A Combined Time-Walk and Timing-Shift Correction Method for Dual-Ended Readout TOF-DOI PET Detector

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ABSTRACT

Researchers at the University of California, Davis have developed a technology that significantly improves the timing and spatial resolution of PET scans using dual-ended readout detectors.

FULL DESCRIPTION

The technology pertains to advanced positron emission tomography (PET) systems equipped with dual-ended readout detectors, designed to enhance both timing and spatial resolution. By employing corrected timing information generated through methods such as time-walk correction and timing-shift correction, these systems can more accurately identify and log the times at which photons are received. This leads to improved image quality by accurately estimating the location of positron-electron annihilations, crucial for detailed medical imaging.

APPLICATIONS

- Medical diagnostic imaging for detecting, diagnosing, and monitoring diseases.
- Research applications in biology and pharmacology for studying physiological processes.
- Advanced imaging techniques in oncology for tumor detection and treatment monitoring.

FEATURES/BENEFITS

- Enhanced timing resolution through corrected timing information.
- Improved spatial resolution by accurately estimating annihilation events.
- Ability to use various scintillation crystal elements for versatile imaging needs.
- Advanced processing for depth-of-interaction layer analysis, improving image detail.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

positron emission tomography, dual-ended readout detectors, timing resolution, spatial resolution, scintillation crystal, silicon photomultiplier, time-walk correction, timing-shift correction, coincidence event detection, medical imaging

CATEGORIZED AS

- **Medical**
  - Devices

- Imaging

RELATED CASES

2024-9B6-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Techniques for Improving Positron Emission Tomography Image Quality and Tracking Real-Time Biological Processes
- Real-Time Tissue Assessment During Surgical Procedures
- Auto Single Respiratory Gate by Deep Data Driven Gating for PET
- Unsupervised Positron Emission Tomography (PET) Image Denoising using Double Over-Parameterization

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