Artificial Intelligence in Health Information Management

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Agenda

- Artificial Intelligence 101
- Current uses of AI in Healthcare
- Miracle or Menace?
- Implications for HIM
- Questions?

Artificial Intelligence (noun)

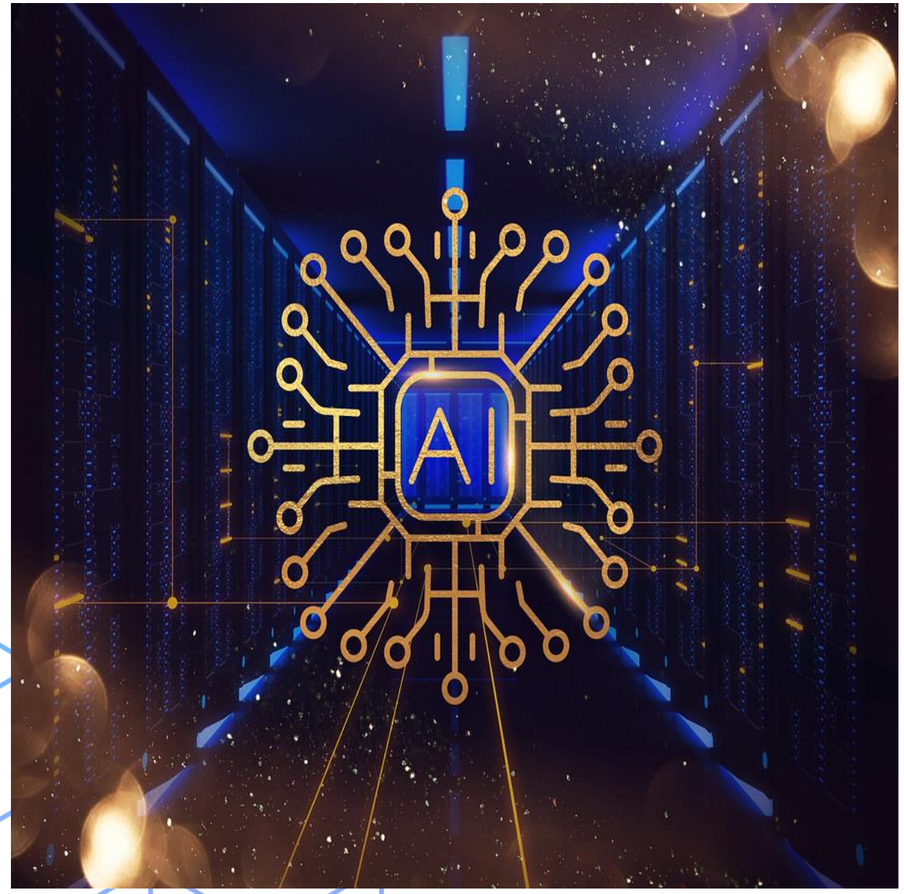
A branch of computer science dealing with the simulation of intelligent behavior in computers.

The capability of a machine to imitate intelligent human behavior.
--Merriam-Webster Dictionary

The theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.
--Oxford Languages

The capability of computers or programs to operate in ways believed to mimic human thought processes, such as reasoning and learning.

The branch of computer science dealing with this.
--Collins Dictionary



What is AI?

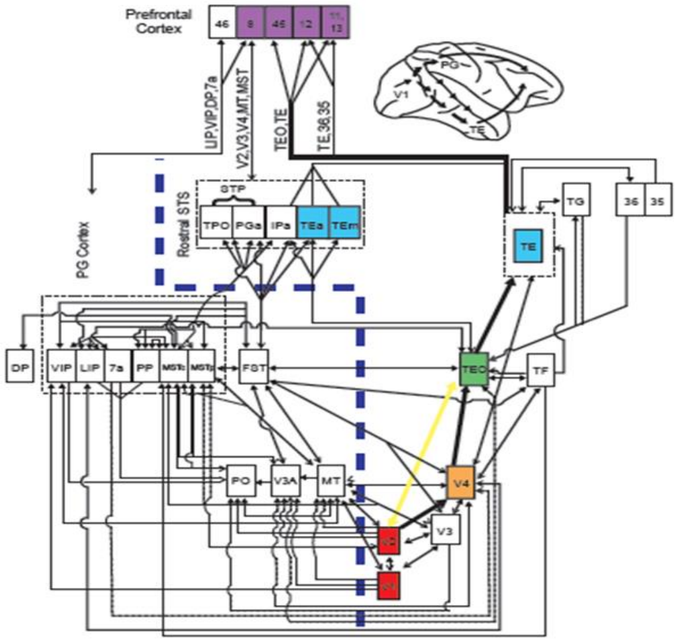
Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to perform tasks that typically require human intelligence. It is a broad field that encompasses various subfields, including machine learning, natural language processing, computer vision, robotics, and expert systems.

