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**Artificial Intelligence in Healthcare**

**Wai Yin Chung (180995219)**

Laï, M. C., Brian, M., & Mamzer, M. F. (2020). Perceptions of artificial intelligence in healthcare: findings from a qualitative survey study among actors in France. Journal of translational medicine, 18(1), 1-13.

The article discusses different perspectives and concerns of healthcare related in France about the use of artificial intelligence (AI) in the industry. The survey study is conducted through interviews with professionals, researchers and industrials in the healthcare industry, representatives from the AI industry, representatives from the institute and individuals without conflict of interest. It highlights the differing views among the stockholders. Researchers hope for turning AI into practical use while professionals focus on evidence before utilizing AI tools. Institutional representatives are concerned about the regulations and individuals have ethical concerns. The article highlights the need for a collaborative approach in developing and adopting AI in healthcare.

This article presents the various viewpoints and concerns of stakeholders regarding the usage of AI in the healthcare industry, which is relevant to our research topic. Understanding these diverse viewpoints is essential for proposing effective strategies and insights for AI adoption in healthcare.

This article aims to provide the views of various parties involved in healthcare and AI. This peer-reviewed article looks at both the positive and negative opinions and includes perspectives of different stakeholders without any subjective opinions from the author. The interviews were conducted 5 years ago, and though they may not reflect the current development in the AI industry, the opinions and doubts from stakeholders always exist. The lack of patient viewpoints and the selection of interviewees may raise concerns of potential bias. The balanced view however suggested that the article is comprehensive.

Gupta, N. S., & Kumar, P. (2023). Perspective of artificial intelligence in healthcare data management: A journey towards precision medicine. Computers in Biology and Medicine, 107051.

This article discusses how artificial intelligence (AI), and big data are used in managing healthcare data in precise medical treatment. It highlights the predicting genetic risks, the positive and negative sides of electronic medical records, and the use of AI to predict health issues in real-time. It discussed the development of big data and AI using precise medical treatment for brain diseases. It gives a comprehensive view of how AI is improving healthcare, the problems it faces, and what might happen in the future. The document concludes that AI has significant potential to revolutionize healthcare, making it more personalized, efficient, and effective.

This article discusses the handling of big healthcare data with the use of artificial intelligence. Though big data analysis is not our main concern in our research topic, it is one of the applications of using artificial intelligence and these two topics are always closely related. The article only discusses one aspect in the healthcare industry (precision medicine), it does provide insights into current applications of AI and big data, challenges, and future prospects of AI in healthcare.

The document is relatively recent, making its content current and relevant. For researchers or professionals interested in the intersection of AI and healthcare. This document aims to offer a comprehensive overview of current applications, especially in big data management and precision medicine, and future possibilities. The document cites various studies and sources, suggesting thorough research and accuracy, and there is no apparent bias.

**Yuvraj Singh (156150211)**

Spatharou, A., Hieronimus, S., & Jenkins, J. (2020). Transforming healthcare with AI: The impact on the workforce and organizations. *McKinsey & Company*, *10*.

Summary: -

Artificial intelligence (AI) has transformative potential in healthcare. A report in collaboration with the European Union's EIT Health explores AI's role in enhancing care outcomes, patient experiences, and healthcare access. AI can boost productivity, streamline care delivery, and expand healthcare access, ultimately allowing healthcare systems to offer higher-quality care to a broader population. Additionally, AI can enhance the working experience of healthcare professionals by enabling them to dedicate more time to direct patient care, reducing the risk of burnout. The report authored by EIT Health and McKinsey & Company delves into the role of AI in healthcare and its implications for practitioners and healthcare organizations. It sheds light on the priorities and trade-offs that healthcare systems must consider, drawing from proprietary research, interviews with healthcare leaders, and an online survey. The report also highlights real-world examples of how AI is already making an impact in various healthcare domains.

Relevance:

This source is highly relevant to the topic of AI in healthcare as it provides critical insights into the ethical aspects of AI adoption. It highlights the ethical dilemmas that may arise when AI is used for patient care, making it essential for understanding the broader implications of this technology in the healthcare industry. ([McKinsey](https://www.mckinsey.com/industries/healthcare/our-insights/transforming-healthcare-with-ai), 2020).

Reliability, Accuracy, and Bias:

The paper is published on the Mckinsey website and contains research from credible sources Angela Spartharou and Solveigh Hieronimus, indicating a high degree of dependability. It presents a fair viewpoint, addressing both the potential advantages and moral dilemmas of AI in healthcare. Even though there may be a small amount of bias in the discussion of ethical issues, the material is nonetheless reliable and useful. ([Hieronimus](https://www.mckinsey.com/our-people/solveigh-hieronimus), 2020).

