Medical Imaging

MULTI-DETECTOR SYSTEMS AND METHODS FOR X-RAY IMAGING

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The Invention

UW-Madison researchers have designed a new photon-counting detector (PCD) interventional system. The PCD system has an x-ray sensing region that is composed of a strip-shaped PCD (Module A) and a rectangular-shaped (Module B). Module A provides a full axial FOV for spectral and ultra-high-resolution PCD-CT imaging at a given z location in the patient; Module B is for volume-of-interest (VOI) 3D cone-beam CT (CBCT) imaging and region-of-interest (ROI) 2D spectral and ultra-high-resolution x-ray imaging. Locations of the VOI and ROI can be selected by the treating physicians based on the full FOV FPD images. The system can be seamlessly integrated with the scintillator based detector. Further, this design only adds a limited amount of cost to the C-arm system. During an interventional procedure, when a clinical scenario requires spectral or high-resolution 2D ROI or 3D VOI PCD imaging, the x-ray beam can be collimated only to the Module B sensing area; when a full axial FOV spectral PCD-CT imaging is desired, the beam can be collimated only to the Module A sensing area. For general interventional x-ray imaging tasks, the x-ray beam is opened to cover the whole FPD area, PCD output will be post-processed to provide an FPD-like image signal such that a full-FOV 2D or 3D image can be produced.

Additional Information

For More Information About the Inventors

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Tech Fields

- Medical Imaging : X-ray

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