Saving lives and revolutionizing healthcare with GenAI

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Northwestern Medicine collaborates with Dell Technologies and NVIDIA on a GenAI solution that can greatly improve patient outcomes and boost the efficiency of healthcare delivery.

Business needs

Northwestern Medicine saw that AI could enable caregivers to be more effective in helping patients and accelerate healthcare delivery. To deliver on the potential of AI, it sought to follow a unified approach that would encompass the organization's data assets and data sources instead of providing another specialized software tool.

Solutions at a glance

- Dell PowerEdge XE servers with NVIDIA GPUs
- Dell AI solutions
- Dell AI Factory with NVIDIA

Business results

- Improves radiology performance by up to 40%.

- Saves lives by alerting clinicians to conditions requiring immediate attention.

- Allows caregivers more time to focus on patients.

- Enables predictive, proactive care management at individual, organizational and regional levels.

- Provides a blueprint for GenAI adoption across the healthcare industry.

- Elevates the safety, quality and consistency of healthcare.

NVIDIA.

DELLTechnologies

Innovating on behalf of patients and caregivers

Innovative caregivers at Northwestern Medicine realized early on that AI can transform healthcare by enabling clinicians to make smarter care decisions more rapidly and take better care of patients than more specialized, disparate technology tools allow. Northwestern Medicine evolved its Generative AI (GenAI) practice with a solution that can save patients' lives by highlighting critical conditions and streamlining such processes as reviews of medical imaging. Dr. Mozziyar Etemadi, clinical director of advanced technologies at Northwestern Medicine, says, "GenAI and AI offer a tremendous opportunity to help us take better care of our patients and give time back to care providers."

Collaborating on GenAI solution development

Northwestern Medicine created its GenAI solution in collaboration with the AI engineers and thought leaders at the Dell Technologies AI Innovation Lab in Round Rock, Texas. "I immediately knew that this was going to be a partnership of kindred spirits," says Etemadi. "The Dell Technologies AI Innovation Lab team feels like a part of our organization. We're working together side by side, solving difficult challenges so we can provide the best possible care to our patients."

Etemadi explains the collaborative approach. "Cloud technology can quickly get costly, and it's also more rigid in terms of how you need to access and provision resources. We find it's less expensive and more convenient to deploy GenAI solutions directly on our on-premises infrastructure. Partnering with Dell Technologies makes that even easier."

Dell Technologies and Northwestern Medicine teams accessed the resources of the Dell AI Factory with NVIDIA to engineer and test a GenAI solution to run multimodal large language models. By combining Dell's AI infrastructure and NVIDIA's industry-leading GPUs, high-performance networking and software with turnkey strategies and automated workflows, Dell Technologies and NVIDIA enable organizations to securely develop and deploy GenAI at scale. The GenAI infrastructure designed in the Dell AI Factory with NVIDIA is a cluster of four Dell PowerEdge XE9680 servers, each equipped with eight NVIDIA H100 GPUs. Northwestern Medicine deployed it on premises, where AI researchers can work closely with medical practitioners. "Combining the power of NVIDIA GPUs and the flexibility of Dell PowerEdge servers allows us to solve real problems affecting real patients," Etemadi comments. "It's truly a match made in heaven."

Saving lives and giving time back to caregivers

Automated Radiology Interpretation and Evaluation System (ARIES), the first GenAI tool built on this solution, reviews radiology images in a rapid first pass, quickly providing radiologists with diagnostic findings and anomalies that would normally require hours of review. This allows radiologists to interpret the images and address patient's health challenges faster. Dr. Samir Abboud, chief of emergency radiology at Northwestern Medicine, says, "With many GenAI beta users, we're seeing an up to 40 percent efficiency gain. When one of our more junior radiologists first worked with ARIES, it took his productivity level to that of someone with 15 or 20 years more experience — without any drop-off in quality."

GenAI also creates the first draft of labor-intensive radiology reports. Radiologists can finalize them quickly and dedicate more time to patients. The efficiency of GenAI will help mitigate the shortage of radiologists in U.S. healthcare organizations. "Working with ARIES is almost like having an extra member of your team," says Abboud. "This technology absolutely helps save lives. One reason for this is the prioritization that allows us to address the most critical patients first. Another is simply allowing radiologists to accomplish more."

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Scaling healthcare transformation

As part of a research study, Northwestern Medicine has rolled out ARIES to its 11 hospitals, broadened the reach of GenAI to nursing and other caregiver roles, and it continues to drive collaborative innovation. "Together with Dell Technologies and support from NVIDIA, we're democratizing access to the very tools that create AI," says Etemadi. "I want every hospital system worldwide to have its own AI factory."

Using GenAI to draw on its data assets, Northwestern Medicine constructs digital twins that can help manage the health journey of individual patients, but which can also scale to encompass entire clinics or populations. "By building models that can predict the future, we can finally stop being reactive and be proactive in patient care, hospital management and population management," notes Etemadi. "Powered by GenAI and multimodal large language models, healthcare will soon be able to predict disease states months to years before they happen."

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