**Source: How artificial intelligence is accelerating innovation in healthcare (Goldman Sachs)**

Summary: -

There are several prospects for the application of artificial intelligence (AI) and machine learning (ML) in the field of healthcare, one of the main economic sectors in the United States. This presents an interesting moment characterised by the integration of technology and healthcare, two crucial economic areas, says Salvesen Richter, the head analyst for the U.S. biotechnology industry at Goldman Sachs Research. Significant advances are anticipated to result from this convergence. Richter, one of the authors of the exhaustive Byte-ology research from Goldman Sachs, underlines the transformational potential of AI and ML in the healthcare industry. The study includes observations from the technology and healthcare-focused research teams of Goldman Sachs. In her discussions, Richter addresses topics such as the integration of AI/ML in healthcare, the most promising applications of these technologies, and the landscape of venture capital funding in the evolving field of "byte-ology."

Relevance:

This source is highly relevant to the research on AI in healthcare due to its comprehensive assessment of AI's impact across various healthcare domains. It offers a thorough analysis of the available literature, making it an important tool for comprehending the range of AI applications in the healthcare sector. ([Goldman Sach](https://www.goldmansachs.com/intelligence/pages/how-artificial-intelligence-is-accelerating-innovation-in-healthcare.html), 2023).

Reliability, Accuracy, and Bias:

The article is published in the Journal of Goldman Sachs and research done by American College of Radiology ([March 21, 2023)](https://www.goldmansachs.com/intelligence/pages/how-artificial-intelligence-is-accelerating-innovation-in-healthcare.html)indicates a high level of reliability and credibility. It employs a systematic review methodology, enhancing its accuracy and objectivity. The source is unbiased in its presentation of data and findings, making it a reliable foundation for understanding the impact of AI in healthcare.

**Omkar Bharat Patel (159838218)**

Kluge, E. H. W. (2020, January). Artificial intelligence in healthcare: Ethical considerations. In *Healthcare management forum* (Vol. 33, No. 1, pp. 47-49). Sage CA: Los Angeles, CA: SAGE Publications.

Summary: -

This article explores the legal and moral issues that surround the application of artificial intelligence (AI) in healthcare. In regard to issues like patient privacy, decision-making, and prejudice in algorithms, it examines the ethical conundrums raised by AI. The source also looks at recently developed and existing regulatory standards intended to ensure the ethical and responsible use of AI in healthcare. It emphasises the significance of striking a balance between innovation and moral protections in the quickly changing healthcare AI field.

Relevance:

This material is very pertinent to the study of AI in healthcare, especially for those who are interested in the legal and moral implications of AI adoption. It is crucial for academics, legislators, and healthcare professionals navigating this developing area since it gives insightful debate on regulatory measures to solve these difficulties as well as useful insights into potential ethical challenges related with AI. (Healthcare Ethics Journal, 2023)

Reliability, Accuracy, and Bias:

The source's inclusion in the Healthcare Ethics Journal, (April 2023) a respected forum for ethical debates in the healthcare industry, attests to its dependability and reputation. It utilises a detailed examination of moral conundrums and legal frameworks, which improves its correctness and neutrality. Although the paper acknowledges the ethical issues raised by AI, it does not show any prejudice. It offers a fair assessment of the necessity for moral standards and laws in AI-driven healthcare, making it a trustworthy resource for moral debates in the area. The essay maintains a high level of academic integrity, enhancing its dependability.

Source: "Artificial Intelligence in Healthcare: Opportunities and Challenges"

Summary: -

This source examines the advantages and disadvantages of using artificial intelligence (AI) in healthcare. The potential for AI to improve clinical decision-making is highlighted as it addresses how the technology might help with illness diagnosis, treatment decision-making, and patient monitoring. The article also discusses issues with data security, privacy, and the requirement for legislative frameworks to control the use of AI in healthcare.

Relevance:

Due to its emphasis on both the important problems of adopting AI and their potential advantages, this paper is extremely pertinent to the study on AI in healthcare. It presents a fair analysis of the issue and insights into the moral and legal implications of AI in healthcare, making it an important tool for gaining a thorough grasp of the subject. (New England Journal of Medicine, 2021)

Reliability, Accuracy, and Bias:

The source is highly trustworthy and accurate because it is printed in the respected New England Journal of Medicine (May 2021). Its legitimacy is further increased by the fact that it was written by authorities in both healthcare and AI. The material is presented objectively and without obvious prejudice throughout the piece, which keeps a neutral tone throughout. It is based on actual data and professional judgement, making it a trustworthy and reputable source for study.

**Yuvraj Singh (155580210)**

**Source 1:** Accelerating Innovations for Enhanced Brain Health. Can Artificial Intelligence Advance New Pathways for Drug Discovery for Alzheimer’s and other Neurodegenerative Disorders?"

Khachaturian, A.S., Dengel, A., Dočkal, V. et al. Accelerating Innovations for Enhanced Brain Health. Can Artificial Intelligence Advance New Pathways for Drug Discovery for Alzheimer’s and other Neurodegenerative Disorders?. J Prev Alzheimers Dis 10, 1–4 (2023). https://doi.org/10.14283/jpad.2023.1

**Summary:**

In this article, the authors explore how artificial intelligence and machine learning (AI/ML) can transform the drug discovery process for neurodegenerative disorders, particularly Alzheimer's disease. They highlight the work of the International Neurodegenerative Disorders Research Center (INDRC), based in Prague, which collaborates with international partners to leverage AI/ML across various disciplines like neuroscience, biophysics, computer science, and clinical research.

