

Teleradiology Solutions: making AI-enabled diagnosis accessible to patients anytime, anywhere

Teleradiology Solutions is countering the global shortage of radiologists by having an AI-driven solution complete the first round of diagnosis. This lets radiologists review more scans and gives clients faster, more accurate diagnoses.

A major issue in the healthcare industry is the lack of radiologists to complete a review of scans to allow for a medical problem to be diagnosed. It is a problem that is especially acute in rural areas where there is a shortage of equipment as well as qualified personnel. Two Yale alumni - **Sunita Maheshwari and Arjun Kalyanpur** – zeroed in on coming up with a solution that can disrupt access to timely treatment for large, underserved parts of India's population.

These US-trained doctors returned to India in the early 2000s to try and make a difference by providing high-quality healthcare. Arjun ended up working for Yale out of Bengaluru, reviewing radiology scans. This turned into a business idea – an outsourced setup to allow US hospitals get scans reviewed overnight.

Soon, this grew into a global setup. Today, it helps doctors work with patients from across the world by simply digitising data obtained from their radiology scans and sending them across to respective doctors without any hassle.

How and why it works

Globally, there is a shortage of radiologists around the world, more so in India. All these years, the group worked on making radiologists more efficient to be able to report more

diagnostic studies per day, helping patients around the world with high quality reports.

The platform, RadSpa, that was built by their tech team enabled a teleradiology workflow to be implemented. It takes the radiology scans sent from anywhere in the world, assigns it to the appropriate radiologist who process the images and sends back the results, along with a preliminary diagnosis.

Teleradiology Solutions provides many different services and quality reporting for scans for trauma, musculoskeletal, neuroradiology, body and abdominal, vascular, and paediatric imaging.

Unlike many other young companies, the couple deliberately decided not to raise external funding, which allowed the business to grow at its own pace and in the way they wanted it to.

The intersection of science and technology

At Teleradiology Solutions, doctors and technologists work together to understand each other's perspective to create new products at the intersection of health and technology, with the goal of more accurate reports and more efficient radiologists.



Sunita Maheshwari and Arjun Kalyanpur, Founders of Teleradiology Solutions

As artificial algorithms began to enter the health care space, the group has worked on building their own AI diagnostic algorithms as well as partnering with AI companies to deploy their AI tools onto RadSpa for the radiologists to use.

Telerad tech's first AI algorithm is Mammo-assist which can auto-detect breast cancer. The benefits of an AI enabled intelligent workflow platform are two-fold. For one, the efficiency tools help each radiologist process a much greater number of scans than they would if the process was manual. Next, it also allows for more accurate diagnosis cutting down on medical errors.

The impact of the solution

Apart from entrepreneurship, the founders had a larger aim - to provide quality healthcare to the people of India, especially in rural areas. They are now doing this by bringing services to rural India via setting up teleradiology for governments such as they have done for the state of Tripura as part of the National Health Mission. Through the **Telerad Foundation**, they provide high quality diagnostics to poor

patients at charitable hospitals, such as the Ramakrishna mission hospitals. In addition, they are helping test technologies in partnership with the Gates Foundation for the automated detection of tuberculosis, which can be game changing for the public health of India.

Working in the area of public health brings with it the advantage of gaining deep insights based on the large volumes of radiology data available. This in turn will help establish community and national-level patterns in data and genomics, longitudinal analysis and creation of virtual GPs to cater to population. Zhong An Health of China has already achieved this at some scale

India doesn't need to be far behind.

Also, under way is a pursuit of radio-omics or the intersection of radiology with genomics to personalise solutions.

Growth and future plans

Apart from Teleradiology Solutions and Telerad Tech, the group has a chain of primary care clinics in Bangalore called RXDX where

telemedicine solutions are deployed. The group currently has a staff strength of about 600 including 150 doctors and over 75 radiologists along with other professionals like data entry operators, transcriptionists, administrative, IT, finance and HR professionals. The group clocked Rs 100 crore in income in 2016-2017 and will end 2018 at a top line of 135 crore. It aims to touch at least Rs 170 crore in the next financial year. Here's a quick look at its other solutions.

Tele 3D Imaging: Through a tie up with Harvard's Mass General hospital, the company runs a 3D lab in India. While it is important to do a complete scan of the affected area, Tele 3D Imaging provides a way to handle complex vascular and neuroimaging cases. For complications like aortic or cerebral aneurysms, the 3D imaging technique provides a thorough scan of the entire complexity that enhances the accuracy of the report. This also facilitates the understanding of the problem and allows for better planning of the treatment.

Quality Over-Read: Quality Over-Read is a peer review of the reports of a radiologist or radiologist group while simultaneously reviewing the examinations to assess the quality and ensure compliance with the standard of patient care. This allows radiologists to get quality information about a patient's disorders and improve the standard of analysis. The group provides Over-Read/Second Opinion Services wherein their radiologist group performs retrospective reviews on reports according to a client's request and grade them based on the American College of Radiology Peer Review Scoring System.

Clinical Trials: Via Image Core Labs, Teleradiology solutions provides clinical trial imaging solutions with an integrated image management capability. This makes it easy to access quality and cost-effective reports in any phase of a clinical trial or to have algorithms tested. Their image core lab has tie ups with several entities including Biocon, Alkem, Stempeutics, Polypid, Zebra and more.

