Meet the Startups

Three cloud startups using AI to save lives and reduce costs

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Health care innovation doesn't just come from labs and hospitals. Artificial intelligence and machine learning boost traditional technologies like X-rays and ECGs. The results have the potential to save money and lives, and deliver care more efficiently to underserved populations. AI can even free up medical personnel to spend more time connecting to patients.

In the past, companies with deep pockets for server farms enabling high-performance computing power would lead this type of transformation. But with cloud, more startups are driving innovation.

Streamlining care for lung diseases

Developing countries have plenty of X-ray machines, but they don't always have enough specialized doctors to read the results. Even with telemedicine, it's not always easy to triage patients for X-rays and prioritize the sickest patients' scans.

NeuralMed changes that with an AI and NLP platform that surfaces the sickest patients and inform emergency room doctors and radiologists of the most complex cases. The result is a one-hour reduction in the time it takes to identify patients with life-threatening respiratory issues. Cofounder Anthony Eigier and a team of data scientists used AI and NLP to solve two problems: triaging patient notes (NLP) and patient X-rays (AI). Analyzing intake notes helps determine who to send for an X-ray quickly. Using AI on the X-ray helps non-radiologists staffing ERs triage patients more efficiently. The process tees up the most problematic cases to offsite radiologists more quickly.

The reduction in time it takes to treat the sickest patients was measured at Brazilian hospitals (six are using the system). While Brazil doesn't require U.S. Food and Drug Administration for this type of technology, NeuralMed has submitted its algorithms to the FDA for additional proof as it expands into other countries. It's also made a point to use senior radiologists to tag and evaluate the raw input that goes into those algorithms.

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"A good physician is normally trained by amazing physicians. Because the quality of the data that comes in reflects directly to the quality algorithm that comes out," Eigier says.

NeuralMed's work is cloud and compute-intensive – a key reason they joined the Oracle for Startups program. But it wasn't the only reason.

"Everyone offers cloud credits, and that's valuable," Eigier says. "But Oracle offers an infrastructure that no one else has. Three to four weeks after joining the program, I was talking to the entire Brazil sales team for health care, showing what our products can do. And they were introducing us to Oracle health care clients in Brazil. It gives us credibility, and I would rather that than more cloud credits."

AI to triage chest pain

Utkars Jain was thinking about the grandfather he never met when he cofounded HEARTio, "The doctors thought he was having a heart attack, and by the time they discovered he had a severe gastrointestinal bleeding, it was too late," Jain says.

Chest pain can signal multiple health problems, from serious conditions to more benign problems like pulled chest muscles and reflux. Only 5% of ER visits for chest pain turn out to be heart attacks.

Still, chest pain symptoms trigger detailed, expensive, and time-consuming workups. Jain and cofounder Adam Butchy put their biomedical engineering PhDs to use to train an AI model to read an ECG quickly, to stratify patient risk, and help make admit/discharge decisions. It's a form of triage that has been acknowledged with the U.S. Food and Drug Administration's breakthrough device recognition status.

"The recognition means we have a novel solution that addresses a life-threatening situation," Butchy says. With discounts and support from Oracle for Startups, HEARTio also got a powerful cloud partner. "That allows us to run lots of experiments at once and speed the modeling process."

Reducing deaths from a curable cancer

Like NeuralMed, Aindra Systems is thinking about how to use medical technology to broaden the reach of health care – in this case, to lower India's death rate from cervical cancer.

While a standard test for cervical cancer has driven death rates from the disease down by 70% in the U.S., cervical cancer is a leading cause of cancer deaths in India.

"We are a powerhouse when it comes to software technology, but we kind of transplant systems that have been built for a completely different context and force it here into the Indian context," says Aindra Systems cofounder Adarsh Natarajan. India has plenty of world-class doctors and hospitals, "but they are only available in the metropolitan cities."

In India, it is difficult (mainly in rural settings) to get to a doctor, let alone go for follow-up treatment for early-stage cervical cancer – when the disease is most treatable. The result is nearly 70,000 cervical cancer deaths – higher by percent of population than most other countries.

Natarajan decided to re-imagine cervical cancer screenings and treatment as delivered remotely. He came up with an AI-based computational pathology approach to read the test at the time it's taken,

with telemedicine support from a pathologist. Natarajan says providers using the platform could come equipped with the technology to treat early-stage cervical cancers on the spot. "If a patient needs to return, studies show compliance rates to follow on treatment drops by about 50%."

Aindra's platform has been deployed through non-government organization clinics. Two-thousand women have been screened. Traditional follow-up readings of the test results by pathologists have validated the results.

None of this is possible without cloud computing and powerful GPUs. Natarajan trains the models in the Oracle cloud. The edge devices running in the field use NVIDIA's GPUs. "The data is pretty large, and the Oracle cloud helps us train the data in very quick time."

Natarajan hopes this is the first of many diseases that can be better managed at the point-of-care. His goal is to deploy his AI-powered platform, dubbed Astra, to tackle multiple health challenges to underserved populations worldwide. "Our goal is to democratize quality health care in an accessible and affordable way."

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