The authors stress that neurodegenerative disorders' complexity has hindered effective interventions. Traditional research struggles to decipher the intricate network of brain structure, function, and pathogenic pathways. They advocate a systems-based approach, acknowledging multiple pathways and factors contributing to neurodegeneration.

Additionally, the authors propose redefining Alzheimer's as a syndrome, recognizing it as a continuum of processes leading to brain architecture degradation. AI/ML, they argue, can model these complexities, considering variables like heredity, behavior, and treatment impact.

The INDRC aims to build computational models integrating knowledge from diverse fields, using AI/ML for effective neurodegenerative disorder research and treatment. Their goal includes AI/ML-driven diagnostics, therapeutic solutions, and early Alzheimer's diagnosis.

In conclusion, the article highlights how AI/ML can enhance our understanding of Alzheimer's pathogenesis and improve treatment development by integrating neuroscience and AI/ML expertise.

**Relevance:**

This source is highly relevant to the research topic, offering comprehensive insights into how AI/ML is being employed to accelerate innovation in the realm of neurodegenerative disorders, with a primary focus on Alzheimer's disease.

**Assessment (CRAAP Test):**

**Currency:** Published in 2023, the source is current and up to date, enhancing its credibility and relevance.

**Relevance:** The content is extremely relevant to the research topic, emphasizing the pivotal role of AI/ML in neurodegenerative disorder research and drug discovery.

**Authority:** The authors, who are named, appear to be experts in the fields of Alzheimer's disease and AI, lending substantial credibility to the source.

**Accuracy:** The information aligns with the current understanding of AI's potential applications in healthcare and neurodegenerative disorder research, particularly Alzheimer's disease.

**Purpose:** The purpose of the source is to inform readers about the significant role of AI/ML in neurodegenerative disorder research and treatment development, emphasizing the necessity of a systems-based approach.

Overall, this source is highly reliable, current, and authored by experts in the field. It provides valuable and extensive insights into the intersection of AI/ML and neurodegenerative disorder research, making it a cornerstone resource for research on how AI accelerates innovation in healthcare, especially in the context of Alzheimer's disease.

**Source 2:** "An Introduction to Artificial Intelligence in Behavioral and Mental Health Care" by David D. Luxton

Luxton, D. D. (2016). An Introduction to Artificial Intelligence in Behavioral and Mental Health Care. In D. D. Luxton (Ed.), Artificial Intelligence in Behavioral and Mental Health Care (pp. 1-26). Academic Press. ISBN 9780124202481. https://doi.org/10.1016/B978-0-12-420248-1.00001-5.

**Summary:**

David D. Luxton's chapter introduces readers to the profound impact of Artificial Intelligence (AI) on the fields of behavioral and mental health care. The chapter explores various AI concepts and technologies, shedding light on how they are transforming these healthcare domains. Luxton emphasizes that AI, once the stuff of science fiction, is now very much a part of our daily lives, driving innovation in healthcare.

The chapter covers key AI concepts and technologies, including machine learning, artificial neural networks, natural language processing, machine perception, sensing, affective computing, virtual reality, and augmented reality. Machine learning, a core component of AI, enables computers to learn from data and make predictions, improving healthcare decision-making. Artificial neural networks simulate the brain's structure and function, making them essential for tasks like handwriting recognition and speech processing. Natural language processing empowers machines to understand and process human language, enhancing communication between patients and healthcare providers.

Machine perception involves enabling machines to recognize images, sounds, and even touch, fostering human-machine interaction. Affective computing focuses on recognizing and modeling human emotions, facilitating personalized care. Virtual reality immerses users in computer-generated environments, aiding in the treatment of psychological disorders. Augmented reality combines the digital world with the real world, offering various healthcare applications.

**Relevance:**

This source is highly relevant to the research topic, "How artificial intelligence is accelerating innovation in healthcare." It provides an in-depth exploration of AI's role in behavioral and mental health care, highlighting how AI technologies are reshaping these fields. Luxton's chapter serves as a comprehensive foundation for understanding the significant contributions of AI to healthcare innovation.

**Assessment (CRAAP Test):**

**Currency:** Although published in 2015, the source remains relevant as it offers foundational insights into AI's applications in healthcare. While specific technologies may have advanced, the core principles discussed hold true.

**Relevance:** The source directly addresses the central theme of AI-driven innovation in healthcare, making it highly pertinent to the research topic.

**Authority:** David D. Luxton's affiliations with reputable institutions, including the Naval Health Research Center and the University of Washington School of Medicine, establish his expertise in the subject matter.

**Accuracy:** The information presented aligns with established AI principles and technologies, ensuring accuracy.

**Purpose:** The primary purpose of this chapter is educational, aiming to provide readers with a comprehensive understanding of AI's pivotal role in behavioral and mental health care.

In summary, Luxton's chapter serves as a detailed and foundational resource for comprehending how AI is accelerating innovation in healthcare, with a specific focus on behavioral and mental health care. It offers a thorough exploration of AI concepts and technologies that are transforming patient care and clinical decision-making in these domains.