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Artificial Intelligence

The Good, The Bad, and Everything In-Between

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Disclosure to Learners

No planner, reviewer, faculty, or staff for this activity has any relevant financial relationships with ineligible companies.
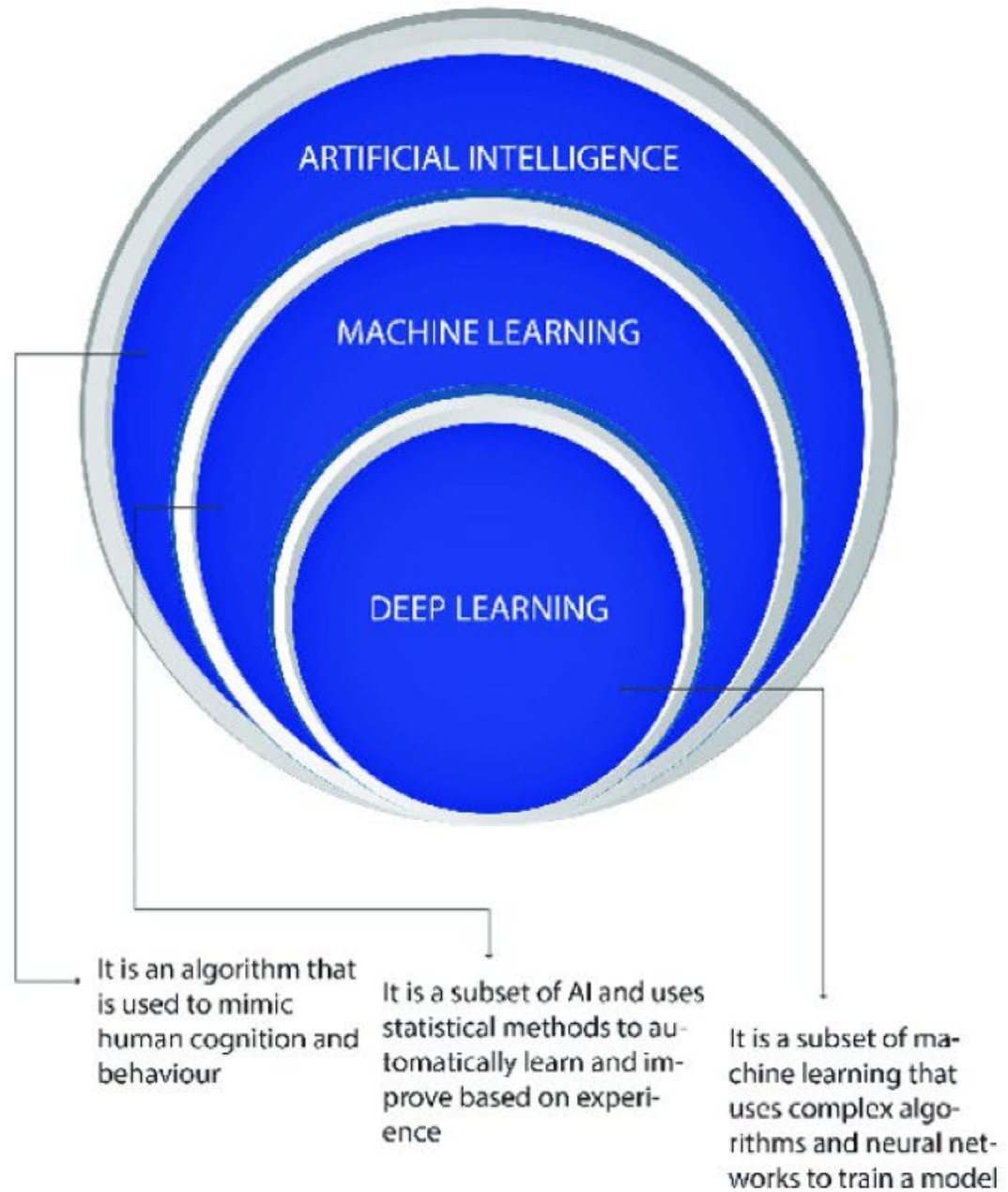
Objectives

- Examine the potential risks and liabilities associated with AI implementation in healthcare.

- Apply the legal and regulatory frameworks governing the use of AI in healthcare.

- Evaluate the ethical considerations and challenges arising from AI utilization in patient care.

- Manage strategies to mitigate risks and liabilities related to AI in healthcare.

- Create protocols and policies to ensure the responsible and ethical use of AI technologies.

- Utilize training from professional agencies to understand how the AI tools work, how they should be used, and not used, and their limitations to minimize the impacts of AI bias.

What is Artificial Intelligence (AI)?

