SIEMENS Healthineers

Press

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Siemens Healthineers introduces AI-Rad Companion Chest CT as first application based on its new AI-Rad Companion platform

- **AI-Rad Companion Chest CT is an AI-based software assistant for computed tomography.**
- **It identifies and measures organs and lesions on CT images of the thorax, and automatically generates a quantitative report.**
- **It can help increase productivity and quality in radiology.**

At the 2018 Annual Meeting of the Radiological Society of North America (RSNA) in Chicago, USA, Siemens Healthineers will be presenting its first intelligent software assistant for radiology, which can identify organs and potentially disease-relevant changes. AI-Rad Companion Chest CT* is a software assistant that brings artificial intelligence (AI) to computed tomography (CT). Teams of Siemens Healthineers scientists trained the underlying algorithms based on extensive clinical datasets. Using CT images of the thorax (chest), the software can differentiate between the various structures of the chest, highlight them individually, and mark and measure potential abnormalities. This applies equally to organs such as the heart and lungs, the aorta and the vertebral bodies. The software automatically turns the findings into a quantitative report.

AI-Rad Companion Chest CT is the first application based on the new AI-Rad Companion platform. It is designed to help radiologists interpret images faster and more accurately, and to reduce the time involved in documenting results. Being at the forefront of digitalization and AI, Siemens Healthineers will provide further intelligent assistants on its AI-Rad Companion to support healthcare providers' transformation towards value-based healthcare.

"AI-Rad Companion Chest CT is a tool that can actually simultaneously increase productivity and quality in diagnostic radiology," says André Hartung, Head of Computed Tomography at

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Siemens Healthineers. “The intelligent assistant also alerts physicians to potentially disease-relevant changes that would otherwise have been missed because they were not the focus of the original examination. This means that – while also considering the patient’s clinical symptoms, of course – physicians can make faster, more accurate, and more comprehensive diagnoses.”

“For 20 years now, Siemens Healthineers has been a pioneer in developing applications based on artificial intelligence. One of the goals we have for our intelligent digital companions is that they’ll help healthcare providers overcome the challenge of rising patient numbers coupled with shortfalls in staff,” says Yan Beynon, Head of Digital Services at Siemens Healthineers. “Artificial intelligence won’t replace radiologists. It will relieve them of routine tasks and can thereby increase the efficiency and quality of diagnostic imaging processes.”

In many countries, the number of radiological examinations is constantly growing, but the number of experts is not keeping pace. As a result, it is not uncommon for radiologists to conduct as many as 100 examinations in a day. This means that they interpret a new clinical image every three to four seconds – for eight hours a day and more.[1] CT examinations of the thorax are common procedures in daily clinical practice. For radiologists, this means more examinations in a limited amount of time and usually for low reimbursement rates.

In radiology, examinations of the chest, a region containing multiple organs, are also challenging because the images display a wide variety of information. Radiologists mainly assess images regarding the primary indication – in other words, the possible disease – which was the reason for performing the CT scan. By contrast, the algorithms in AI-Rad Companion Chest CT pay equal attention to all areas of the chest and can mark abnormalities in places that the radiologist might not consider so closely. The software assistant generates standardized, reproducible, and quantitative reports based on the AI-supported analysis.

AI-Rad Companion Chest CT currently supports a variety of tasks, such as identifying lung lesions and calculating cardiovascular risk based on an analysis of coronary artery calcification on non-ECG-triggered CT images. A study in collaboration with the Medical University of South Carolina (MUSC) has also shown that AI-Rad Companion Chest CT can

segment and measure the diameter of the aorta, an important parameter for potential aneurysms. These study results will be presented at RSNA 2018.[2] AI-Rad Companion Chest CT also examines the spine in the patient's chest region. It detects and segments the individual vertebrae, labels and analyses them for bone density and possible fractures. This can be helpful for detecting osteoporotic changes at an early stage.

AI-Rad Companion Chest CT is a cloud-based solution and uses certified, secure teamplay** infrastructure that complies with the Health Information Portability and Accountability Act (HIPAA) in the U.S., and with the General Data Protection Regulation (GDPR) in the EU. The software integrates seamlessly into existing clinical workflows and conforms to Digital Imaging and Communications in Medicine (DICOM) standards. The images and all supporting information can be made automatically available in the picture archiving and communication system (PACS) in line with the radiologist's individual requirements. The solution is particularly helpful for time-consuming, basic, and repetitive tasks.

AI-Rad Companion Chest CT is vendor-neutral, can analyze image data from all CT manufacturers and should be available in multiple markets, including the U.S. and Europe, from spring 2019.

Siemens Healthineers is a leader in digitalization and artificial intelligence

Thanks to exponential growth in computing power, enormous storage capacities, and increased networking, artificial intelligence opens up previously unimagined possibilities. Siemens Healthineers uses artificial intelligence to help healthcare providers worldwide to offer individual prevention and therapy based on highly exact diagnoses as part of the move toward precision medicine. With over 500 patents in the field of machine learning, 100 basic patents in the field of deep learning, and over 40 AI-based applications, Siemens Healthineers is a leader in the deployment of artificial intelligence in imaging and diagnostics. The company currently has access to over 300 million curated clinical images, reports, and data and receives additional insights from around 4,400 clinical collaborations worldwide. Using a 16-PetaFLOPS TensorCore supercomputer in New Jersey, USA, Siemens Healthineers scientists conduct around 400 AI experiments every day.

* AI-Rad Companion Chest CT is currently under development. It is not for sale in the U.S. Its future availability cannot be guaranteed.
**teamplay is not yet commercially available in all countries. Due to regulatory reasons, its future availability cannot be guaranteed. Please contact your local Siemens organization for further details.

[1] McDonald RJ, Schwartz KM, Eckel LJ, et al. The effects of changes in utilization and technological advancements of cross-sectional imaging on radiologist workload. Acad Radiol. 2015; 22(9):1191–8.
[2] Branch CR, Charleston SC, Rapaka S, et al. Artificial Intelligence Based Aortic Diameter Quantification on Routine Unenhanced Chest CT. Scientific Session at RSNA 2018. Chicago, USA. Wednesday, Nov 28, 2018.

For further information on AI at Siemens Healthineers, please see
www.healthcare.siemens.com/infrastructure-it/artificial-intelligence
This press release and a press picture are available at
www.healthcare.siemens.com/press-room/press-releases/pr-20181125043SHS.html.
For further information on RSNA, please see siemens-healthineers.com/press-rsna.

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Siemens Healthineers enables healthcare providers worldwide to increase value by empowering them on their journey toward expanding precision medicine, transforming care delivery, improving the patient experience, and digitalizing healthcare. A leader in medical technology, Siemens Healthineers is constantly innovating its portfolio of products and services in its core areas of diagnostic and therapeutic imaging, and in laboratory diagnostics and molecular medicine. Siemens Healthineers is also actively developing its digital health services and enterprise services. In fiscal 2018, which ended on September 30, 2018, Siemens Healthineers generated revenue of €13.4 billion and adjusted profit of €2.3 billion and has about 50,000 employees worldwide. Further information is available at www.siemens-healthineers.com.