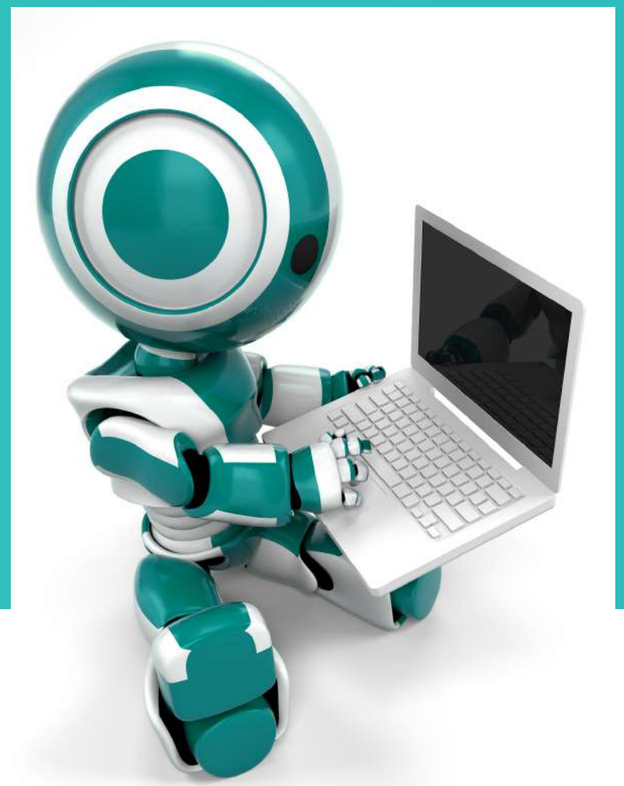
Emerging Applications of **AI** in **Healthcare**

As we embark into the era of digital health, disruptive ideas and solutions are likely to emerge. With healthcare offering a prolific space for Artificial Intelligence (AI) to grow, there is a scout for solutions that can **increase engagement, ROI, and deliver better care.**

