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How AI is enhancing medical diagnostics

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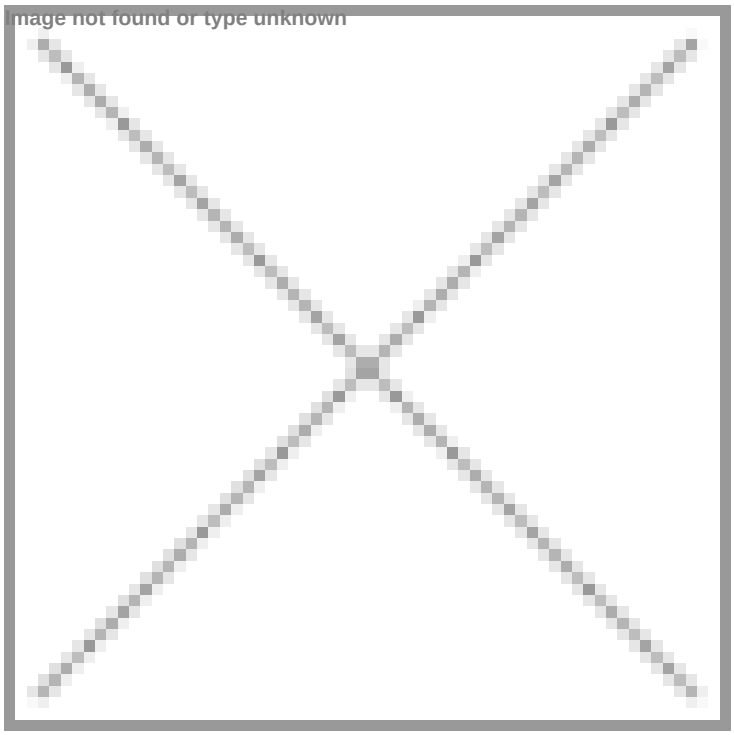
India's medical diagnostics sector is undergoing a transformative shift, fuelled by the power of Artificial Intelligence (AI). According to a report by Research and Markets, the AI-based Medical Diagnostics Market in India was valued at $12.87 million in 2024 and is projected to soar to $44.87 million by 2030, growing at an impressive CAGR of 23.1 per cent. However, the rapid adoption of AI technologies in diagnostics is probably more focused on early detection of diseases such as cancer, respiratory diseases, diabetes, and cardiovascular diseases, among others. Sensing this bend, the industry has now started deploying AI to detect unexplored areas such as ophthalmology, dermatology, trichology, in vitro fertilisation, to name a few. Let’s find out more about the potential that lies in the hands of AI in medical diagnostics.



AI is rapidly transforming healthcare, particularly in diagnostics and imaging across the globe. The industry is continuously developing solutions in the form of new apps and devices using AI to ease out the burden on the healthcare setting. As a result, these solutions are improving diagnostic accuracy and enabling faster treatment decisions for conditions such as cancer, tuberculosis, diabetes, cardiovascular diseases etc.

With India witnessing a rising burden of these diseases, coupled with a shortage of skilled healthcare professionals, AI-driven diagnostic solutions are emerging as a transformative force. By reducing diagnostic turnaround times, increasing accuracy, and enabling remote healthcare access, AI is playing a pivotal role in addressing the growing healthcare demand and disease burden, particularly in urban areas where non-communicable diseases (NCDs) are more prevalent.

However, challenges persist in terms of high implementation costs, the lack of standardised AI regulations, a limited skilled workforce and concerns over data privacy and patient confidentiality. Furthermore, limited adoption of AI in rural healthcare

facilities remains a significant barrier to widespread deployment in India.

Despite these challenges, many new areas such as ophthalmology, dermatology, trichology, in vitro fertilisation, etc. are being touched upon by the industry where the use of AI can offer timely diagnosis and effective treatment plans.