AI and related aspects of AI

ARTIFICIAL INTELLIGENCE

MACHINE LEARNING

DEEP LEARNING

It is an algorithm that is used to mimic human cognition and behaviour

It is a subset of AI and uses statistical methods to automatically learn and improve based on experience

It is a subset of machine learning that uses complex algorithms and neural networks to train a model

Impact of AI in Healthcare (Pros)

- Improved Diagnosis

- Precision Medicine

- Enhanced Patient Care

- Efficient Healthcare Operations

- Early Disease Detection

- Medical Image Analysis

- Drug Discovery and Development

- Data Security and Privacy

Impact of AI on Healthcare Professional Liability

Reduction in Medical Malpractice Claims Due to:

- Enhanced treatment planning

- Real-time monitoring

- Predictive analytics

- Improved documentation

- Assistance in decision-making

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Potential Downsides Use of AI in Healthcare

- Data quality and privacy

- Algorithm bias and transparency

- Integration with existing systems

- Ethical considerations

- Regulatory and legal challenges

Impact of AI in Healthcare (Cons): Hallucinations

- AI hallucinations occurs where an AI model fabricates information that has no factual standing

  - ➤ Avianca Airlines

  - ➤ CNET identified falsities in AI generated stories

  - ➤ AI provide fabricated citations and PubMed IDs information on osteoporosis

- In 2023 Google CEO Sundar Pichai stated, "no one in the field has yet solved the hallucination problems."

Artificial hallucinations in ChatGPT: implications in scientific writing. Alkaissi H, McFarlane SI. *Cureus.* 2023;15:0.
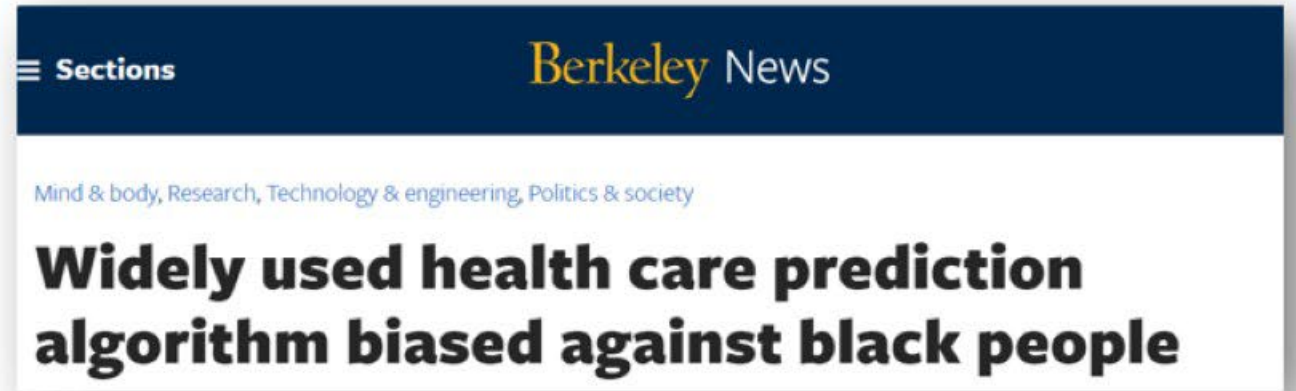
Catherine Thorbecke, *Plagued with Errors: A News Outlet's Decision to Write Stories with AI Backfires,* CNN (Jan. 11, 2024), https://www.cnn.com/2023/01/25/tech/cnet-ai-tool-news-stories/index.html

Ramishah Maruf, *Lawyer Apologizes for Fake Court Citations from ChatGPT,* CNN (Jan. 11, 2024), https://www.cnn.com/2023/05/27/business/chat-gpt-avianca-mata-lawyers/index.html

Scott Pelley, *Is Artificial Intelligence Advancing too Quickly? What AI Leaders at Google Say,* CBS News (Jan. 11, 2024), https://www.cbsnews.com/news/google-artificial-intelligence-future-60-minutes-transcript-2023-04-16/

Impact of AI in Healthcare (Cons): Bias

- Racial bias identified care management AI software

- AI allowed healthier whites into care management program ahead of less healthy blacks

- Algorithm component focused on health care costs

- Uncovering algorithmic bias can be difficult

≡ Sections

Berkeley News

Mind & body, Research, Technology & engineering, Politics & society

Widely used health care prediction algorithm biased against black people

Kara Manke, *Widely used Health Care Prediction Algorithm Biased Against Black People*, Berkely News (Jan. 11, 2024)
https://news.berkeley.edu/2019/10/24/widely-used-health-care-prediction-algorithm-biased-against-black-people

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Impact of AI in Healthcare (Cons): Security