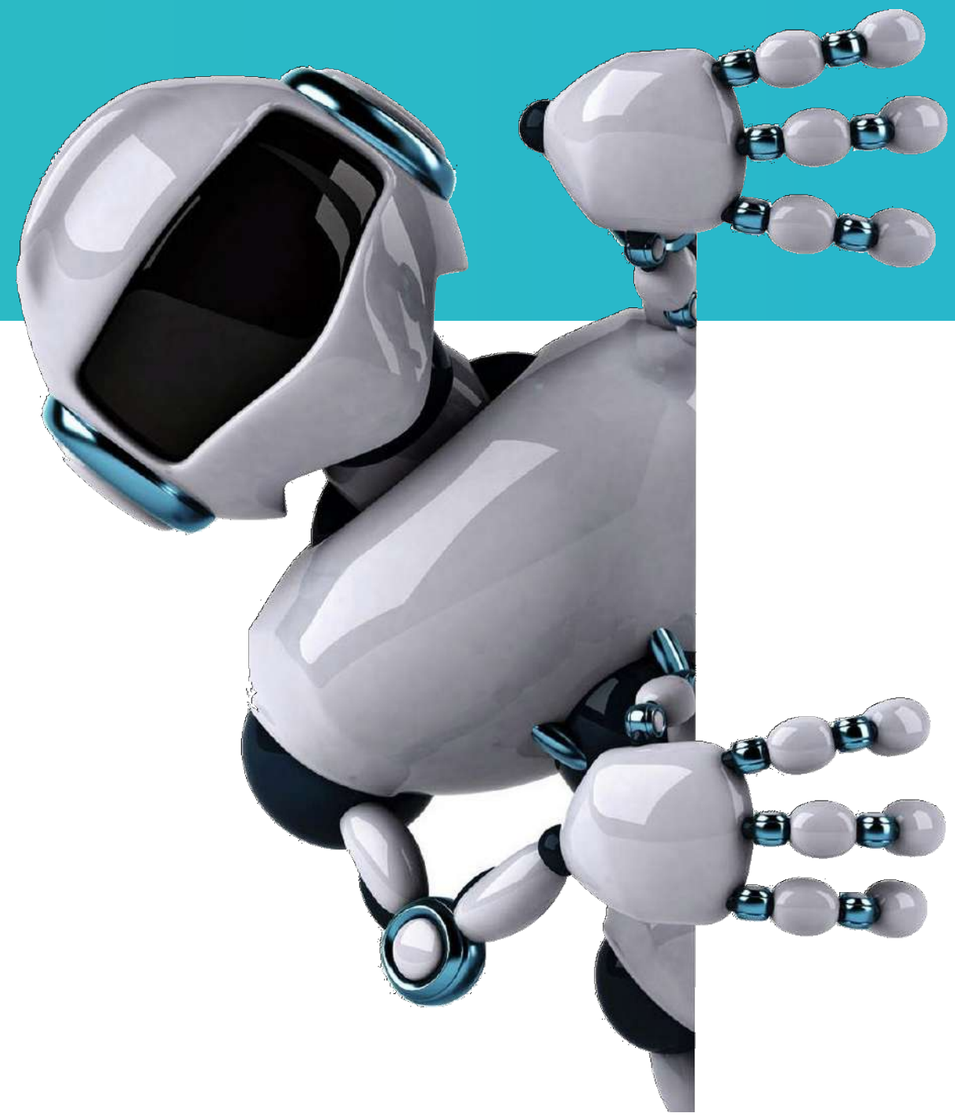


Artificial Intelligence is the key source of setting a competitive edge in the mushrooming digital healthcare market. With a rapid unfolding of AI in healthcare, the providers will take a leap forward to deliver mature solutions that reduce clinical trials, accelerate drug discovery, diminish in-person consultation gap, assist physicians in performing repetitive tasks, and more.

> ***"Responding to the AI hype in healthcare, the industry will be close at $8 billion by 2022-an astounding compound annual growth rate of close to 53%."***
>
> ***by MarketsandMarkets***

With advances that have been made by AI in healthcare and the future projections, **we outline some of the areas of biggest AI potential,** along with a few products that are exploiting these areas.