AI systems are designed to perceive their environment, reason about the information they receive, and take actions or make decisions to achieve specific goals. These systems can analyze large amounts of data, identify patterns, learn from experience, and adapt their behavior over time.

--ChatGPT, May 28, 2023

The Building Blocks of AI

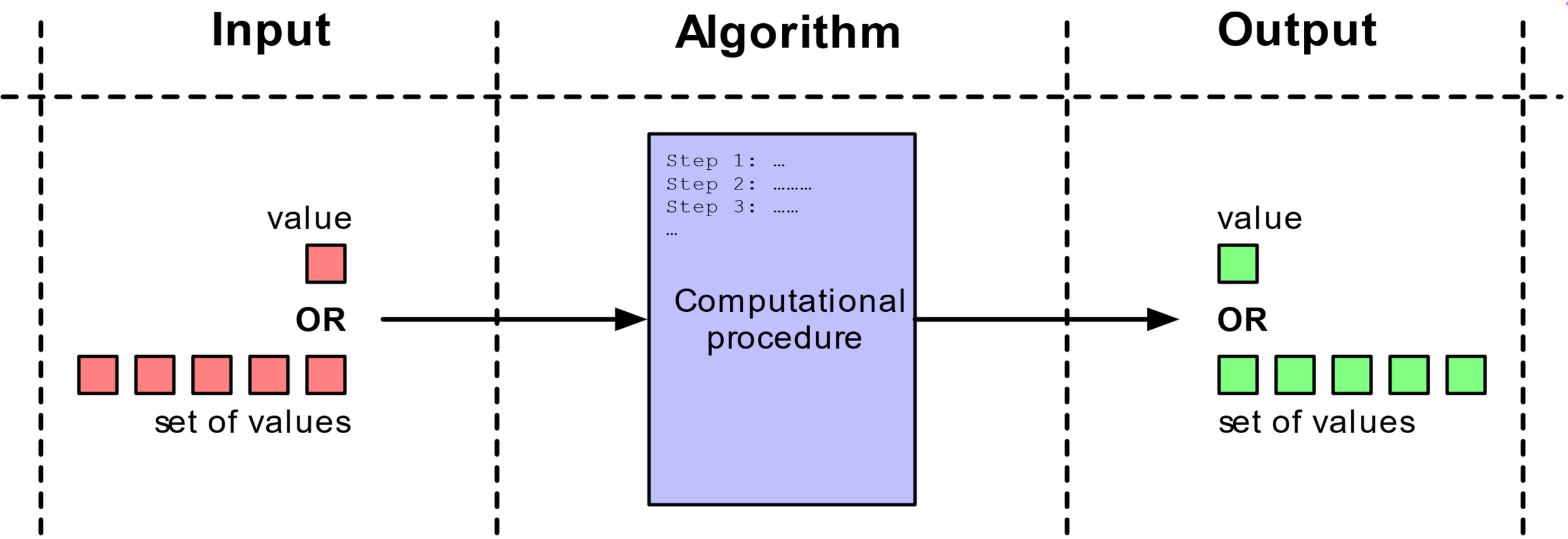
120 zettabytes of data generated in 2023



Really Smart People do this part

Frontier Supercomputer performs 6.88 exaflops per second

The Building Blocks of AI



The Building Blocks of AI

An algorithm is a defined set of steps to accomplish a task

Common algorithms in healthcare

- Support Vector Machines
- Artificial Neural Networks
- Logistic Regression
- Random Forest
- Discriminant Analysis
- Naïve Bayes

The Building Blocks of AI

Machine Learning

Supervised

Goal = make predictions based on patterns that correlate inputs and outcomes

Input = labeled, structured data set

Output = known, labelled outcome

Unsupervised

Goal = make predictions based on the structure of the input

Input = unlabeled, structured data set

Output = pattern recognition within the data set

Semi-Supervised

Goal = predictions trained in labeled data increases accuracy in unlabeled data

Input = labeled and unlabeled data sets

Output = correlated labelled outcome and pattern recognition within the data set

What are we building?

