International Journal of Recent Advances in Multidisciplinary Topics
Volume 6, Issue 5, May 2025
https://www.ijramt.com | ISSN (Online): 2582-7839

A Review Report on Medi-Intel Engine

Naznin A. Qayyum Shaikh[1*], Vandana Chandrakant Maindargi[2], Prashant S. Kolhe[3]
[1]*Student, Department of Electronics & Telecommunication Engineering, Terna Public Charitable Trust's College of Engineering, Osmanabad, India*
[2]*Associate Professor, Department of Electronics & Telecommunication Engineering, Terna Public Charitable Trust's College of Engineering, Osmanabad, India*
[3]*Professor, Department of Electronics & Telecommunication Engineering, Terna Public Charitable Trust's College of Engineering, Osmanabad, India*

***Abstract*: In the modern era, increasing professional demands, household responsibilities, and digital engagement have led many individuals to neglect their health. Minor health issues are often overlooked, which can escalate into serious medical conditions due to delays in seeking care. To address this growing concern, I propose the development of an AI-powered healthcare system which is web-based platform designed to assist users in managing their health more effectively. By leveraging Artificial Intelligence, the system will analyze user-reported symptoms, offer preliminary diagnostic insights, and provide essential information before medical consultation. It will also support continuous health monitoring and deliver personalized, real-time recommendations based on user's medical history. Unlike traditional healthcare systems, AI offers 24/7 support, continuous learning, and adaptability to individual needs. The proposed solution aims to reduce unnecessary clinical visits, lower healthcare costs, and enhance early detection and prevention. Ultimately, this system seeks to make healthcare more accessible, efficient, and personalized, supporting a shift toward proactive and patient-centered care.**

***Keywords*: Artificial Intelligence, health engine, healthcare, medical history.**

1. Introduction

The integration of Artificial Intelligence (AI) into healthcare systems has marked a paradigm shift in the way medical data is analyzed, diagnoses are made, and patient care is delivered. Among the forefront innovations is the development of Medi-Intel engines—intelligent computational systems designed to assist in clinical decision-making, predictive analytics, and personalized medicine.

Medi-Intel engines harness diverse methodologies such as machine learning, deep learning, and natural language processing to extract insights from massive, heterogeneous datasets including electronic health records (EHRs), imaging data, genomic sequences, and scientific literature. Their ability to process and learn from complex patterns in real-time presents unprecedented opportunities to enhance diagnostic accuracy, improve treatment outcomes, and streamline healthcare operations.

This article explores the concept, architecture, applications, benefits, and challenges of AI health engines. It aims to provide a clear understanding of how these systems are shaping the future of healthcare and what considerations must be addressed to ensure their effective and ethical deployment.

2. Technological Involvement

Artificial Intelligence (AI), unbound by the physiological limitations of human operators, offers the capability for continuous monitoring of patients in critical care. Machine learning models can be employed to track vital signs in real time and alert clinicians when specific risk indicators exceed predefined thresholds. This continuous surveillance enhances the early detection of clinical deterioration and supports timely medical intervention.

Furthermore, the integration of AI into precision medicine holds significant potential. By leveraging adaptive learning capabilities, AI systems can offer dynamic, personalized recommendations based on a patient's evolving clinical profile and historical data. These models can retain and apply individual preferences, enabling the delivery of tailored care that adjusts over time.

In addition, AI-powered virtual assistants could serve as a constant point of contact within the healthcare system, providing patients with immediate responses to queries. These assistants, informed by the patient's medical history and personal preferences, could reduce the redundancy of repeatedly conveying the same information to multiple providers. Such a system would not only improve patient experience but also streamline communication and increase efficiency across clinical settings.

3. Literature Review

The evolution of artificial intelligence (AI) in healthcare has been extensively documented over the past decade, with a growing body of literature focusing on its application in clinical decision support systems, predictive modeling, and patient engagement platforms. AI health engines, in particular, represent an integrated application of these technologies, designed to synthesize data and enhance the delivery of care.