Clinical Diagnostics, Risk, and Disease Prediction



AI in healthcare brings in the opportunity of early diagnostics, risk analysis, and prognosis. With its propensity to gather, store, and normalize big data, artificial intelligence is making big strides to transform the existing system of care.

- **Deep Mind Health**
- **CareSkore**

DeepMind Health

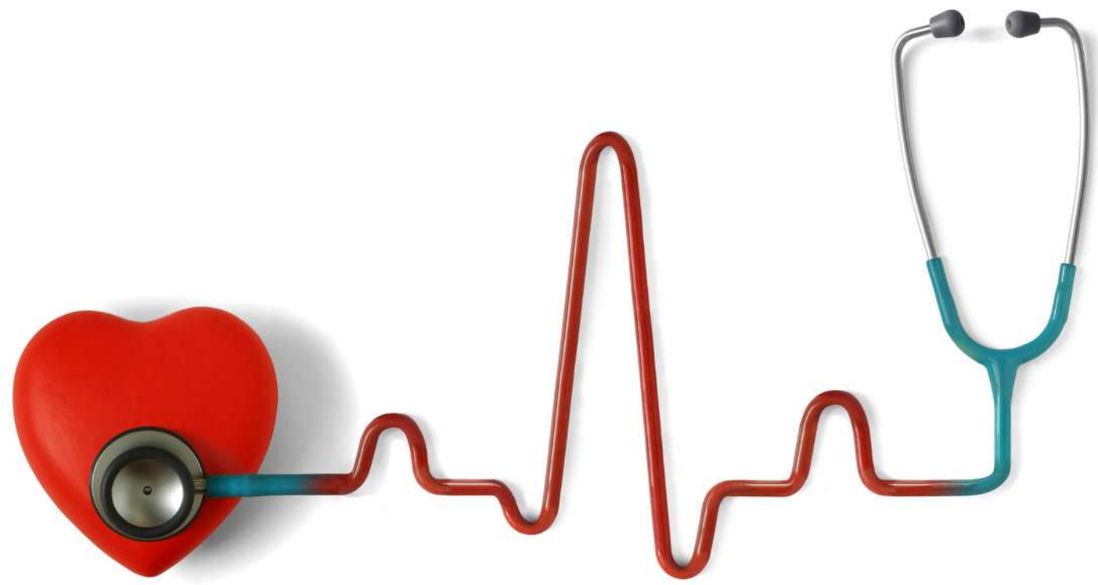
Deepmind Health project, a subsidiary of Google applies machine learning algorithms to large data set in order to train the system and make predictions. The AI system mines hundreds and thousands of medical records within minutes, to serve faster and better health services. In the current application of Deepmind Health, Google is cooperating with Moorfields Eye Hospital NHS Foundation Trust for ameliorating the eye treatment process.

