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Healthcare AI, Radiology solutions

Powering AI in radiology: The role of structured data

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Whether they realize it or not, radiologists already depend on AI to help them handle growing patient volumes while creating accurate, actionable reports. In fact, most radiology reporting solutions use AI through machine learning and language processing algorithms. For AI to effectively streamline radiology workflow and create reports that initiate the right follow-up actions, it needs access to structured data. Structured data helps AI deliver value for radiologists, downstream care teams, and the patients they serve. Discover how better data leads to better AI, resulting in better outcomes.

In a world of rising patient volumes and increasing provider burnout, the need for AI has never been greater. In radiology, AI-powered solutions can streamline workflow, allowing radiologists to focus on image interpretation instead of report creation while calling attention to important diagnostic clues locked in the pixels.

It's important to remember one of the most valuable applications of AI in radiology is using advanced natural language understanding (NLU) technologies to streamline reporting and unlock the value in vast amounts of radiology reporting data.

Getting more value from radiology reports

A diagnostic image and the words that interpret it become millions of data points containing insights that impact patient outcomes. For AI solutions to make radiology reports more meaningful and actionable, data must be structured and codified according to universally accepted standards. This is where advanced NLU comes into play. Only with powerful NLU systems will downstream care teams be able to understand exactly what the data means and what follow-up actions to take.

We're leaving behind the old world where important information was often buried in free-form narrative reports—a situation that could lead to information being missed and patients falling through the cracks. Now, structured data and automation help streamline reporting workflow while reducing the incidence of failed follow-ups and adverse outcomes. Machine learning-based systems can identify discrete data elements and use them to automatically trigger alerts and initiate actions—in the radiology department and downstream. For example, radiologists can be notified of errors and mismatches, and critical findings can be automatically communicated to the right care teams.

Bringing structured data to life

I'm excited to see the strides Nuance is making in harnessing the power of AI and structured data to transform radiology. The new Ambient Mode in PowerScribe One turns free-form dictation into a structured report so radiologists can dictate their observations in their preferred way, rather than having to follow a prescribed format. And because the AI converts radiologists' observations into structured data, it's easier to share that information with other systems—and for users to act on it. A good example is the ability of PowerScribe One to automatically deliver follow-up recommendations to the EMR, which can enhance communication, optimize workflows, and improve patient outcomes.

Dr. Ben Gordon, Senior Medical Director for Imaging Services at Intermountain Healthcare, has no doubt about the power of structured data. "We're capturing discrete data elements in structured reports as they're spoken by our radiologists and then delivering them to downstream systems—it's having a real impact on patient care," he explains. "For example, we've done some work on community-acquired pneumonia to show a decrease in hospitalization, reduced cost to our patients, and an improvement in outcomes. So now, we're also able to show our executive leaders the value that radiology can deliver."

Structured data: the future of radiology

The value of structured data in radiology is clear. Professional associations are promoting the adoption of common data elements (CDEs) to standardize the names and attributes of data and concepts. For example, RadElement, a joint initiative by RSNA and the ACR, is creating a catalog of radiology CDEs to help enhance reporting, data analysis, decision support, and patient care.

I'm delighted that Nuance is working with the RSNA/ACR Common Data Element Steering Subcommittee to help health systems share actionable radiology reporting data. AI-driven, automated systems like PowerScribe One can reinforce and operationalize these efforts, integrating structured data from AI services and textual elements to accelerate the digital transformation of radiology.

Radiology sits at the heart of care, and implementing CDE standards will multiply the power of structured data for radiologists and the care teams and patients they serve. It will help AI-driven clinical intelligence solutions like PowerScribe One deliver even more value by harnessing the ever-increasing volume of radiology data to help improve patient outcomes.

Tags: Radiology reporting, Future of healthcare, PowerScribe One, Radiology solutions

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About Sheela Agarwal, MD MBA

Dr. Sheela Agarwal joins Nuance from Bayer Healthcare Radiology, where she held the position of Digital Medical Advisor, acting as medical lead for the Digital Solutions Business. Prior to that, Dr. Agarwal held other leadership roles at Bayer including Head of the Digital Solutions Business and Head of Medical Affairs for region Americas. She is an experienced leader with a history of working in academics and industry, has written multiple AI-related publications through her work with the American College of Radiology DSI and was recently involved in establishing "AI Central," the FDA-Cleared Algorithm Catalog. Dr. Agarwal completed her undergraduate and graduate degrees in Economics, as well as her MD from Duke University, her graduate radiology training subspecializing in abdominal radiology and MRI from Massachusetts General Hospital/Harvard Medical School and her MBA from the University of Chicago Booth School of Business. She continues to practice as an abdominal radiologist at Lenox Hill Radiology in New York City.

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