Multi-Angle CT Scanning of Stationary Patients

Published date: March 14, 2017

Technology description

X-ray computed tomography (CT) is an imaging technique that generates cross-sectional images of a patient by combining multiple X-ray images taken at a range of angles. A patient may be physically moved through a gantry structure as the scanner rotates up to 360 degrees.

Conventionally, patients lie on a table during the scan. However, standing may be preferable in some situations (e.g., coughing lung cancer patients, vertebrate fractures). Moreover, positioning large animals like horses on a table is challenging and may require anesthesia.

In such situations a more versatile scanning structure would be highly advantageous. Researchers from UW–Madison and the Morgridge Institute for Research have developed a gantry support structure that uses articulating arms to scan humans or animals sitting, standing or lying down.

Their articulating robotic arm system (called ARMS) controls the motion of a standard high-speed CT scanner. ARMS moves around a patient, producing complex trajectories while allowing the patient to remain stationary.

The articulating arms have motorized shoulder, wrist and elbow joints to support greater motion capabilities. The system is suitable for scanning humans as well as large animals, and may be mounted on the floor, ceiling or wall for added versatility.

Application area

X-ray CT imaging
Veterinary medicine
Potential use in PET, radiotherapy and industrial inspection

Advantages

Uniquely versatile

Subjects patients to fewer physical constraints

ARMS is easy to control and manufacture.

Works with full function CT system and standard gantry

Supports fan-beam design for high-resolution imaging

Works for large animals and unusual trajectories (e.g., the head of a standing horse)

Institution

Wisconsin Alumni Research Foundation

Inventors

Thomas (Rock) Mackie

George Petry

Robert Swader

Peter Muir

Mark Markel

联系我们

叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com