CareSkore

The healthcare industry wastes 20$ billion on unnecessary readmissions. 17$ billion on no-shows and cancellations and another 17$ billion on hospital acquired conditions. Answering to this unorganized healthcare system and avoiding readmissions, Careskore has its real-time analytics engine, called Zeus.

Careskore is a cloud-based, predictive analysis platform based on AI. On the basis of clinical, labs, and behavioural data, the Zeus algorithm by Careskore examines the risk of a patient being readmitted, while they are hospitalized. This not only help hospitals to render a better care to the patients but also giving a clear picture of health to the patients.

Some other powerful and well-publicized uses of AI includes Watson for Oncology, CloudMedx Health, Zephyr Health, Oncora Medical, Sentrian etc. Currently, AI is supporting diagnosis by detecting variations from the baseline, comparing data from the similar patient's database, ingesting real-time data for smart decision making and consequently providing better care.



Preventing Pandemics Spread Through Drug Discovery

Bringing new pharmaceutical drugs to market may take a decade or more. The clinical trials cost million dollars. To make the drug development cycle cost-effective and ensure that the innovation reaches the healthcare industry at the earliest (especially in epidemic), AI has been making some amazing contributions.

- **Atomwise**
- **Deep Genomics**

Atomwise

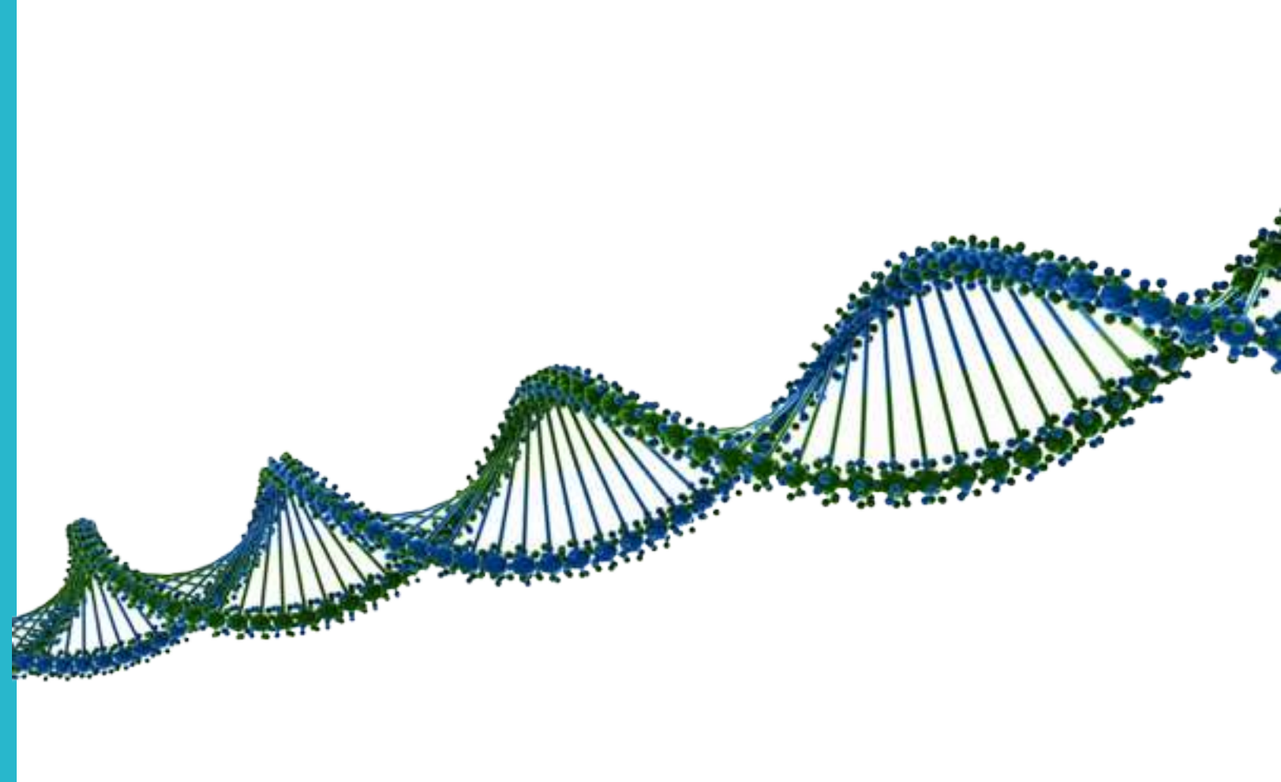
Better medicines faster.

Atomwise, a San Francisco-based startup develops Artificial Intelligence systems for drug discovery. They use deep learning algorithms and supercomputers for examining the database of molecular structure to find relevant therapies.