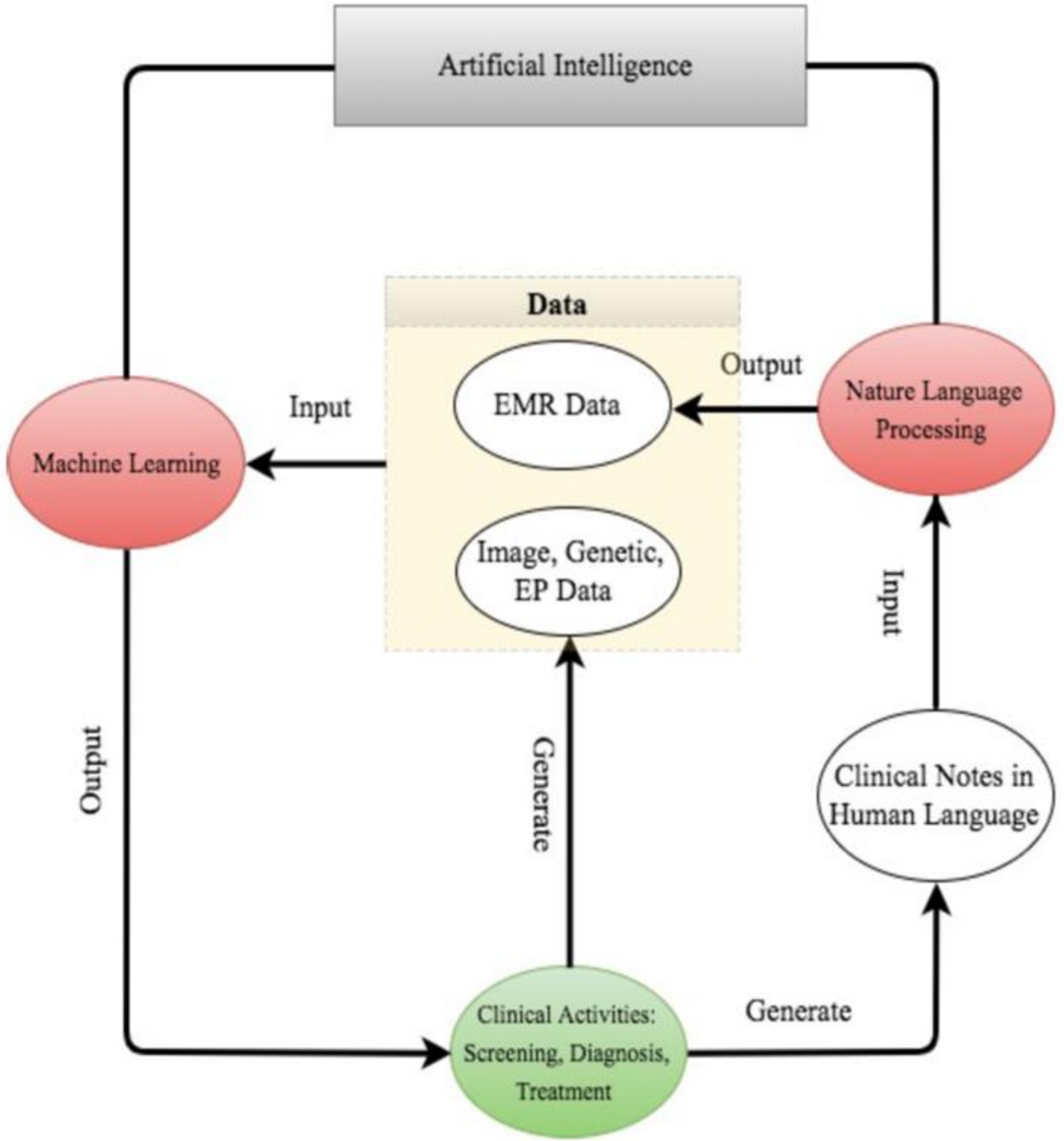
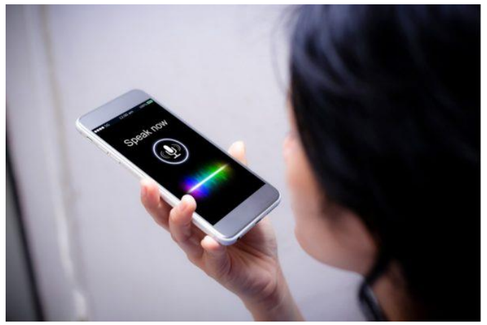


Figure 2 The road map from clinical data generation to natural language processing data enrichment, to machine learning data analysis, to clinical decision making. EMR, electronic medical record; EP, electrophysiological.

