

## "AI has the potential to revolutionize healthcare delivery"

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By : Rahul Koul - December 19, 2018



***Bangalore-based healthtech startup, NIRMAI (Non-Invasive Risk Assessment with Machine Intelligence), has developed an innovative early breast cancer detection technology that is a radiation free and non-invasive. The solution is based on thermal imaging and cloud hosted analytics and is portable, accurate, privacy aware and can be used for women of all ages. The core of their solution is an Artificial Intelligence based computer aided diagnostic engine that powers these benefits. NIRMAI has developed a novel patented technique called Thermalytix™ which is a fusion of machine learning and advanced thermal imaging.***

***In this exclusive interview, BioVoice interacted with Dr Geetha Manjunath, CEO and CTO, NIRMAI who has over 25 years of experience in IT research and has led many innovative projects in healthcare and transportation sector. Here she shared the details about startup's foundation, products and much more. Read on:***



**Please tell us about the story behind the foundation of NIRMAI. How has been the journey so far?**

**Geetha: We started working on the idea of non-invasive breast cancer detection way back in 2014 as a research project in my lab. When the US company I was working with decided to stop all exploratory activities, I requested some of my team members to join and start our own venture. Along with my co-founder Nidhi Mathur, I incorporated Niramai (which stands for Non Invasive Risk Assessment with Machine Learning) and started full time working from Jan 2017.**

**The journey has been really exciting, challenging and very fulfilling. The first problem was to raise funds in order to run the company. In April 2017 we raised seed funding from pi Ventures, Ankur Capital, Axilor Ventures, 500 Startups and Binny Bansal. We conceptualized and built the cancer screening product and deployed in our reference site in August 2017. We realised early on how comfortable women were with our solution. Since the screening test was completely privacy aware and radiation free, women were very open to take the test. We also fine-tuned the algorithms, did multiple clinical trials and got good results to drive clinical and regulatory acceptance. We have started expanding our customer base. The test is currently available in Bengaluru, Mumbai, Pune, Mysore, Hyderabad, and Dehradun. Chennai and Delhi sites will be coming up next month. Overall a good learning phase with a lot of encouragement from the startup ecosystem in India.**



**Why did you decide to focus on developing Artificial Intelligence based computer aided diagnostic engine? What were the challenges?**

**Geetha: Nearly 500,000 women die every year globally from breast cancer. Many of these lives could be saved if we were to detect cancer early on. We will have better treatment effectiveness and cost of treatment will also be lower. Initially, when we learnt that people had used thermography for breast cancer detection, we looked at why such a superb non-invasive technique was not used much in real practice. We then learnt that there was lot of subjectivity in interpretation and errors in image capture which made the performance not as suitable.**

**Over 400,000 color points need to be analyzed per person and that is a huge cognitive task for a radiologist. So, we decided to try a machine learning based approach and provide an automated interpretation solution that can be used by a medical professional for cancer care.**

**The key challenge was to get high levels of accuracies so that doctors can trust the solution. A lot of inventive algorithms had to be developed which has now led to 10 patent applications (of which 6 are already granted).**



**IMAGE- NIRAMAI Team. NIRAMAI co-founders Dr Geetha Manjunath and Nidhi Mathur (middle), both were working together at Xerox earlier. In 2017, they raised seed funding led by pi Ventures, with participation from Ankur Capital, Axilor Ventures, 500 Startups and Flipkart co-founder Binny Bansal.**



**How successful has been the product development so far? What are the products and their unique features?**

**Geetha: Niramai has developed a novel solution for detecting early stage breast cancer in a completely privacy aware manner. The core of the solution is Thermalytix, an automated diagnostic tool, which combines thermal imaging with artificial intelligence. The solution is radiation-free, accurate, automated and works on women of all age groups. Given that it is portable and low-cost, the solution makes cancer screening more accessible and affordable to all.**

**Niramai solution is deployed in 14 hospitals and diagnostic centres now. We had done clinical trials in reputed hospitals like Narayana Hrudayalaya and HCG, showing the efficacy of our solution to be equivalent or better than current methods. Over 4500 women have undergone this test. We are also partnering with cancer societies to take the test to many rural areas as well. Women really like our test as no one touches or sees the person during the test – it is a simple private experience.**



**How receptive has been the market to AI in healthcare? What is the future potential?**

**Geetha: Artificial intelligence has the potential to revolutionize healthcare delivery in a developing country like India, where access to healthcare is limited to a few in urban areas and there is an acute shortage of expert doctors. Using AI in healthcare can help in improving the efficiency and productivity of radiologist by providing data based decision making. While in the rural areas, the tool can be used as an automated triaging device mediated through a health worker to identify people who need critical care.**

**We find doctors being more open to accept AI based products as their tools now. They are willing to evaluate and accept innovative solution. It is exciting time for people working in AI for healthcare – as there is a great opportunity to solve meaningful challenging problems with social impact.**



**Dr Geetha Manjunath and Nidhi Mathur, COO & Co-founder. Nidhi is responsible for the product roadmap and go-to-market strategy at NIRAMAI.**



**What are your immediate and long term goals?**

**Geetha: We hope to make cancer detection universal, easy and affordable to all. We will focus on India for the next two years and then expand to Asia and rest of the world. We are already regulatory approved for India and our device is CE and FDA approved. We are working on completing the required certifications for the solution to enable this expansion. We have also started discussions with government institutions to enable us to take this solution to large number of women in India.**



**What kind of outlook do you share for the company in next five years?**

**Geetha: I would like to think about Niramai as two main divisions – one focusing on hospitals and diagnostic centres to sell our managed solution of Niramai hardware-software to provide preventive screening and diagnostic tests for women walking into a medical centre. The second division is for Screening Operations. We would like to conduct group screening programs in corporate and academic institutions to enable many women to avail the test at their work place or at home. We also would like to partner with NGO and government bodies to conduct large scale camps in rural areas. The overall vision is to take Niramai solution to every lady in India and beyond.**