SIEMENS Healthineers

Press

Not for publication in the USA

Erlangen, February 27, 2019

ECR 2019 in Vienna: Austria Center Vienna, Expo X5, Booth 511

Siemens Healthineers provides the photorealistic 3D visualization app Cinematic Rendering for Microsoft HoloLens 2

- **Displaying CT and MR images on a mixed-reality headset using Cinematic Rendering makes the job of coordinating multidisciplinary teams of physicians easier and could help surgeons select the right OR strategy and improve surgical accuracy**
- **Further areas of applications are seen in patient communication and in the training and professional development of medical staff**

In the future, Siemens Healthineers will make its photorealistic 3D visualization technology Cinematic Rendering available as an app for the HoloLens 2, which was introduced by Microsoft just a few days ago. This will expand the range of applications for this technology, which is available by the radiology software Syngo.via. Using a mixed-reality headset instead of viewing the clinical images on a 2D monitor when preparing for surgery, for example, gives surgeons a realistic 3D overview of the surgical area. This could make it easier to select the right operating room (OR) strategy and thereby increase the accuracy of the surgery. Thanks to the high performance of the new, real-time Cinematic Rendering algorithm and its photorealistic representation, the HoloLens 2 application is extremely easy to learn and use interactively for a wide range of purposes. Visitors to the European Congress of Radiology (ECR) in Vienna can experience the applications of the first version of the headset firsthand in the Siemens Healthineers Digital Experience Hall.

“Working with Microsoft allows expanding our position as a leading innovator in medical imaging and digitalization in healthcare even more and making Cinematic Rendering available to a broader group of users. We firmly believe that a photorealistic representation of clinical images can make communication between physicians and patients easier, and that it can also help with medical training,” says Christian Zapf, head of the Syngo Business Line at Siemens Healthineers. The prototype application “Cinematic Rendering for Surgery”

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Reference number: PR-20190226008SHS

is being tested in an evaluation study at Erlangen University Hospital. The results show that Cinematic Rendering improves surgeons' efficiency and the results of surgical planning. Participating surgeons compared CT images retrospectively with the Cinematic Rendering equivalents to find out, to what extent Cinematic Rendering results in faster and better OR strategy. Cinematic Rendering 3D visualizations supported the anatomic interpretation process. The error rate dropped from 14.1 to 0.8 percent for surgeons in training and from 11.1 percent to 0.8 percent for qualified surgeons.[1] "With the HoloLens 2, we expect even greater improvements," says Christian Zapf.

"The newly announced Microsoft HoloLens 2 is a self-contained holographic computer that enables heads-free, heads-up interaction with digital models. It builds on the breakthrough innovation of HoloLens and is even more immersive, more comfortable and delivers industry leading value right out of the box with partners like Siemens Healthineers," said Alex Kipman, Technical Fellow, AI and Mixed Reality, Microsoft. "Their innovative Cinematic Rendering solution paired with HoloLens 2 creates transformative experiences across the medical field and shows the true power of mixed reality to improve collaboration and communication."

HoloLens 2 users can have interactive 3D holograms displayed in their immediate environment. The real world merges with the virtual so that viewers perceive the photorealistic hologram as a projection floating in the air. Visualizing Cinematic Rendering images from CT and MR exams on the HoloLens 2 gives users the extra benefit of being able to interact with the images by enlarging them, zooming in, and rotating them using gestures, speech, or eye gaze. This all happens in real time, with no delay at all, thanks to a newly developed algorithm from Siemens Healthineers.

Opportunities for using the Cinematic Rendering app are many and varied: Using the HoloLens 2 application makes it easier to discuss complex medical cases with referring physicians if the anatomical situation is particularly challenging: in a pediatric or trauma context, for example. Multidisciplinary medical teams comprising radiologists and surgeons can work together more efficiently if they can view the areas of the body they're working on together using the HoloLens 2 and interacting directly with each other on the projection. Especially when planning difficult procedures in interventional radiology and surgery, Cinematic Rendering provides an exceptionally realistic and natural visualization that helps

physicians from non-radiological disciplines understand MR or CT images of their patients. With HoloLens 2, other conceivable applications include establishing the exact position of tumor tissue and blood vessels before surgery and viewing the target organ from every angle. This can make it easier to choose the best OR strategy and improve treatment accuracy.

Other areas of application include patient communication and training for the next generation of medical professionals: Thanks to the photorealistic visual language of the Cinematic Rendering presentation, patients can more easily understand what's happening in their bodies. They'll gain a better understanding of the nature of their upcoming surgery, resulting in a much more positive patient experience. For medical professionals in training, Cinematic Rendering offers a major advantage: Students and trainees in the medical professions will have the opportunity to investigate specific anatomical features and clinical conditions virtually, in a kind of "living anatomy session" that would otherwise not be available to them.

Visitors to ECR 2019 can experience the 3D visualization of clinical images using Cinematic Rendering on the first version of the HoloLens in the Siemens Healthineers Digital Experience Hall. The hall is right next to the entrance to the Austria Center Vienna and will be open from 10:00 a.m. to 6:00 p.m. every day from Thursday February 28 to Saturday March 2, 2019. Siemens Healthineers will also offer a broad overview of its latest digital products and all its new developments in medical imaging at the ECR industrial exhibition in Booth 511, Expo X5.

Cinematic Rendering in Mixed Reality is for education and communication. Not for diagnostic use. The application is still under development. Its future availability cannot be guaranteed.

The statements by Siemens' Healthineers customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

[1] Data on file.

This press release and press pictures are available at www.healthcare.siemens.com/press-room/press-releases/pr-20190226008shs.html.
For further information on ECR, please see siemens-healthineers.com/press-ecr.

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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.