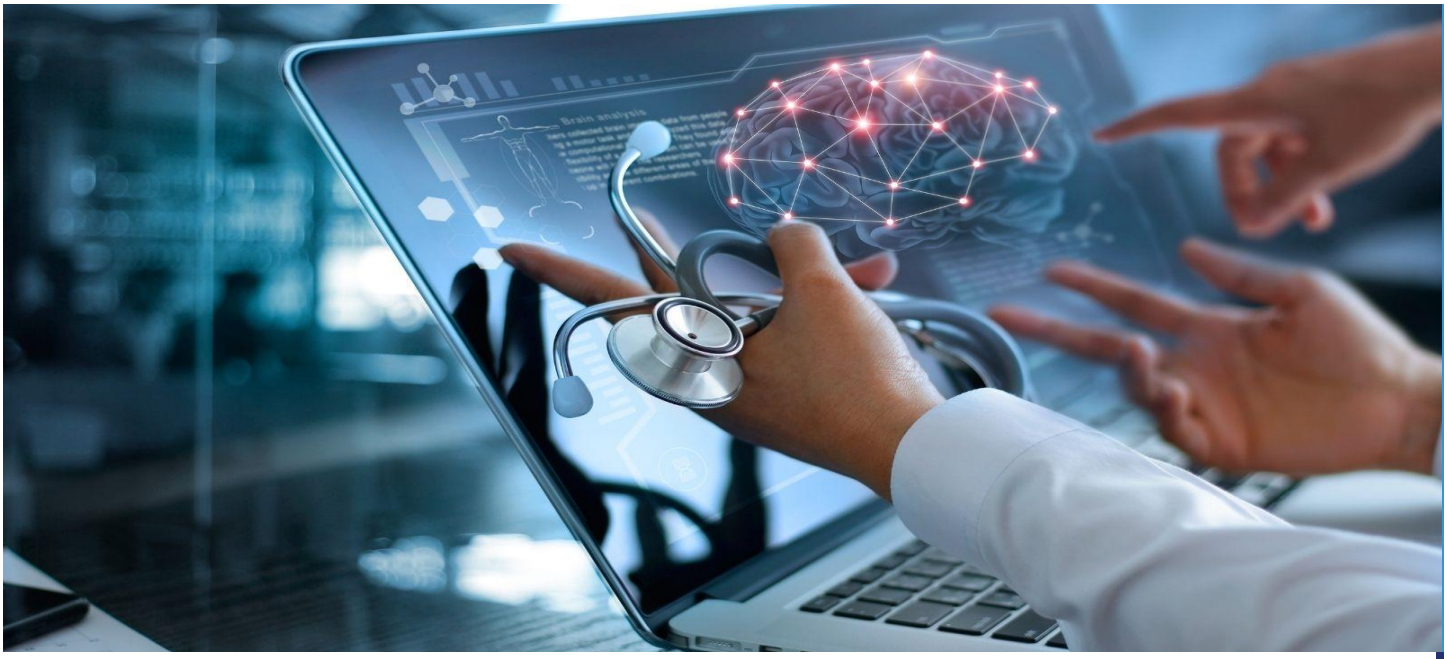
ARTIFICIAL INTELLIGENCE EVOLUTION IN MEDICAL DEVICES

TRANSFORMING HEALTHCARE: REVOLUTION IN MEDICAL DEVICES

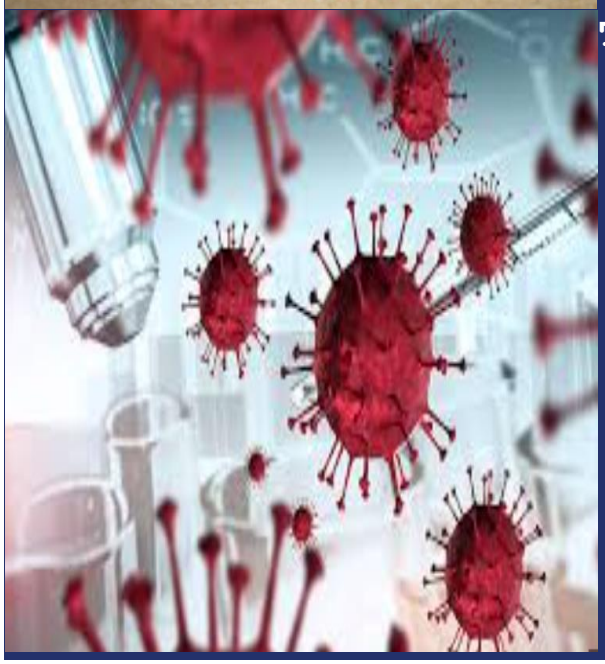


IN THE REALM OF HEALTHCARE, THE CONVERGENCE OF ARTIFICIAL INTELLIGENCE (AI) AND MEDICAL DEVICES HAS IGNITED A REVOLUTIONARY SPARK. AI HAS EMERGED AS A GAME-CHANGER, EMPOWERING MEDICAL DEVICES TO UNLOCK NEW LEVELS OF ACCURACY, EFFICIENCY, AND PATIENT CARE.

HEALTHCARE — ONE OF THE LARGEST SECTORS OF THE ECONOMY — IS AMONG THE MANY INDUSTRIES WITH SIGNIFICANT OPPORTUNITIES FOR THE USE OF ARTIFICIAL INTELLIGENCE (AI) AND MACHINE LEARNING (ML).

WHY IS HEALTHCARE RIPE FOR DISRUPTION?

From a data standpoint, the healthcare industry produces and relies upon massive amounts of data from diverse sources. That creates a rich environment for applying AI and ML. The need for these technologies is there given the inefficiencies in the healthcare