Weill Cornell Medicine

Portable, Self-contained Upright PET Imaging System with Integrated Augmented Reality and Motion Tracking

Lead Inventors:

Amirhossein Goldan, Ph.D.

Associate Professor of Electrical Engineering in Radiology, Radiology, Weill Cornell Medicine

Gloria Chiang, M.D.

Professor of Radiology, Radiology , Weill Cornell Medical College

Business Development Contact:

Donna J. Rounds

Associate Director, Business Development and Licensing

(646) 962-7044

djr296@cornell.edu

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Background & Unmet Need

- Traditional PET imaging requires patients to lie flat for extended periods, causing discomfort and requiring significant immobilization
- Conventional PET setups are large, fixed installations requiring dedicated scanner rooms, workstations, and technician operation rooms
- Current systems lack mobility and flexibility, limiting their use in outpatient or non-traditional settings
- **Unmet Need:** A mobile, self-contained PET imaging system that can accommodate patients who cannot lie flat without compromising image quality

Technology Overview

- **Technology:** A portable, upright PET imaging system featuring integrated motion tracking and augmented reality capabilities, designed for seated or partially reclined imaging positions.
- A prototype system has been designed and constructed to validate the concept
- The system features a compact upright gantry mounted on a mobile cart with an integrated foldable chair
- Real-time electromagnetic tracking enables sub-millimeter motion correction during scanning
- Built-in lead shielding provides radiation protection for nearby personnel
- An integrated AR headset enhances patient engagement and comfort during procedures
- A comprehensive control center manages synchronized data acquisition and system monitoring

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Amirhossein Goldan
Gloria Chiang
Zipai Wang

Patents:
Provisional Filed

Publications:
N/A

Biz Dev Contact:
Donna J. Rounds
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Cornell Reference:
D-11338

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Technology Applications

- Outpatient PET imaging in non-traditional settings, such as clinics or mobile diagnostic units
- Dynamic imaging studies requiring patient interaction or movement
- Clinical applications requiring upright positioning, including patients who need head movement flexibility or cannot lie flat (such as pediatric cases or those with specific medical conditions)

Technology Advantages

- Enhanced mobility and flexibility - can be wheeled to any location as a self-contained unit
- Improved patient comfort and accessibility through upright positioning
- Superior image quality despite patient movement through real-time motion correction
- Reduced space requirements compared to traditional PET installations

Supporting Data / Figures

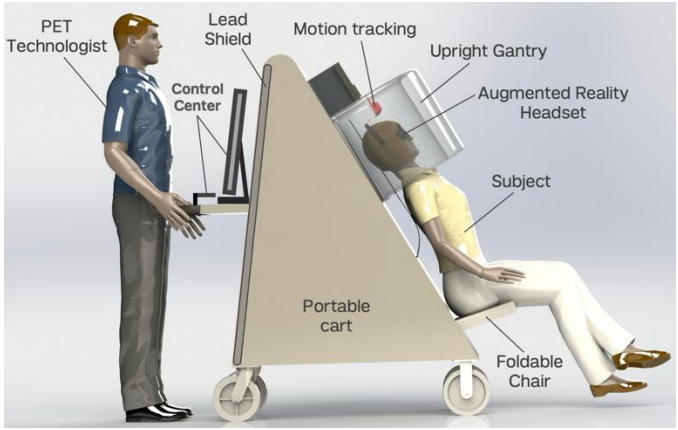

Figure 1: Rendering of the mobile PET system featuring an upright gantry mounted on a portable cart. Key components include a foldable patient chair, integrated lead shielding, motion tracking system, augmented reality headset, and control center for the PET technologist.

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