The company is famous for their drug discovery using AI, which blocked Ebola infectivity, that left thousands dead and tens of thousands orphaned since 1976. In one of their recent findings, Atomwise explored 8.2 million molecules and discovered a protein-protein inhibitor that can aid multiple sclerosis treatment. The inhibitor acts as a blood-brain-barrier penetrant, orally available, and is highly effectious in animals.

deep genomics

Deep Genomics aim to resolve the biggest puzzle in genetics. For this, it is leveraging AI, especially deep learning for analyzing the data patterns of genetic information and medical records to verify variations and linkage to the disease. With this, a new generation of computational technologies is introduced that will let the geneticists predict what will happen within a cell when a DNA is undergoes any genetic variation, either natural or therapeutic. Such findings can therefore help in genome-based therapeutic development, assessing risks for genetic disorder, and molecular diagnostics.



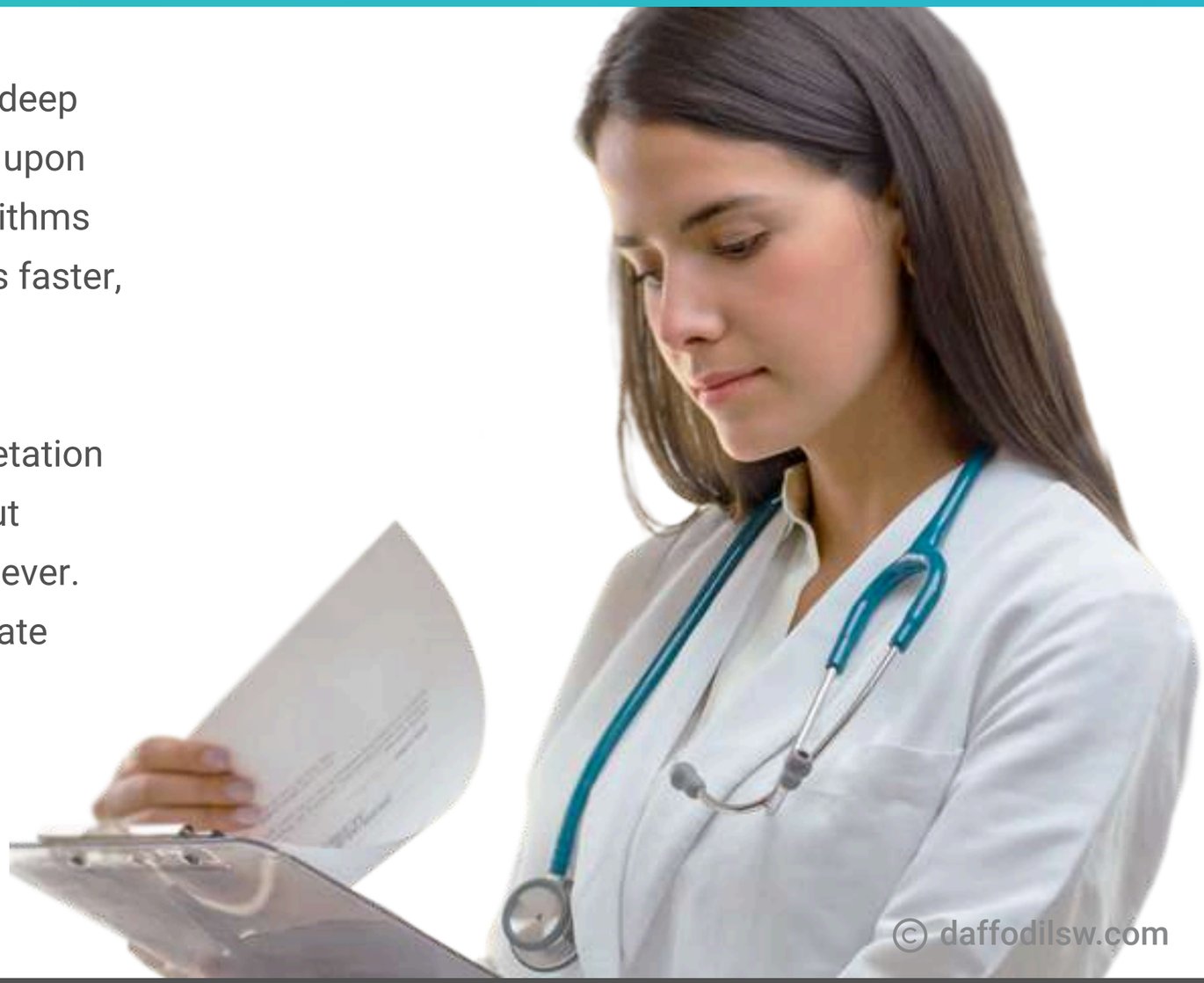
Other companies like Recursion Pharmaceuticals, iCarbonX, Whole Biome are doing the finest job in this arena. These AI based systems collect and sort patient's biological data and then map out the differences between healthy and infected environment for drug discovery and development.