“Diagnostics is undergoing a quiet revolution, one driven by artificial intelligence (AI). What was once a system dependent on reactive responses is now evolving into a proactive model that prioritises early detection, precision, and patient clarity. In a world where diagnostic errors contribute to 10 per cent of patient deaths, the stakes couldn’t be higher. AI brings a much-needed shift, enhancing accuracy, speeding up outcomes, and making care more understandable and accessible”, said **Deepak Sahni, Founder & Chief Executive Officer, Healthians.**

Setting the right vision with AI

The growing number of cases of eye diseases such as diabetic retinopathy, glaucoma, cataract, and age-related macular degeneration (AMD), in the country has urged technology developers to increase the use of AI for their early detection. Studies have suggested that AI systems demonstrate strong diagnostic performance in detecting eye conditions such as diabetic retinopathy, with sensitivity and specificity comparable to or exceeding traditional clinicians.

One notable example is Remidio Innovative Solutions, a Bengaluru-based healthtech startup focused on preventing avoidable blindness with the use of AI. The company has recently received regulatory approval from the State FDA, Karnataka (CDSCO), for its Medios HI (Humanising Intelligence) Glaucoma AI and Medios HI AMD AI tools. Following the success of the CDSCO-approved Medios DR HI, AI for diabetic retinopathy, which has impacted nearly 2,50,000 patients in the past year, the newly approved AI solutions are focused on early detection of glaucoma and AMD in diverse healthcare settings.

A recent significant initiative leveraging Remidio’s AI technology is the announcement of Nayanamritham 2.0, India’s first government-led AI-assisted eye disease screening programme, launched by the Kerala government in February 2025.

“India accounts for 12 million glaucoma patients, nearly one in eight globally. Yet over 90 per cent of these cases remain undiagnosed, often leading to irreversible vision loss. Early detection using portable, AI-enabled tools can drastically change this trajectory”, said **Dr Anand Sivaraman, CEO and Founding Director, Remidio**.

Another example of fostering cutting-edge research in eye care is Zeiss India partnering with the Indian Institute of Science (IISc), Bengaluru, to establish a state-of-the-art research facility. This facility is focused on developing high-fidelity AI solutions for eye care and upskilling students in AI-based technologies. Supported by the Spectrum Lab at IISc, the collaboration aims to harness AI's potential to improve early diagnosis and patient outcomes in ophthalmology.

Zeiss India is also sponsoring students through its 'MTech Fellowship Programme,' further strengthening the research ecosystem and promoting advancements in AI-driven eye care solutions.

Mumbai-based startup AND Healthcare Solutions is another player that is focused on delivering low-cost, AI-driven eye screening solutions to millions. The startup has partnered with Australian company TeleMedC to roll out advanced eye imaging and AI-powered diagnostics across India.

Mumbai-based institute Wadhwani AI is also emerging as another key player in this space. As a key partner, Wadhwani AI is supporting the development of multiple AI solutions for the screening of diabetic retinopathy, pulmonary and skin conditions at the All India Institutes of Medical Sciences (AIIMS). These solutions will now be scaled by the AIIMS Centre of Excellence (CoE), in collaboration with the Ministry of Health and Family Welfare, across primary and secondary healthcare settings to ensure timely care for all.

“Diabetic retinopathy is a leading cause of preventable blindness, especially in India, where access to specialised eye care is limited, particularly in rural regions. Many individuals are unaware of their condition until severe vision loss occurs. AI-based solutions can empower optometrists and field investigators to screen patients, enabling early diagnosis and referral to specialists. We strongly believe in India’s ability to lead in AI innovation. With the right talent, ecosystem, and data, India can be at the forefront of AI applications”, said **Nakul Jain, Director of Products and Design at Wadhwani AI.**

Further, Bengaluru-based startup NeuraSim Health, in collaboration with QWR, has introduced BeeVee, India's first AI-powered VR therapy for amblyopia or lazy eye. This groundbreaking solution is transforming vision care with 3X faster recovery, making treatment more effective, engaging, and now available for at-home use.

The application of AI in ophthalmology encompasses a wide range of innovations, from advanced diagnostic tools that can detect conditions like diabetic retinopathy, AMD and glaucoma with remarkable precision to personalised treatment plans that optimise therapeutic outcomes and reduce costs. Additionally, AI-driven surgical tools and teleophthalmology services are making high-quality eye care more accessible, particularly in underserved and remote areas.

