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RSNA15: Gaming Tech Creates Better X-Rays

Researchers have developed software for the Microsoft Kinect gaming console that measures body-part thickness and checks for motion, positioning and beam adjustment immediately before x-ray imaging. The goal is to have the best quality x-rays at the lowest dose possible without repeating images, the researchers explained. Their feasibility study was presented on Tuesday, 1 December, at the annual meeting of the Radiological Society of North America (RSNA).

Microsoft Kinect was originally developed as a motion sensor and facial and voice recognition device for the Xbox gaming system that enabled players to play games without a standard controller. Subsequently, the technology has been adapted for select non-gaming applications.

For this study, the researchers combined the technology of the Microsoft Kinect 1.0 with proprietary software to address common problems that affect imaging results, including body-part thickness and motion.

"To optimise radiation exposure and image quality, x-ray technique should be set based on body-part thickness," said Steven Don, MD, associate professor of radiology at Mallinckrodt Institute of Radiology, Washington University School of Medicine in St. Louis, Mo. "Use of traditional callipers is time-consuming, intrusive, and sometimes frightening to young children. Using Microsoft Kinect with this software, we can measure body-part thickness automatically without patient contact."

In addition, the software provides valuable information on motion and positioning with respect to automatic exposure control (AEC) sensors, image receptor and body part within the x-ray field. Through real-time monitoring, the software alerts the user when any of these factors do not match the requisition — such as the wrong body part — or could compromise image quality. This fail-safe helps to reduce or eliminate common causes of unnecessary repeat image acquisition.

With this new technology, patients will benefit from reduced radiation exposure and higher quality images to ensure diagnostic accuracy.

"This device can help technologists and radiologists achieve the radiation dose goal of ALARA, As Low As Reasonably Achievable, while enhancing the quality and consistency of x-ray images," Dr. Don explained. In the future, he hopes to see the device and similar tools installed on radiography equipment to aid technologists by identifying potential problems before they occur.

Co-authors of the study are Robert MacDougall, MSc, and William Clayton.

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