- Some AI models are created by private entities

- Not considered covered entities as defined by HIPAA

- Security concerns

  - Algorithms require access to data

  - Data breaches

Blake Murdoch, *Privacy and Artificial Intelligence: Challenges for Protecting Health Information in a New Era*, BMC Medical Ethics (Jan. 11, 2024) https://bmcmedethics.biomedcentral.com/articles/10.1186/s12910-021-00687-3

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Impact of AI in Healthcare (Cons): Privacy

- 2016 Google's DeepMind program partnered with Royal Free Hospital

- Developed AI model to assist in automatic detection of possible acute kidney injury

- 1.6 millions records shared without consent
  - Argued direct care v. pilot testing

Google DeepMind 1.6m patient record deal 'inappropriate'

National data guardian says patient data transfer from Royal Free to Google subsidiary has 'inappropriate legal basis' as information not used for direct care

Alex Hern, *Google DeepMind 1.6m Patient Record Deal Inappropriate*, The Guardian (Jan. 11, 2024) https://www.theguardian.com/technology/2017/may/16/google-deepmind-16m-patient-record-deal-inappropriate-data-guardian-royal-free

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Case Study: A Physician and AI Arrive at Different Solutions

In this case study, we explore a scenario where a physician and an AI system arrive at different solutions for a medical diagnosis. This highlights the unique capabilities and perspectives of both human experts and artificial intelligence in the healthcare field.

Background:

The case involves a patient presenting with a complex set of symptoms, including fatigue, weight loss, and joint pain. The physician and AI system are both consulted to provide a diagnosis and treatment plan.

Physician's Approach:

The physician, relying on years of medical training and experience, performs a thorough physical examination, reviews the patient's medical history, and orders relevant diagnostic tests. Based on their clinical expertise, the physician hypothesizes that the patient may have an autoimmune disorder such as rheumatoid arthritis.

AI System's Approach:

The AI system, equipped with vast amounts of medical data and advanced algorithms, analyzes the patient's symptoms, medical records, and test results. It applies machine learning techniques to identify patterns and correlations. The AI system suggests that the patient's symptoms align more closely with a rare genetic disorder called familial Mediterranean fever (FMF).

Case Study: A Physician and AI Arrive at Different Solutions

Different Solutions:
The physician's diagnosis of rheumatoid arthritis is based on their clinical judgment and experience, considering common conditions. However, the AI system's analysis of extensive medical data and its ability to detect rare patterns leads it to propose FMF as the diagnosis.

Collaborative Discussion:
Recognizing the disparity in diagnoses, the physician engages in a collaborative discussion with the AI system. They review the evidence, discuss the pros and cons of each diagnosis, and consider additional factors such as the patient's family history and genetic predisposition. Together, they aim to reach a consensus on the most accurate diagnosis.

Resolution:
Through collaboration, the physician and AI system reach a consensus that the patient is indeed suffering from familial Mediterranean fever (FMF). This collaborative approach highlights the value of combining human expertise with AI capabilities to achieve the most accurate diagnosis.

Treatment Plan:
With the confirmed diagnosis of FMF, the physician and AI system work together to develop a comprehensive treatment plan. They consider the patient's specific symptoms, medical history, and available treatment options. The physician provides personalized care, prescribing medications to manage symptoms, and recommending lifestyle modifications. The AI system assists by continuously monitoring the patient's progress, analyzing treatment outcomes, and suggesting adjustments if necessary.

Conclusion:
This case study demonstrates how a physician and an AI system can arrive at different solutions initially but, through collaboration, reach a consensus and provide an accurate diagnosis and treatment plan. The combination of human expertise and AI capabilities has the potential to enhance medical decision-making, improve patient outcomes, and drive advancements in healthcare.

California's Regulation of AI: SB 313 AI-ware Act

- Bill would establish the Office of Artificial Intelligence
  - ➤ Authority to guide the design, use, and deployment of AI for state agencies
- Deployment of AI requires privacy and bias protections
- Provide notice when AI interactions are used
  - ➤ Option available for natural person interaction
- Bill is currently held in committee (i.e. temporarily placed on hold)

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California's Regulation of AI: AB 331

- **Would require a deployer of AI tool to complete annual impact assessment**
  - ➤ Failure to provide assessment result in fines

- **Transparency with public regarding AI decision making**
  - ➤ Provide opportunity for an alternative decision process, if feasible, and if decision was solely based on AI

- **Require establishment of governance program to safeguard against discrimination**

- **Currently held in committee awaiting further action**

Additional California Efforts

- **Governor's Executive Order N-12-23**
  - Government Operations Agency to issue guidelines for public agency procurement, use, and training
  - Evaluate impact on AI to vulnerable communities
  - Develop training for state workers related to AI and mitigating bias, inaccuracies, and privacy