Early studies emphasized the role of AI in diagnostic support. Esteva et al. (2017) demonstrated the efficacy of deep convolutional neural networks in classifying skin cancer at a

*Corresponding author: nazninaqa28@gmail.com

level comparable to dermatologists. Similarly, Rajpurkar et al. (2018) showed that deep learning algorithms could accurately interpret chest radiographs, aiding in the detection of pneumonia and other thoracic diseases.

Recent literature has shifted towards the use of AI engines in longitudinal patient monitoring and risk prediction. For example, Shickel et al. (2018) reviewed the use of deep learning techniques in intensive care unit (ICU) settings, where AI systems were shown to effectively predict sepsis, acute kidney injury, and in-hospital mortality using electronic health records (EHRs). These engines can continuously learn from new data inputs, providing real-time insights that adapt to a patient's changing condition.

In terms of patient-centered applications, Bickmore et al. (2018) explored AI-driven virtual health assistants that support chronic disease management and medication adherence through natural language interactions. These systems not only improve patient engagement but also alleviate the burden on human healthcare providers.

Moreover, AI engines are increasingly involved in supporting precision medicine. As noted by Topol (2019), AI can assist in integrating genomic data with clinical and lifestyle information to inform individualized treatment plans. This capability is enhanced by AI's ability to identify subtle patterns across multidimensional datasets that may be imperceptible to human clinicians.

However, the literature also underscores significant challenges. Concerns around data privacy, algorithmic bias, lack of transparency, and regulatory oversight are recurrent themes (Obermeyer et al., 2019). These challenges must be addressed to ensure the safe and equitable deployment of AI health engines.

In summary, the literature reveals that AI health engines hold considerable promise in advancing healthcare delivery through real-time monitoring, decision support, and personalized care. Nonetheless, ongoing research is essential to refine these systems and address ethical, legal, and technical limitations.

4. Gap Identification

The review of literature has shown some gaps in the existing system and technologies used. By using those gaps we have identified the problem statement and the main objective of study has been decided. The objective is to develop a system which will provide patient-centered design and outcomes because most studies focus on provider-facing applications while patient centric features e.g. explainability, accessibility, autonomy are underexplored. Additionally, most AI health models are unimodel. Context rich AL can provide more holistic and accurate patient insights. Therefore, context aware multi source AI health engine is next frontier.

References

[1] Bickmore, T. W., Trinh, H., Olafsson, S., O'Leary, T. K., Asadi, R., Rickles, N. M., & Cruz, R. (2018). Patient and consumer safety risks when using conversational assistants for medical information: An observational study of Siri, Alexa, and Google Assistant. Journal of Medical Internet Research, 20(9).

[2] Esteva, A., Kuprel, B., Novoa, R. A., Ko, J., Swetter, S. M., Blau, H. M., & Thrun, S. (2017). Dermatologist-level classification of skin cancer with deep neural networks. Nature, 542(7639).

[3] Obermeyer, Z., Powers, B., Vogeli, C., & Mullainathan, S. (2019). Dissecting racial bias in an algorithm used to manage the health of populations. Science, 366(6464).

[4] Rajpurkar, P., Irvin, J., Ball, R. L., Zhu, K., Yang, B., Mehta, H., & Ng, A. Y. (2018). Deep learning for chest radiograph diagnosis: A retrospective comparison of the CheXNeXt algorithm to practicing radiologists. PLoS Medicine, 15(11).

[5] Shickel, B., Tighe, P. J., Bihorac, A., & Rashidi, P. (2018). Deep EHR: A survey of recent advances on deep learning techniques for electronic health record (EHR) analysis. Journal of Biomedical Informatics, 83, 168–185.

[6] Topol, E. (2019). Deep medicine: How artificial intelligence can make healthcare human again. Basic Books.

[7] Lundberg, S. M., et al. (2018). Explainable machine-learning predictions for the prevention of hypoxaemia during surgery. Nature Biomedical Engineering, 2(10), 749–760.