Current Uses in Healthcare

Clinical Applications
--Clinical decision support at point of care
--Diagnostic analytics
--Predictive analytics

Patient Engagement
--Chatbots
--Wearable data integration
--On-line appointment booking



Operations
--Patient volume analytics
--EHR integrated NLP, voice technologies
--Identification of fraud, waste and abuse

Miracle or Menace?

Benefits

Increased diagnostic speed and accuracy
Realtime data and recommendations
Connecting disparate healthcare data
Reducing medication errors
Chronic condition management
Better patient outcomes
Decreased costs

Challenges

Data Quality
Privacy and Security
Data exchange
Ethics and Transparency
Patient trepidation
Current regulatory environment

Implications for HIM

Volume of Information/data
Complexity of systems
Changes in skill sets
Regulatory compliance

THANK YOU!

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Suggested Resources

Blueprint for an AI Bill of Rights
https://www.whitehouse.gov/ostp/ai-bill-of-rights/

ChatGPT
https://openai.com/blog/chatgpt

Coalition for Health AI
https://www.coalitionforhealthai.org/

What is Artificial Intelligence?
https://www.ibm.com/topics/artificial-intelligence

Library of Congress Research Guides: Artificial Intelligence and the Healthcare Industry
https://guides.loc.gov/artificial-intelligence-healthcare/introduction

NIST AI Risk Management Framework
https://www.nist.gov/itl/ai-risk-management-framework/ai-rmf-development

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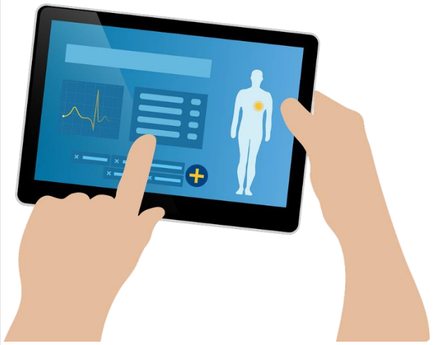
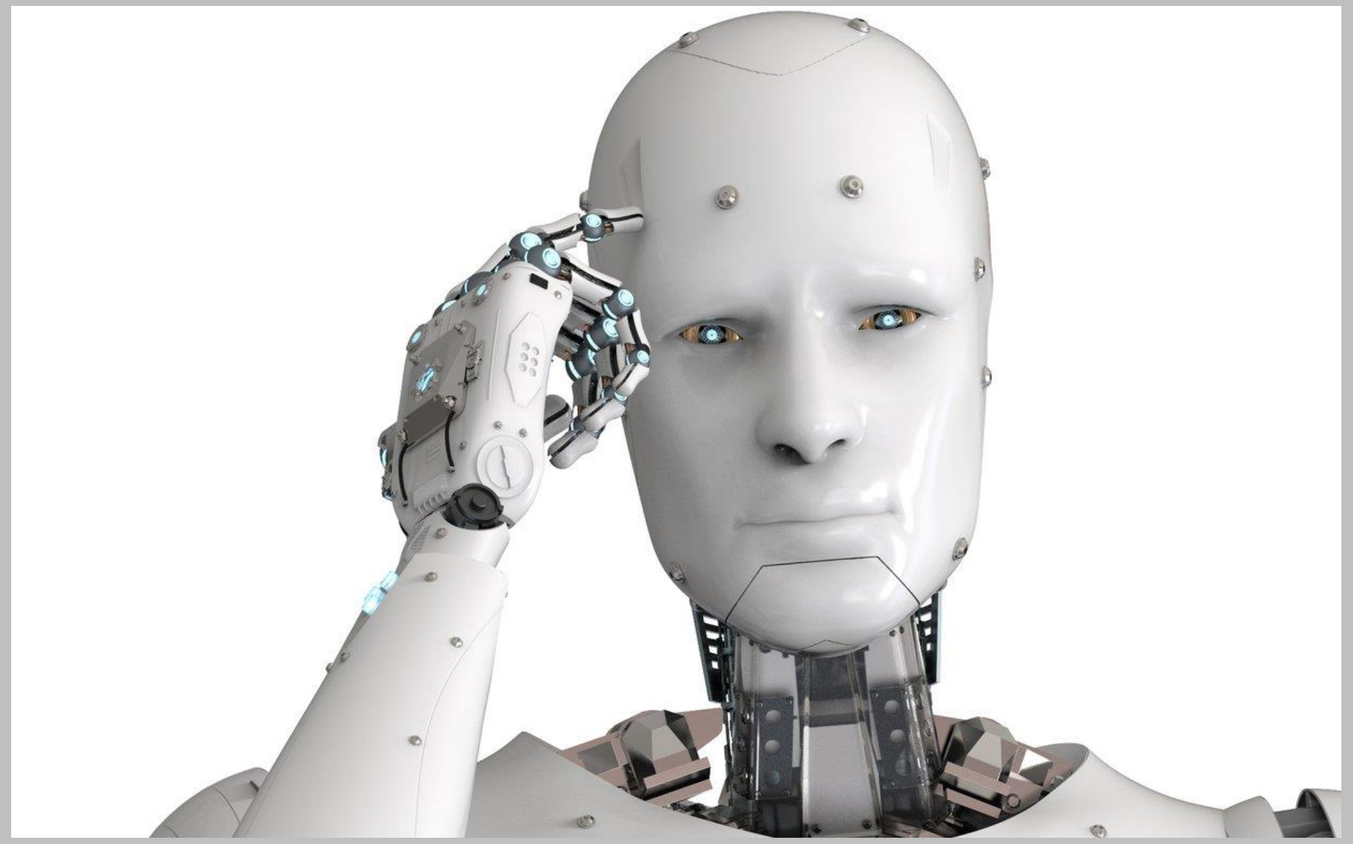
The Role of Artificial Intelligence in Health Information Management