Imaging Diagnostics (Radiology & Pathology)

For AI-enabled diagnostic imaging interpretation, deep learning and categorization technology is applied upon large set of data. This can assist in creating algorithms that reads the X-ray studies, CT scans, MRI exams faster, and without human intervention.

AI-based solutions for diagnostic imaging interpretation are not only improving a clinician’s productivity but making the image reading process accurate than ever. By assisting image diagnosis, chances of inaccurate diagnosis could decrease as well.

- **3SCAN**
- **Enlitic**



3SCAN

3Scan aims to help laboratories and researchers with robotic microscopes and machine vision for a better view of tissues. The machine can eliminate the plodding for researchers by amplifying the process of tissue analysis. Tissue sample analysis, which generally takes a year or more by pathologist through traditional methods can be done in a day with 3Scan.

enlitic

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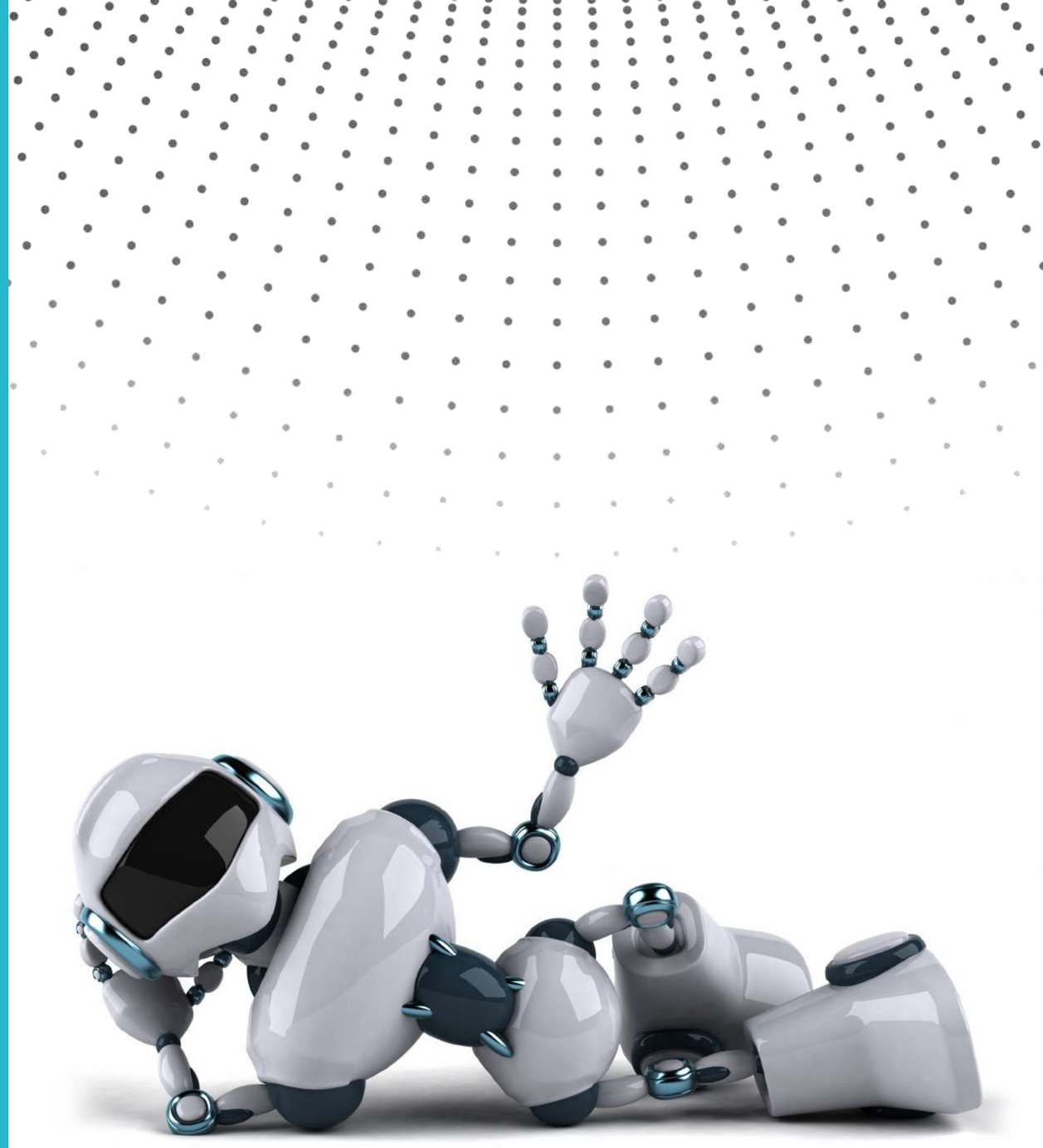
Healthcare Operations and Administration Management

