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Novel Software for Generating Attenuation Correction Maps with MRI for PET Reconstruction

Tech ID: 25589 / UC Case 2015-246-0

INVENTION NOVELTY

This invention can accurately and rapidly map patient bone structure and classify all tissue types such as fatty soft tissue, water soft tissue, lung tissue, bone, and air within a single scan using novel MRI acquisition and reconstruction techniques.

VALUE PROPOSITION

Hybrid positron emission tomography (PET) and magnetic resonance imaging (MRI) (PET/MRI) scanners provide great promise in providing exceptional diagnostic information and require much less ionizing radiation, yet are currently limited by the necessity of MRI-generated "attenuation correction" maps for accurate PET reconstruction. This invention offers several advantages over the current methods for creating attenuation correction maps: • Unlike competing technologies, this invention does not rely on an anatomy atlas to classify bone and air, which do not reflect the individual patient variability in bone structure and air spaces; • Current fat/water and direct bone imaging methods rely on combining multiple echo times, which result in longer scan times and can lead to imaging artifacts due to motion between scans; • This invention uses direct bone imaging with novel magnitude and phase image processing methods within a single echo time (TE), thus resulting in faster scans

TECHNOLOGY DESCRIPTION

An attenuation correction (AC) map estimates positron attenuation from various tissue types, which is required for accurate PET image reconstruction. Researchers at the University of California, San Francisco have developed novel software that uses new MRI acquisition and image processing methods to generate an AC map through personalized mapping of bone structure and classification of tissue types, all within a single acquisition. Therefore, it offers fast and reliable diagnostic imaging for a variety of patient applications including cancer imaging throughout the body, functional imaging of the brain (eg. injury and degenerative diseases) and cardiovascular system, and musculoskeletal diseases such as osteoarthritis.

LOOKING FOR PARTNERS

To develop & commercialize the technology as a software modification to existing PET/MRI scanners

CONTACT

Gonzalo Barrera-Hernandez

Gonzalo.Barrera-Hernandez@ucsf.edu

tel: 415-502-1637.

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INVENTORS

▸ Larson, Peder E.Z.

▸ Leynes, Andrew

OTHER INFORMATION

KEYWORDS

PET/MRI, Attenuation correction, Diagnostic imaging, Image processing, Software

CATEGORIZED AS

▸ Medical

▸ Disease: Cancer

▸ Disease: Central Nervous System

▸ Imaging

▸ Software

RELATED CASES

2015-246-0

STAGE OF DEVELOPMENT

Proof of Concept

DATA AVAILABILITY

Under CDA / NDA

RELATED MATERIALS

▶ Not available at this time

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Improved and adjustable hyperpolarized magnetic resonance imaging (MRI) method