UW–Madison To Perform the First U.S. Evaluation of GE Healthcare's Photon Counting CT Technology with Deep Silicon Detectors

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- *GE Healthcare's design for Deep Silicon detectors for a photon counting CT (PCCT) is engineered with the goal of achieving breakthroughs in both CT spatial and spectral resolution at the same time and increasing imaging performance across care areas*
- *Researchers at the University of Wisconsin–Madison will kick off research scanning human subjects with GE Healthcare's latest generation PCCT prototype in December 2022, representing the first U.S. clinical evaluation site with GE Healthcare's pure silicon CT detector technology*
- *The project is the result of a close collaboration between Wisconsin-based healthcare, academia and medical technology providers*

Photon Counting CT Technology with Deep Silicon Detectors
PICTURE CREDIT: GE Healthcare
IMAGE/JPEG · 8.38 MB

Waukesha, WI, November 21, 2022: Researchers at the University of Wisconsin–Madison, the first U.S. clinical evaluation site for GE Healthcare's industry-first silicon-based photon counting CT[i], will begin human scanning using the device, which is engineered with Deep Silicon detectors with the goal of greatly enhancing imaging capabilities to help clinicians improve patient outcomes across oncology, cardiology, neurology, and other clinical CT applications.

The collaboration comes nearly one year after GE Healthcare announced its first clinical evaluation site at Karolinska Institute and MedTechLabs in Sweden. Since then, the company has made rapid progress in enhancing the developing technology, building a new system prototype to include:

- A larger detector with the possible goal of enabling quicker scan times as well as expanding coverage;
- ECG-gated cardiac scan capabilities designed for coronary artery imaging; and
- Faster acquisition speed with the intent to reduce the likelihood of blurred images due to motion[ii].

"Photon counting CT has promise to embody the best of CT imaging available to date," explains Dr. Meghan G Lubner, professor of radiology at the UW School of Medicine and Public Health. "This technology has the potential to expand the scope of current indications by combining refined energy resolved data, high spatial resolution, reduced noise and improved soft tissue contrast. We are working with GE Healthcare by testing their novel photon counting solutions in human subjects to assess issues ranging from improving commonly encountered CT image quality limitations to evaluating whether previously out of reach clinical questions can now feasibly be answered."

Photon counting CT could potentially advance the capabilities of CT, including the visualization of minute details of organ structures, improved tissue characterization, more accurate material density measurement (or quantification) and lower radiation dose.

GE Healthcare is pursuing a unique approach to photon counting CT, which may enable higher spatial and spectral resolution at the same time, thanks to several advantages provided by Deep Silicon detectors, including: the detector's material purity, innovative geometric design, and true multi-bin technologies for high performance spectral imaging. As such, the research being done at UW–Madison will assist GE Healthcare in better understanding the heights of these unique capabilities.

"Photon counting detectors push CT technology forward in two major ways: better spatial resolution and better contrast resolution," shares Tim Szczykutowicz, Ph.D., associate professor radiology at the school. Szczykutowicz is also affiliated with the Departments of Medical Physics and Biomedical Engineering. "I think for CT, photon counting is undoubtedly the next big thing. We are a part of the process of evaluating and developing this unique approach to photon counting based on Deep Silicon technology."

UW–Madison will facilitate human subject research and produce technical feedback to test and advance GE Healthcare's photon counting CT technology with Deep Silicon. The study will assess reconstruction methods, image presentation workflows, and clinical benefits for specific pathologies and disease types to determine how to best optimize photon counting CT with Deep Silicon detectors to enable better visualization and utilization.

"Innovation requires close collaboration between medical technology innovators and academia," concludes Jean-Luc Procaccini, President & CEO, Molecular Imaging & Computed Tomography, GE Healthcare. "We are thrilled to deliver our newest prototype to our long-time collaborators at UW–Madison and UW Health. Together with UW, Karolinska Institute and MedTechLabs, we are advancing a cutting-edge technology with the potential to provide clinicians and patients with more information sooner – all with the goal of helping to improve patient outcomes."

For more information on GE Healthcare's unique approach to photon counting CT with Deep Silicon, visit gehealthcare.com.

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About GE Healthcare:

GE Healthcare is the $17.7 billion healthcare business of GE (NYSE: GE). As a leading global medical technology, pharmaceutical diagnostics and digital solutions innovator, GE Healthcare enables clinicians to make faster, more informed decisions through intelligent devices, data analytics, applications and services, supported by its Edison intelligence platform. With over 100 years of healthcare industry experience and around 48,000 employees globally, the company operates at the center of an ecosystem working toward precision health, digitizing healthcare, helping drive productivity and improve outcomes for patients, providers, health systems and researchers around the world.

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[i] Technology in development that represents ongoing research and development efforts. These technologies are not products and may never become products. Not for sale. Not cleared or approved by the U.S. FDA or any other global regulator for commercial availability. Not CE marked.

[ii] Compared to previous prototype version.

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