AI brings in a number of opportunities to improve efficiency of a hospital. With AI, many components of real-time healthcare system can be managed through predictive and cognitive capabilities. This includes eliminating bottlenecks in supply chain, managing the data that's produced daily, automating routine practices, and more.

Healthcare Chatbots for Customer Service: For simple administrative processes like appointment scheduling, bill payment, medication reels, online chatbots are saving the human efforts by providing an interactive interface, 24/7. Bots use Natural Language Processing for analyzing the sentiments and concepts to create scripts that can offer better, human like experience to the customers.

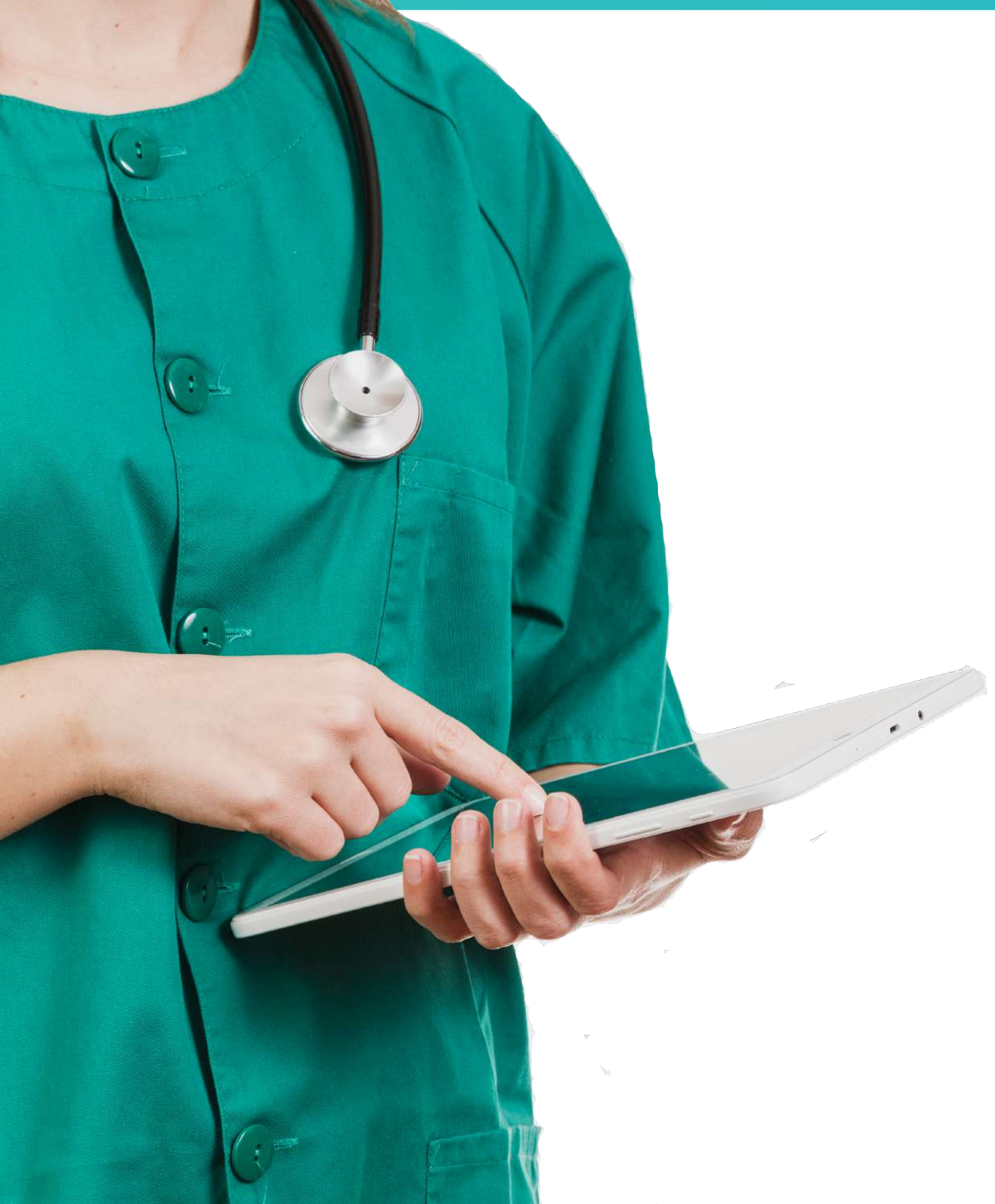


Barriers and Challenges in AI Adoption

AI has been penetrating and rendering its advantages to almost every industry. However, when it comes to healthcare, there are some true barriers and challenges that refrain the industry stakeholders from adopting it.

- Medical practitioners have reluctance to AI adoption for a variety of reasons. To many, machine learning is notorious for black-box output, for the fact that healthcare providers cannot trust the algorithms that offers solution based on prediction. It is still difficult to convince them with output-diagnosis and treatment results.

- Regulations and compliances that license AI in healthcare solutions is still ambiguous. Absence of global standards is a stumbling block in the growth of artificial intelligence in the healthcare market. With this, the healthIT innovations reaching a part of world might stay restricted to another.



- The prejudices and fears exist and they can’t be neglected. For securing and validating the AI outputs, training large datasets is the utmost requirement, which isn’t possible for various AI developers. With many startups lacking access to such volumes, their validation to the results is hampered.

- Big datasets and smart algorithms are the basis for AI existence in healthcare industry. But, what if the algorithm fails? What if a failed algorithm puts a patient at risk? Where does the liability sit? The regulatory book of AI does not mention the legal risk involved, making the system unaccredited.

- AI sciences and algorithms render the best solution with large datasets. However, the healthcare industry is not prepared to harvest the best from the huge datasets due to exchange and security standards and lack of management.

Takeaways

- Artificial Intelligence has got some amazing opportunities for the healthcare analysis vendors. While there are only a few at this tier but those who have involved have surely evolved by using AI for accurate outcomes and effective care delivery.

- One of the promising areas of AI in healthcare is imaging diagnostics. Considering that deep learning algorithms are faster and better than human perceptual tasks, this branch of AI can lead to consistent, accurate, and speedy image diagnostics.

- AI will not only revolutionize the medical care system but also be helpful in solving administrative tasks.

- Disease prediction, drug discovery, and treatment. All of these processes for improving health care system are covered by AI. Currently, clinical adoption of AI is dithery due to unproven capability of right decision making and confidence in the algorithms.