Introduction to Health Information Management

AI can support healthcare professionals in managing patient data, improving diagnoses, and providing personalized treatments. Explore its potential!

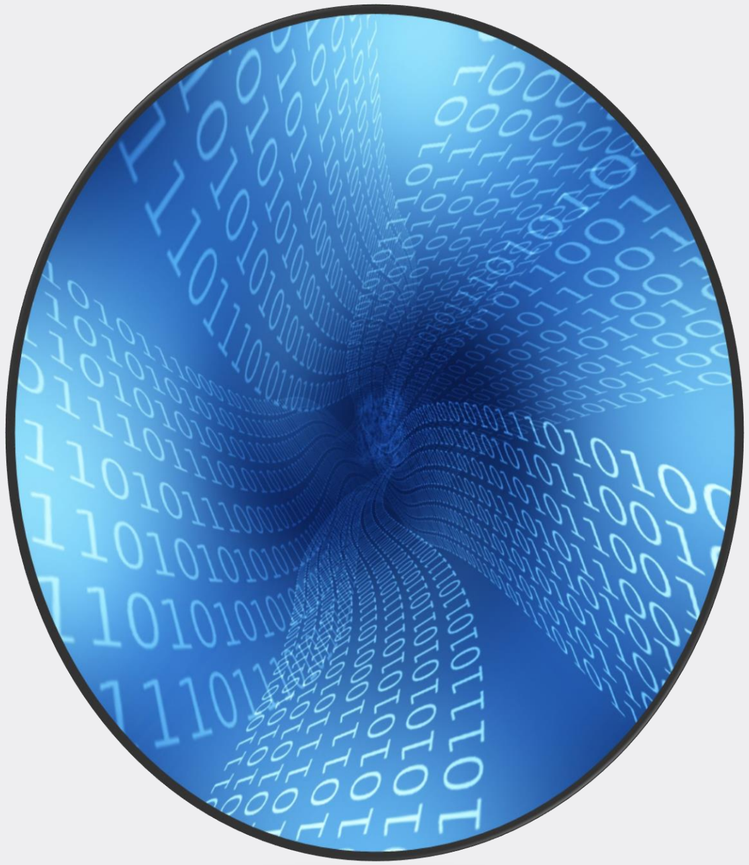


What is Artificial Intelligence?

AI refers to machines that can perform tasks that would normally require human intelligence. In healthcare, AI can help with diagnostics, patient monitoring, and data analysis.

Importance of AI in Health Information Management

AI can analyze medical data, assist in diagnosis, and predict outcomes. It enables efficient patient care, reduces errors, and personalizes treatment.



Benefits of AI in Health Information Management

AI in HIM can improve diagnosis accuracy, enhance patient care, reduce errors, and streamline administrative tasks. It's the future of healthcare!

Applications of AI in Health Information Management

AI can help with diagnosis and treatment recommendations.

AI can assist in medical research and drug development.

AI can improve patient care and outcomes through personalized medicine.

Challenges and Risks of AI in Health Information Management

AI in health information management brings risks such as data breaches, errors, and privacy concerns. Implementing safeguards and ensuring transparency is crucial.

Conclusion and Future of AI in Health Information Management.

AI has the potential to revolutionize HIM by streamlining data management, reducing errors, and improving patient outcomes. The future is bright.