- **California Privacy Protection Agency (CPPA) – created draft regulations on automated decision-making technology**
  - Risk assessments
  - Transparency when AI is used
  - Opt-out option

CPPA Draft Risk Assessment Regulations Jan. 11, 2024
https://cppa.ca.gov/meetings/materials/20231208_item2_draft_clean.pdf

Executive Order N-12-23 (Jan. 11, 2024) https://www.gov.ca.gov/wp-content/uploads/2023/09/AI-EO-No.12-_-GGN-Signed.pdf

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Federal Regulation of AI

Biden Administration released Executive Order (E.O.) 1411:

The Federal Government will work to ensure that all members of its workforce receive adequate training to understand the benefits, risks, and limitations of AI for their job functions, and to modernize Federal Government information technology infrastructure, remove bureaucratic obstacles, and ensure that safe and rights-respecting AI is adopted, deployed, and used.

- Safety and security
- Innovation and competition
- Worker support
- Consideration of AI bias and civil rights
- Consumer protection
- Privacy
- Federal use of AI
- International leadership

Proposed Federal Legislation: One Example of Many

Bipartisan legislation to provide more transparency on content generated by artificial intelligence (AI). The new bill would help ensure people know when they are viewing AI-made content or interacting with an AI chatbot by requiring clear labels and disclosures.

- Require that developers of generative AI systems include a clear and conspicuous disclosure identifying AI-generated content and AI chatbots

- Make developers and third-party licensees take reasonable steps to prevent systematic publication of content without disclosures

- Establish a working group to create non-binding technical standards so that social media platforms can automatically identify AI-generated content

International Regulation of AI

**E.U. Agrees on Landmark Artificial Intelligence Rules**

The agreement over the A.I. Act solidifies one of the world's first comprehensive attempts to limit the use of artificial intelligence.

Lawmakers discussed the A.I. Act in June at the European Parliament. Jean-Francois Badias/Associated Press

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National Academy of Medicine Code of Conduct Development
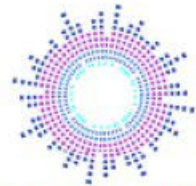
Health Care Artificial Intelligence Code of Conduct

Toward a Code of Conduct for Artificial Intelligence in Health, Health Care, and Biomedical Science

The Artificial Intelligence Code of Conduct (AICC) project is a pivotal initiative of the National Academy of Medicine (NAM), involving leading experts and stakeholders in developing a guiding framework to ensure that artificial intelligence (AI) and its application in health, health care, and biomedical science performs accurately, safely, reliably, and ethically in the service of better health for all. This project represents a unique opportunity for national leaders across disciplines to work together to advance artificial intelligence as a reliable and trustworthy force in health, health care, and biomedical science.

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AMA Position Statement on AI

The AMA House of Delegates uses the term *augmented intelligence* (AI) as a conceptualization of artificial intelligence that focuses on AI's assistive role, emphasizing that its design enhances human intelligence rather than replaces it.

The AMA is committed to ensuring that AI can meet its full potential to advance clinical care and improve clinician well-being. As the number of AI-enabled health care tools continue to grow, it is critical they are designed, developed and deployed in a manner that is ethical, equitable and responsible. The use of AI in health care must be transparent to both physicians and patients.

- Health care AI oversight
- When and what to disclose to advance AI transparency
- Generative AI policies and governance
- Physician liability for use of AI-enabled technologies
- AI data privacy and cybersecurity
- Payor use of AI and automated decision-making systems

Challenges on the Horizon

- Legislation has not yet caught up with new AI technology

- Insufficient case law to establish precedent

- Courts will be forced to analogize new tech with old tech where law exists

- Standard of care questions

Amanda Swanson & Fazal Khan, The Legal Challenge of Incorporating Artificial Intelligence into Medical Practice, 6 J. Health & Life Science. L. 90

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How can healthcare benefit from AI without increasing the risk of harm?

AI Risk Reduction Strategies

- Verify AI generated responses with peer reviewed medical sources

- Business association agreement with non-covered entities

- Cybersecurity strategy includes encryption, access controls, and security audits

- Full transparency with patients

- Policy development and training

"AI can complement healthcare professionals by handling routine tasks, assisting in diagnosis, and improving treatment plans. However, the human element of healthcare-empathy, judgment, ethical decision-making, and adaptability-remains irreplaceable. The optimal approach is likely to involve a synergy between AI and human healthcare providers, with AI supporting and enhancing the work of professionals while leaving the core aspects of patient care in the hands of trained experts." - ChatGPT 3.5, August 16, 2023

Thank you

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