CONCLUSION

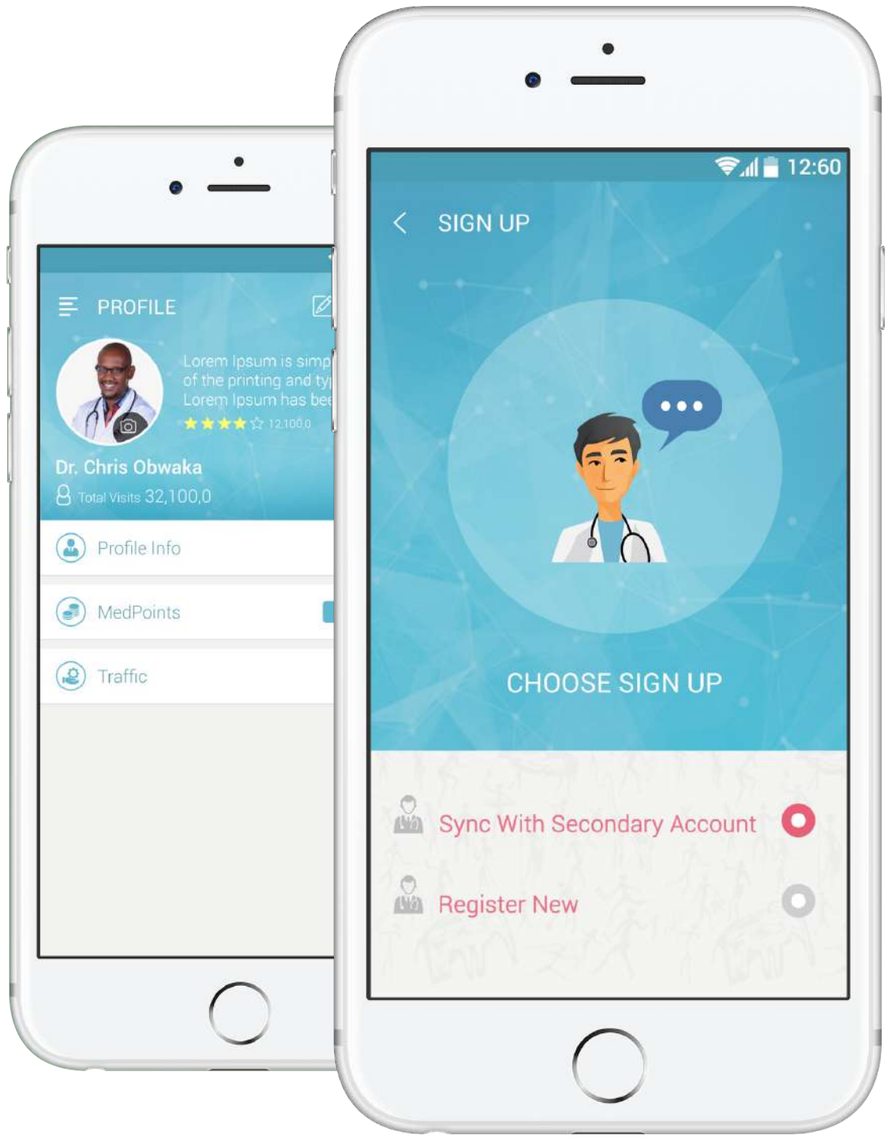
AI holds potential for disruptive innovation in the healthcare industry. From automating the process of delivering care to improving diagnostic accuracy, decreasing medical error to streamlining administrative operations, AI has been in the forefront. With these capabilities, a force multiplier effect will be created wherein the discoveries and insights when combined with data will render better healthcare experiences for patients and providers. However, for artificial intelligence to evolve to its potential, it is important to break down the prejudices and fears linked to its acceptance.

Customer Success Story

Learn how digitizing healthcare system and automating tasks can assist healthcare providers to streamline their business, connect with patients, and generate an omnichannel for care.

The client requirement was to build a ‘mobile health information exchange’ platform, prominently meant for African healthcare market, where payments for health services are out-of-pocket. The platform aimed at offering an efficient and accessible system of care so that patients can connect and communicate with healthcare providers (doctors, labs, pharmacies etc.).

Daffodil built an integrated system for patients, doctors, pharmacy and labs that help patients to conveniently locate, book and prepay for independent health care services. Also, it enables health service providers to procure medicines directly from wholesalers through an integrated ordering process.



Testimonial

“Kindly allow me to the opportunity to extend my greetings from Nairobi and express my sincere appreciation to Daffodil for the fantastic work leading to the launch of iSikcure. The initial feedback has been all positive.
I am deeply appreciative of the fine work of the team. Kindly express my hearty congrats to all involved as we look forward to the next phase- post development support and growth of features that will make iSikcure a household name soon enough.”

by Dr Moka Lantum, Founder & CEO, iSikcure

Benefits Achieved with Daffodil

Daffodil developed a revolutionizing mobile platform for a healthcare startup that aims to reach 20% of Kenyan private healthcare facilities and 14% of households by end of 2017. For this, Daffodil addressed to the following challenges:

- Building a platform that works with offline access for slow networks
- Simplify prescription process to save doctors time
- Creating a central repository for patient health records, to minimize cost of care

Why Daffodil?

We help health tech startups, medical organizations and individual healthcare professions to build innovative healthcare solutions that are connected, device agnostic, scalable and robust.

- **Custom EHR/EMR software development** and integration for optimizing healthcare workflows for recording demographic information, patient vitals, chief complaint charting, Evaluation & Management (E/M) etc.

- **End-to-end system integration and development** of robust Hospital Information Systems (HIS) to manage all aspects of operations and optimize workflows.

- **Development of doctor- patient marketplace** for patient self-scheduling, prescription refill requests etc., and integration with EHR systems.

- **Development of fitness tracking mobile** apps and integration with wearable devices and other high-end equipment.

Some of our Health-Tech Clients

MediNexus

lybrate

NationalNutrition.ca

iSikCure

Medidoc

iVisitMD

Setup a free Consultation with our Health-Tech Experts

Setup Now

At the end of your 30 minute consultation, you will walk away with:

- Validation of your project idea
- Industry specific best practices that can be applied
- Actionable insights on which technology would suit your requirement
- Implementation and engagement plan of action
- Ballpark estimate and timeframe of development

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