

Course Title: Research Methodology in Computer Science

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Lecturer: Dr. Mohammed Anbar

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Assignment Report: AI in Healthcare

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AI in Healthcare

Summary research paper's:

Paper 1: AI in healthcare: A narrative review

This paper shows the AI role in healthcare and how it has become a need, and how it will help to improve the services and help doctors make better decisions. The paper also mentions how AI can save time and reduce cost.

Paper 2: Applications of Artificial Intelligence (AI) in healthcare: A review

This paper shows the AI role in transforming the healthcare systems through analyzing large datasets and speeding up drug development. AI reduce time and cost and increases accuracy.

Paper 3: AI in Healthcare domain.

This Study explores how AI enhances diagnostics, treatment planning, and clinical decision-making using machine learning and data analytics. It shows that AI improves efficiency and supports personalized healthcare.

Paper 4: Artificial Intelligence in Healthcare and Research.

This paper focuses on various AI applications for disease detection and treatment such as diagnostic algorithms and systems surveillance; it also highlights the key contribution of AI to medical imaging products. It will also examine ethical issues such as data privacy, bias and accountability. The results demonstrate that AI can enhance healthcare delivery but also presents significant ethical and social challenges.

Paper 5: AI in Healthcare: Revolutionizing Diagnosis and Therapy.

This paper focuses on how AI can detect diseases earlier and more accurately, also improve diagnoses and help to find the best treatment for patients; however, it's not reliable because it depends on the quality of the data.

Paper 6: The “inconvenient truth” about AI in healthcare

This paper shows the challenges in AI systems in the healthcare domain and how it needs a strong dataset, and also shows that AI solutions are not ready yet to be used in real hospitals.

Problem statement:

Artificial intelligence is used widely in the healthcare domain in many aspects, such as disease diagnosis, personal treatment, drug discovery, surgery and decision - making. “AI is being used or trialled for a range of healthcare and research purposes, including detection of disease, management of chronic conditions, delivery of health services, and drug discovery. “ Nuffield (2018). Many studies show that AI increases accuracy and efficiency, also saves time, and reduces cost and human errors.

AI has become very important because of the challenges that the health sector faces, like a shortage of medical staff, increasing costs, and the need to process large amounts of data in a short time.

Many organizations are investing in the AI solutions to improve their healthcare systems and give patients the best experience.

Despite these advantages, AI systems have limitations, especially when applied to real life. AI systems need high-quality and well-structured data. Most of the medical data is fragmented, incomplete, and distributed across different systems. (Panch et al., 2019).

Another challenge is the concerns about data privacy, which leads to a lack of trust from users. In addition, data bias will make it inaccurate or unfair because some systems are trained on certain data, which could give inaccurate results sometimes.

Furthermore, many existing studies focus on theoretical models and experiments that are not applied in real hospitals, which creates a gap between research and real-world implementation.

Even though machine learning has been suggested to enhance AI performance, These solutions still can't provide consistent results in real environment.

There is a clear need to develop AI systems that are more reliable, transparent, and can be effectively applied in real-world healthcare systems.

Research Objectives:

This research aims to enhance the reliability of AI systems in healthcare.

- 1- To analyze the role of current AI applications and how to improve them to increase accuracy and efficiency. (Väänänen et al., 2021)
- 2- To evaluate the technique in handling large data and suggest new one to increase scalability and efficiency.(Shaheen, 2021)
- 3- To identify ethical challenges such as bias and privacy concerns and propose solutions to build users' trust. (Nuffield, 2018)
- 4- To study AI methods used in diagnoses and treatment, and improve their ability to adapt to different patient conditions. (Talati, 2023)
- 5- To understand how poor data can affect the systems and develop methods to improve data handling (Zeb et al., 2019)
- 6- To analyze the reasons for AI systems' failure in a real environment and suggest solutions to improve integration and practical use in hospitals. (Panch et al., 2019)

References:

- 1- Nuffield Council Bioethics (2018) *Artificial intelligence (AI) in healthcare and research*.
[Artificial-Intelligence-AI-in-healthcare-and-research-1.pdf](#)
- 2- Panch, T., Mattie, H., & Celi, L. A. (2019). *The “inconvenient truth” about AI in healthcare*.
[s41746-019-0155-4.pdf](#)
- 3- Shaheen, M. Y. (2021) *Applications of Artificial Intelligence (AI) in healthcare: A review*
[Applications of Artificial Intelligence \(AI\) in healthcare A review.pdf](#)
- 4- Talati, D. (2023) *AI in healthcare domain* [article+3+word.pdf](#)
- 5- Väänänen, A., Haataja K., Katri Vehviläinen-Julkunen, K., Toivanen, P. (2021) *AI in healthcare: A narrative review* [AI in healthcare: A narrative review | F1000Research](#)
- 6- Zeb, S. FNU, N. Abbasi, N. Fahad, M. (2024) *AI in Healthcare: Revolutionizing Diagnosis and Therapy*. [hengki26,+\[12\].+4546-Article+Text-20173-1-2-20240815.pdf](#)