ability to solve problems and to perform tasks that would otherwise require human intelligence."[1]

Types of AI

AI terms are often used interchangeably, but there are many different subsets of AI:

Machine learning. A type of AI that uses "supervised," "unsupervised," or "reinforcement" techniques to train algorithms to recognize patterns in loose and unstructured data. Humans might otherwise miss these patterns but can use machine learning to label and organize data and improve predictions by confirming the machine's accurate results.

Deep learning. A type of machine learning that involves passing data through multiple computer nodes that mimic the neural network of the human brain. As the network processes training data, connections between the parts of the network adjust, which enables it to interpret future data more accurately.

Foundation models. AI systems trained on very large sets of unlabeled data that can be used for different tasks, with minimal fine-tuning. Foundation models employ computer neural networks to "self-learn" and identify unique data patterns. This helps data scientists minimize the task of pre-labeling numerous data examples for particular use cases. Foundation models are heavily used in generative AI where users seek information about a variety of tasks.

Generative AI ("GenAI"). A type of deep learning model that takes raw data and "learns" to generate statistically probable outputs when prompted. GenAI trains a computer model to recognize patterns within foundation or large language models ("LLMs"). Based on human or machine inputs, the model then statistically produces new content such as text, images, or videos. GenAI tools include OpenAI (GPT-4), Google (Gemini), and Adobe (Firefly), as well as chatbots that can communicate in real time with users to provide textual responses to their questions or concerns.

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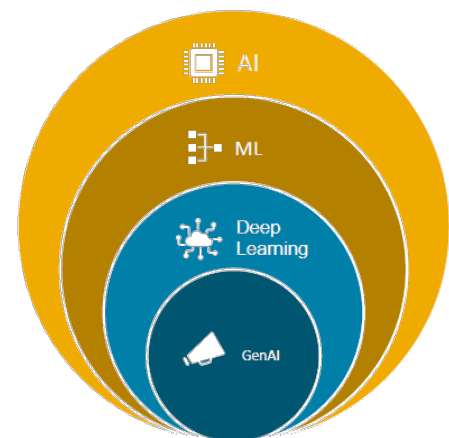
[1] National Security Commission on Artificial Intelligence (NSCAI), Interim Report 8 (Nov. 2019), https://www.nscai.gov/wp-content/uploads/2021/01/NSCAI-Interim-Report-for-Congress_201911.pdf.

Natural language processing ("NLP"). A type of AI focused on teaching computers to interpret text and spoken words in much the same way as humans do. It combines deep learning models with computational linguistics to enable computers to process human language (in the form of voice or text data) and "understand" its full meaning, including a speaker's intent and sentiment. NLP allows computers to follow voice commands or answer spoken questions and convert speech into text. NLP is used in speech-to-text dictation software and customer service chatbots.

AI Risks

There are several known risks with AI, as outlined below[2]:

Bias or Discrimination	Prejudices or unconscious biases in training datasets may inform AI model's outputs that could lead to discriminatory access or outcomes.	**Liability**	Where liability falls (e.g., developer, organization, provider) is unsettled.
Explainability *Ability to explain how an AI output was generated from inputs.*	Newer models (e.g., foundational models) have low degrees of explainability due to large size and significant complexity.	**Coding & Payment**	Nascent, but growing. Until recently, there was no common terminology to describe health care services or procedures delivered via AI, and no standardized way to pay for those tools and services.
Transparency *Ability to access information about an AI model's training data and model details*	Difficult for increasingly complex and evolving models to meet high standards of transparency, which are important for end-users in determining whether the model will work as expected.	**Privacy & Security**	AI development and training rely on access to large data sets; few, if any, technical controls are available to help end users specify how systems are trains and/or how secure data entered into AI systems is and how it's used/reused.
"Hallucination"/ Confabulation	Generative AI models produce outputs that are either nonsensical or appear credible but are factually inaccurate.	**Regulation & Oversight**	Significant regulatory and oversight gaps exist. Multiple parties (federal, state, organizational) will need to coordinate to develop regulations and oversight processes that mitigate the risks identified on this slide.

AI Policy Landscape

The policy, legal and regulatory landscape for AI is nascent and rapidly evolving. Below we outline some key activities to date:

White House: Issued an AI Executive Order and Blueprint for AI Bill of Rights.

Congress: Formed a Bipartisan Taks Force on AI and is in the early stages of developing national AI legislation, though its unlikely that any significant AI legislation passes this year.

Office of the National Coordinator (ONC): Finalized transparency and risk management requirements for certified health IT (HTI-1 Rule).

FDA: Issued non-binding guidance on AI-driven clinical decision support tools that should be regulated as medical devices.

CMS: Issued FAQs for Medicare Advantage plans regarding use of clinical algorithms for medical necessity determinations.

HHS Office of Civil Rights: Proposed Non-Discrimination Rule under 1557 of the Affordable Care Act.

Department of Justice: Pending litigation over alleged use of AI to deny Medicare Advantage claims.

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[2] Adapted from American Medical Association. Future of Health – AI. February 2024.