

# Transforming Paradigm of Artificial Intelligence for Scalable Clinical Healthcare

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**Artificial intelligence become useful technology with enormous capacity and performance. Although it's based on theoretical construct having extensive processing power for larger datasets. AI & machine learning algorithms strengthen the medical research and revolutionized the healthcare sector. In AI based system, prediction models are developed to identify key variables in any input datasets. Although, accuracy in the clinical healthcare is the major challenge for computer-based diagnosis and treatment process. Therefore, substantial improvement required for clinical identification due to risk associated with clinical complexity of the disease.**

Numerous categories of AI utilized by customers and providers of care with functions consist of diagnosis, treatment recommendations, organizational actions, patient engagement and adherence [1-3]. Currently, use of the deep-learning technology, computing process and cloud storage with big data analytics enhanced the decision power in healthcare sector.

## Convergence of Technologies

Revolutionize the healthcare ecosystem developed through several additional technologies such as Cloud, IOT, AI, big data & blockchain etc., which supplements building of electronic health records and services in easily pattern [4-6]. In medicine, AI impact at three levels: for clinicians by precise image understanding; for health practices, by enhancing workflow; and for patients, by allowing them to practice their own data [7]. Artificial Intelligence is steadily becoming a use-to technology in health care, from diagnosing to prediction performance. Some diseases such as cardiac, cancers and diabetes etc. found to be suitable for AI based technology due to clinical identification of patients accurately while, avoiding risk of critical care. How technologies and analytics can revolutionize the healthcare ecosystem, this can be understandable through market and business [8,9].

## AI is Renovating Concept with Ascendable Offerings

Virtual technology allocates personal healthcare at next level through AI enable devices. AI is contest-transforming

paradigm, where an intelligent device with information technology develop opportunity to profoundly change clinical medical science. AI tools deliver better healthcare related services with quality at mass level. Study shows that AI-based tools may enhance prognosis, diagnostics, and care planning, although risks should be tackled before its incorporation with regular clinical attention [10]. Several organizations involved in technical support to scale the healthcare field extensively. Cloud technology counterbalance deficit of medical expertise through building healthcare data [4,5]. Amazon based AWS presents the greatest set of machine learning facilities and aiding cloud infrastructure for the expert practitioner [11]. Google Cloud's goal for healthcare is universally accessible and useful system for healthcare management [12]. The roadmap to create zero distance between health infrastructure and patients ensured by adaptation of advanced technologies [13,14]. The quality healthcare depends on network of medical sensory devices, programmable nanotheragnostics to facilitate virtual and remote clinics [15,16]. AI transforming healthcare management with quality and quantity assurance comprehensively by healthcare data analytics. Assistance between the patient and the doctor in a caring environment beholds scalable via AI aided technologies. AI offers quality of care for patient during non-availability of resources through arranging information, consultation, analysis and cooperation among stakeholders.

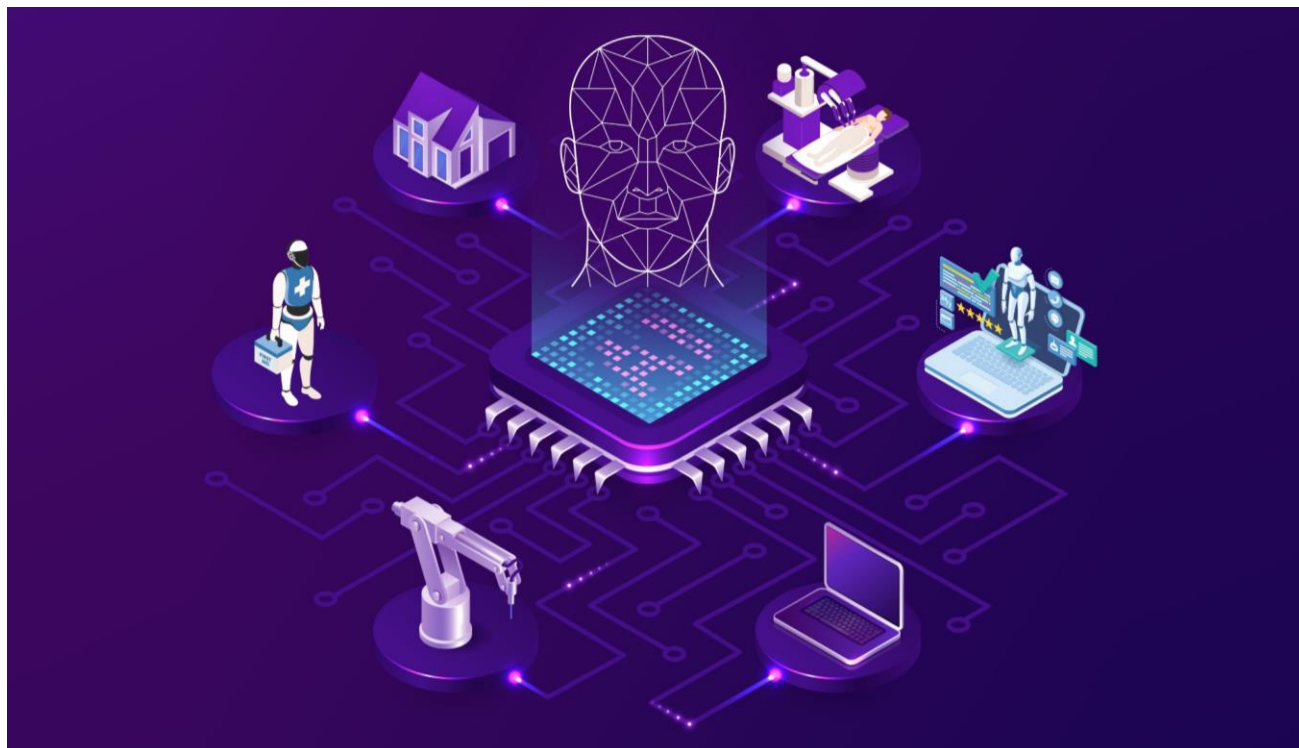
## Delivering Mass Healthcare with Socio-financial Attributes