system. **IT IS ESTIMATED THAT IT TAKES MORE THAN EIGHT YEARS AND $2 BILLION TO DEVELOP A DRUG, AND THE LIKELIHOOD OF FAILURE IS QUITE HIGH WITH ONLY ONE OF TEN CANDIDATES EXPECTED TO GAIN REGULATORY APPROVAL**



THE COVID-19 PANDEMIC UNDERSCORED THE NEED FOR DIGITAL SOLUTIONS IN HEALTHCARE TO IMPROVE PATIENT ACCESS OUTCOMES AND REPRESENTED A KEY INFLECTION POINT FOR TELEHEALTH AND REMOTE MONITORING.

Where are we now in the integration of AI into the healthcare sector?

Despite all previous innovation, we are still in the early innings. While the promise of ai/ml in healthcare has been there for decades, we believe its role came into the spotlight during the covid-19 pandemic response. AI helped companies develop covid-19 miRNA vaccines and therapeutics at unprecedented speeds.

Demand for telehealth is elevated since the covid pandemic.

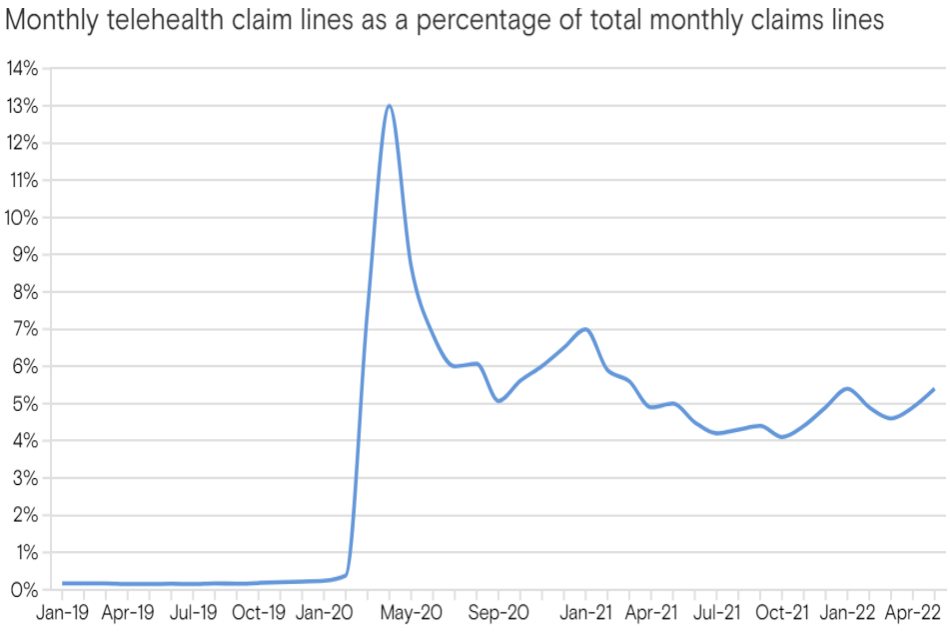
What are the barriers or hurdles for AI in healthcare?

