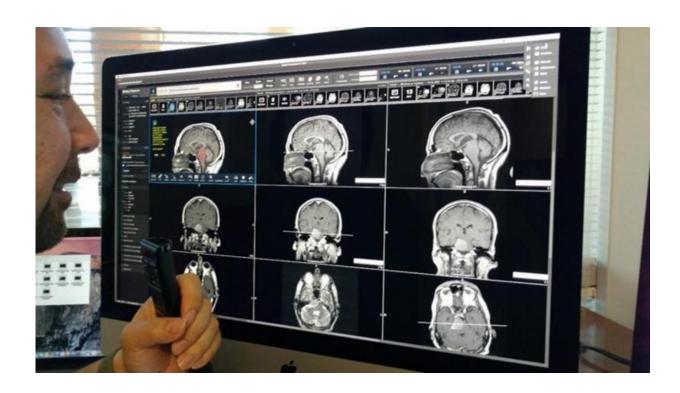# IBM unveils Watson-powered imaging solutions for healthcare providers

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BM demos AI and imaging at RSNA 2016, world's largest annual gathering of radiologists in Chicago. Credit: IBM Watson Health

IBM today announced at the Radiological Society of North America Annual Meeting (RSNA 2016) it will preview new imaging solutions from Watson Health and Merge Healthcare (Merge; an IBM Company) designed to help healthcare providers pursue personalized approaches to patient diagnosis, treatment, and monitoring. The solutions benefit from

more than a decade of machine learning and artificial intelligence (AI) work conducted in IBM Research. Further, IBM Research has partnered with the Radiological Society to debut a live demonstration of how Watson understands, reasons and learns from imaging information.

Medical images are by far the largest and fastest-growing data source in the healthcare industry—IBM researchers estimate that they account for at least 90% of all medical data today—but they also present challenges that need to be addressed. The volume of medical images can be overwhelming to even the most sophisticated specialists; radiologists in some hospital emergency rooms are presented with thousands of images each day.

Tools to help clinicians extract insights from medical images remain limited, requiring most analysis to be done manually. This has created an opportunity to analyze and cross-reference medical images against a deep trove of lab results, electronic health records, genomic tests, clinical studies and other health-related data sources to enable providers to compare new medical images with a patient's image history as well as populations of similar patients to detect changes and anomalies.

"The breadth and depth of Watson-powered solutions on display at RSNA 2016 from Watson Health's imaging group and from Merge are unmatched among the AI community, and showcase how IBM is bringing cognitive computing to healthcare in clinically meaningful ways," said Anne LeGrand, Vice President of Imaging for IBM Watson Health.

Watson Health will show:

- A cognitive peer review tool intended to help healthcare professionals reconcile differences between a patient's clinical evidence, and data in that patient's electronic health record

(EHR).

- A cognitive data summarization tool intended to provide radiologists, cardiologists, and other physicians with patient-specific clinical information to use when interpreting imaging studies, or when diagnosing and treating patients.
- A cognitive physician support tool intended to help doctors personalize healthcare decisions based on integrating imaging data with other types of patient data.
- The MedyMatch "Brain Bleed" App, a cognitive image review tool intended to help emergency room physicians diagnose a stroke or brain bleed in a trauma patient by identifying relevant evidence in a patient record.

Merge will show:

- Marktation, a new process for interpreting medical images intended to help physicians improve image reading speed and accuracy, with an initial application in mammography.
- Watson Clinical Integration Module, a cloud application for radiologists that aims to help increase reader efficiency and counteract common causes of errors in medical imaging, such as base rate neglect, anchoring, bias, framing bias, and premature closure.
- Lesion Segmentation and Tracking Module, designed to help radiologists increase the speed by which they interpret and report comparison exams in cancer patients and for other patient conditions that require longitudinal tracking.

"Watson cognitive computing is ideally suited to support radiologists on their journey 'Beyond Imaging' to practices that address the needs of patient populations, deliver improved patient outcomes, and demonstrate real-world value," said Nancy Koenig, General Manager of Merge Healthcare. "This week at RSNA, Merge is proud to unveil solutions for

providers that enable the first steps on the cognitive care journey, addressing breast cancer, lung cancer, and trauma patients in the ER."

RSNA and IBM Research Show Physicians How Watson Understands, Reasons and Learns

IBM Research will show physicians how Watson might reduce the time to diagnosis and increase efficiency in provider workflows. Radiologists select cases from a variety of imaging topics, make their diagnosis, and see how a Watson solution attempts to assist the same case as it understands, reasons and learns from text- and imaging data in real time.

The live demonstration showcases more than a decade of work by IBM Research's top medical imaging, text mining, and AI data scientists. The demo is able to analyze patient data culled from thousands of data sources and present insights in a compact summary report intended to help clinicians efficiently reach a differential diagnosis. For example, the technology featured in the demo uses deep learning to recognize positions in the body for major anatomical structures (such as in a CT imaging study) and detects anomalies (such as dissections in the aorta, or embolisms in pulmonary arteries). Combining imaging and clinical data with clinical knowledge, it performs clinical inference on the patient's condition and its management, pre-assembling relevant information in a simple online format for a diagnosing physician to consider.

More information: The Merge website: go.merge.com/2016Q4RAMBRSNA_Registration.html

Provided by IBM