Economical production needs for a more innovative switching to develop outcome-based commercial model. Study using a SWOT (strengths, weaknesses, opportunities, threats) analysis shows that AI involved in the acceleration of Sustainable Development Goal 3 (SDG3), to highlight socio-ethical implications [17]. Advanced healthcare device that tells us quick clinical

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**Fig. 1.** AI transforming healthcare management with quality and quantity assurance.

comparison such as real time organ function (heart in cardiac care), biochemicals monitoring of molecules (glucose in diabetic care) via digital electronics in a small setup is considered more useful today. AI based automation reduce labour demand and physical contact along with increasing productivity thus benefit broadly by growing inequality between employees and the holders of technology [18]. Medical devices can act as first line of testing through non-invasive method to save money. Although, such kind of devices not suitable for clinical decision in critical situation, however for mass healthcare monitoring its useful to segregate clinically ill and healthy subjects cost effectively. Later, clinically ill subject could move for laboratory-based disease specific invasive method examination. All such kind of integrated module-device with AI based functionality making monitoring of clinical features easy and cheaper. Several healthcare wearables (smartwatches, rings, bracelets etc.) used today as a fitness tracker. Such kind of devices able to handle mass healthcare issues such as epidemic or pandemic more easily. Recent COVID pandemic has risen the risk and increased the cost of healthcare services, as is especially noticeable in mass community.

### **Transformative Potential of Prognostic Decision in Substantial Dimensions**

Artificial Intelligence based interpretation of the data; their analysis made available automatically. AI assisted image based state-of-the-art algorithms helpful in diagnostic

judgment with precision. AI has played a decisive part in diagnosing diabetes and tuberculosis [19]. AI is helpful in expanding efforts towards sustainable development across the world (Fig. 1). The “virtual wards” supporting patients play key role in healthcare management [20]. Mobile technology, facilitating E-clinics and enable faster access to medical care [21,22].

- **Implementation of Materials Modelling**

Improved algorithms and data manipulation methods helpful to develop theoretical and computational modelling to identify the geometry of a materials and related characteristics. Simulation perspective in different settings determine various interaction perspectives useful for nanomaterials.

- **Nanotechnology and Imaging Realization**

AI can improve experimental imaging data accurately either in image or moving format. Identification of cancerous condition based on image analysis of histological data (cell type, shape and uniformity etc.) in real-time manner is one of diagnosis approach. Here, developed algorithm of machine learning spontaneously determines biological fate of disease.

- **Pharmaceuticals, Device and Nanomedicine**

Discover point-of care device that connects the biology, information technology, nanotechnology and AI is being used efficiently for prognosis models. Technologies such as microfluidic channel, 3D printing and virtual simulations

used to develop diagnostic and sensors devices for precise targeting, identification and delivery systems.

## Confronts with Indispensability

The part of AI in the advancement of a healthcare is perhaps more evident these than ever before. Robust technical accuracy for clinical evaluation is intuitive for patient care and required understanding of algorithmic bias, generalisability, improved machine learning predictions [23]. Although, artificial intelligence improves health services in resource-poor settings, however, require attention to ethical and legal issues including those related to data privacy [24]. Systematic literature analysis suggests more inclusive economic analyses to facilitate economic decisions for or against employing AI technology in health care [25]. In this article, we emphasize to adopt an AI technology in public health to create existential claims about sustainable healthcare environment even under burden. Smartphone impact through all-in-one healthcare delivery and indispensability of mobile hospitals enable faster access to healthcare [26,27]. To overcome a universal challenge of pandemic like condition, AI developed a competence in healthcare services through automation. Adequate information's are urgently needed for sustainable healthcare development, while AI potentially committed for secured future. Overall, AI based sustainable development is indispensable and vital for public health program.

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