There are cultural obstacles, such as the healthcare industry relying on patents and exclusivity. That raises questions about how IP can be protected without slowing progress, or how information can be shared as it is in software engineering research that benefits from open-source data.

Lack of transparency and concerns around data sharing leading to cybersecurity concerns and hindering adoption of ai in healthcare

Challenges related to identification and minimization of bias in ai algorithms leading to concerns surrounding the reliability of diagnosis and thus hindering the use of ai-enabled solutions.

The hesitancy around ai/ml may further be exacerbated by the need for better surveillance systems to protect patients from hacking or breach events, the lack of continuing education for healthcare professionals on the benefits of these technologies and the concern that ai/ml models may be susceptible to bias as a result of historical underrepresentation embedded in training data.



THE TECHNOLOGIES THAT COULD BE TRANSFORMATIVE IN HEALTHCARE, INCLUDES DEEP LEARNING, CLOUD COMPUTING, BIG DATA ANALYTICS AND BLOCKCHAIN.

RECENT DEVELOPMENTS IN GLOBAL ARTIFICIAL INTELLIGENCE/MACHINE LEARNING MEDICAL DEVICE MARKET.

- IN OCTOBER 2022, KONINKLIJKE PHILIPS N.V. RECEIVED THE U.S. FDA 510(K) APPROVAL FOR ITS AI-ENABLED MRCAT HEAD AND NECK RADIOTHERAPY APPLICATION.
- IN JUNE 2022, AIDOC MEDICAL, LTD. RAISED A $110 MILLION SERIES D ROUND INVESTMENT TO ADDRESS THE CHALLENGES FACED BY HEALTH SYSTEMS BY USING AI.
- IN JUNE 2022, HYPERFINE INC. RECEIVED FDA 510(K) CLEARANCE FOR THE MRI DEVICE SWOOP. THE SWOOP SYSTEM SOFTWARE USES DEEP LEARNING TO DELIVER CLEAR IMAGES THAT AID IN CLINICAL DIAGNOSIS.
- IN APRIL 2022, CLARIUS MOBILE HEALTH CORP.'S RANGE OF ULTRA-PORTABLE SCANNERS, CLARIUS HD, WAS APPROVED BY HEALTH CANADA.
- IN MARCH 2022, CLARIUS MOBILE HEALTH CORP. RAISED $20.0 MILLION IN FUNDING TO EXPAND ITS COMMERCIAL-SCALE ACTIVITIES.

KEY PLAYERS

aidoc Always On AI

PHILIPS Healthcare

CELLAVISION

iz.ai

HYPERFINE

SIEMENS Healthineers

Medtronic

THE FUTURE OF AI IN MEDICAL DEVICES IS INCREDIBLY PROMISING. AS AI ALGORITHMS CONTINUE TO EVOLVE, SO TOO WILL THEIR POTENTIAL TO TRANSFORM HEALTHCARE. FURTHER ADVANCEMENTS IN DATA INTEGRATION, INTEROPERABILITY, AND AI TECHNOLOGIES WILL DRIVE PERSONALIZED MEDICINE, IMPROVED PATIENT OUTCOMES, AND BETTER RESOURCE UTILIZATION.

Source[1] | Source[2] | Source[3] | Source[4] | Source[5] | Source[6] | Source[7]