Exploring dermatology and trichology

AI is now also being used to detect numerous skin (eczema, acne, psoriasis, vitiligo) and hair (baldness, alopecia, scalp infection) conditions to offer better health solutions to millions across India.

For instance, in a revolutionary move set to transform the Rs 25,000 crore-worth Indian skincare market, Mumbai-based health-tech platform Skin Beyond Borders (SkinBB) has launched a pioneering Skincare Metaverse platform. This innovative digital ecosystem seamlessly integrates cutting-edge AI technology with clinical knowledge, creating a unique synergy between consumers, clinicians, and industry partners.

Further, Kaya Clinic has launched a revolutionary AI app that offers an in-depth understanding of skin issues tailored to individual needs, making it the first app in India to leverage AI for personalised skin diagnosis. The app focuses on analysing acne, scars, pigmentation, fine lines, and anti-ageing concerns. Kaya holds the intellectual property, for the AI app, making it as the first AI-powered dermatology service in India.

Also, Bengaluru-based startup Cureskin, a leader in AI-driven dermatology solutions, has developed the world's first AI-powered hair analyser. It is designed to accurately detect male pattern baldness and assess hairline health with advanced precision.

Arshan Ommid, Founder and Chief Executive Officer of Dermose, said, "AI has the unprecedented ability to analyse the complexities of hair loss, from genetic predispositions to lifestyle factors, creating a holistic diagnostic framework. This precision equips clinicians to design truly tailored treatments, giving patients confidence in both the process and the outcome. AI tools such as computer vision and big data analytics are transforming the treatment of chronic conditions by allowing physicians to automate the identification of biomarkers for hair loss and combine thorough lab results with trichoscopic data. These developments significantly shorten diagnostic times while increasing precision, enabling patients to start receiving efficient treatments earlier."

AI in IVF and birth management

Another area where a rapid surge of AI integration is taking place is in vitro fertilisation (IVF). A type of assisted reproductive technology (ART), IVF has been revolutionising the field of infertility treatment over the past few years in India. With a market size of Rs 12000 crore, the IVF procedures are now offering better treatment plans with AI integration. A most recent example of this utilisation is the world's first infant born (to an Indian couple in the US) using a fully automated and digitally controlled intracytoplasmic sperm injection (ICSI) process. After several failed IVF attempts, the couple was referred for ICSI treatment at a fertility clinic in Mexico, where four of the five eggs treated with AI-assisted ICSI were successfully fertilised, ultimately resulting in the first live birth.

According to **Dr Ramnath Babu T J, Co-founder, CEO, SpOvum Technologies**, "The potential that AI and automation bring to IVF is unimaginable. They hold the possibility of increased success rates, customised treatment protocols, and lower costs, making fertility treatment affordable. The intersection of AI, automation, and IVF is a revolution in reproductive medicine. These advancements are hope in a country like India, where infertility is increasing."

Additionally, labour and delivery management is now also being handled using AI, by predicting birth times with precision and optimising hospital operations in real time. This groundbreaking AI-based obstetrics platform has been developed in a collaborative effort by US-based Birth Model with Pune-based Mindbowser.

"What makes AI particularly valuable is its ability to quickly process large volumes of data and identify patterns that might be missed during routine evaluations. As the technology evolves, AI is expected to become a standard part of maternal care, not just in well-equipped hospitals but also in remote and underserved areas via mobile health tools and wearable devices. With

continued research and thoughtful regulation, AI has the potential to make maternal care more personalised, accessible, and timely, ultimately improving outcomes for mothers and babies and reshaping the future of prenatal health", said **Ayush Jain, CEO & Founder, Mindbowser.**

Way forward

While new avenues are opening for AI-based healthcare implementation and delivery, a strong and supportive ecosystem will need to be built in the coming years. The government is already on track to strengthen the skills for AI with its ongoing IndiaAI Mission. With Stanford University ranking India among the top four countries along with the US, China, and the UK in the Global and National AI vibrancy, AI-based innovations in India will cement the landscape further.

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