

Changing white noise into pink noise: For white aprons

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AI is being wielded to automate, simplify, accelerate, smarten and sharpen a lot of areas in healthcare. But what happens when it is used where it all starts – diagnosis? **Anuj Gupta, Co-Founder of AI4Rx**, helps to dissect why, how and where AI helps to bridge the gap between doctors and patients

▼ **When there are so many AI solutions emerging in the healthcare space, what sets you apart? What new problem or answer is AI4RX after?**

We are focusing on empowerment of patients and tools for tech-savvy doctors. We want to shorten the distance between the moment a patient thinks of a doctor and the moment of final diagnosis. All the time, confusion, lack of clarity that occupies this distance – can be cut away when AI asks the right questions to a patient and presents them in a crisp, and spot-on, way to the doctor. AI4Rx has two apps: MedBeat HealthConnect for patients for medical summary generation; and MedBeat HealthConnect Plus for medical institutions (Doctors' OPD, Clinics & Hospitals) – In addition to patients' summary, it also provides differential diagnoses to the doctor who can then correlate clinically. It uses AI to not just get an accurate medical summary of patients' ailments and symptoms, but also offers differential diagnoses. MedBeat HealthConnect Plus is meant for the doctors or the medical community (Doctors, clinics and hospitals) and is a B2B app. This group will also be able to access AI generated differential diagnoses, based on the symptoms of their patients, which they can then correlate clinically with physical examination. This diagnoses feature is not available to the patients or for the non-medical community.

▼ **How does this work?**

We started this concept two years back with some doctors as experts. We had observed that patients often struggle to communicate their problem properly to the doctors. In India, with our massive population, this struggle can have a lot of implications in terms of waiting time, stress and inaccurate diagnosis. What if a digital avatar of a doctor asked the patient some precisely useful questions about his/her condition? So we developed an AI engine that could do that and create a medical summary for the doctors. This helps to improve the accuracy of diagnosis. Equipped with background information on previous conditions, we can also guide patients to the right specialist or department—again, saving a lot of time for both patients and doctors. This approach removes mis-diagnosis and late treatment scenarios.



ANUJ GUPTA, Co-Founder, AI4Rx

Also, remote areas can be addressed very fast when doctors have the right summaries in front of them.

▼ **And where does the data come from?**

Our medical experts and advisors have helped to develop questions and verification measures. Our technology is hybrid. It's true that in Machine Learning having data is crucial. In healthcare a lot of data is either not adequately available or is biased. We have built a model where questions and visual data can lead to quick summaries – with proper validation, lab investigations, as guided by our experts. We are learning from data. It's a combination of expert data and model data.

The app is backed by an effective algorithm that asks the most relevant questions for differential diagnosis. It is a hybrid model that focuses on expert knowledge in medicine with data driven learning. Unlike other deep learning models, MedBeat HealthConnect Plus is transparent, explainable and verifiable by experts. It's also lightweight, highly scalable, and comes with APIs for easy integration.

▼ **How effective has it been? Any pilots or deployments you can talk about?**

The assistant app shares the summary with the Doctor with differential diagnoses for the Doctors' consumption. The doctor can physically examine the patient clinically and reach a formal diagnosis.

MedBeat HealthConnect Plus will help in reducing around 14-20 per cent of consultation time and in addition will help in analyzing the symptoms better and reaching a quicker and more accurate diagnosis. The accuracy rate of the app in trials is around 95 per cent. MedBeat HealthConnect Plus pilot is running at Jindal Medical Centre, Ghaziabad.

▼ **Is the model versatile enough for Indian population and health issues here?**

Our model is very modular. We are building it disease by disease. So far it covers 200 diseases and we want to touch 300 diseases ahead.

▼ **How apt is this data-use from the angles of privacy and avoidance of third-party misuse. Did the recent DPDP regulatory change in India affect your model?**

I have been part of GDPR implementation in some previous stints. We have the concept of in-built privacy. Data monetisation through third parties is not the game we are into. Privacy has been a core part of our solution since the onset. The DPDP Bill is a good change but nothing changed for us. We are not taking Personally Identifiable Information (PII). We don't store such data. We are a decision system where data is used only for the purpose of suggestions and learning.

▼ **Any chances of duplication or bias when the patient meets the doctor?**

Yes, we can ensure that does not happen. The summary is complemented with physical examination and advanced questions. We provide provisional and differential diagnosis. The final diagnosis is always that of a doctor. Human will always be in the loop of AI here.

A lot of healthcare data is still paper-driven. Also while many areas are being technologically-powered through various healthtech ideas, most of this change is fragmented. Is that a challenge? Would end-to-end tech-powered healthcare happen soon?

Yes, most health records are scattered and in paper format. It would be good to have a holistic and seamless chain. There are players like Microsoft trying to use generative AI to address these issues. We intend to partner with such players and integrate technologies. Our focus is patients. Startups cannot solve this massive digitalisation problem but we can build on top of digitalisation efforts.

▼ **Do you feel doctor/medical staff fatigue is as serious a problem in India as it has been seen recently to be in certain countries?**

I can answer this from a patient's perspective only. Fatigue is a serious problem. Our solution intends to help with exactly that—lightening the weight for overburdened doctors and staff. At the end of the day, doctors are humans—they feel tired, sleepy and stressed.

▼ **Self-diagnosis is another problem in healthcare these days. Will such apps exacerbate that tendency?**

Our deliberate aim is to not disclose the disease or possibility to the patient—despite having some demands on that front coming to us. The summary is only available to the doctor. We underline that AI can never replace a doctor. We should not encourage self-diagnosis. We don't.

▼ **Will this solution reach all kinds of patients?**

We have also made sure that the app is multi-lingual. We are working to launch in some South Indian languages for patient-side interaction. The summary for doctors is in English. The question bank is as huge as 600 questions. And they work well for not-so-educated patients also—with multiple choices.

▼ **Will you ever tie this in with wearables – for automatic nudges to patients to visit a doctor?**

That's a possibility. Because parameters can be taken from anywhere. It's a good idea.

▼ AI cannot replace human doctors. The final diagnosis is always that of a doctor.