



Fan- and Cone-Beam Image Reconstruction Using Filtered Backprojection of Differentiated Projection

[View U.S. Patent No. 7,251,307 in PDF format.](#)

WARF: P04316US

Inventors: Guang-Hong Chen

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an improved algorithm that provides better image quality than FDK-type algorithms.

Overview

The Feldkamp (FDK) algorithm is widely used for image reconstruction for cone-beam projections, which are utilized in three-dimensional computed tomography (CT). However, because current FDK-type algorithms started from a naïve generalization of fan-beam reconstruction methods, they do not account for the complexity of today's cone-beam geometries.

The Invention

A UW-Madison researcher has developed an improved algorithm that provides better image quality than FDK-type algorithms. This new algorithm was derived from cone-beam geometries. It is part of an image reconstruction method that produces images from projection data by filtering the backprojection image of differentiated projection data. The algorithm works with many different imaging modalities that use symmetric or asymmetric two-dimensional fan beams or three-dimensional cone beams.

Applications

- Tomographic imaging modalities including CT, MRI, PET, SPECT, thermalacoustic CT and photoacoustic CT

Key Benefits

- Convolution-based; can be efficiently implemented in a computer
- Provides better image quality than FDK-type algorithms for a cone-beam data set acquired from an arc
- Mathematically exact, if sufficient projection data are acquired
- Provides accurate reconstruction when projection data are truncated
- Allows use of an asymmetrically placed detector to enlarge the scanning field of view while maintaining accurate reconstruction of the region of interest

Additional Information

For More Information About the Inventors

- [Guang-Hong Chen](#)

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

- [Medical Imaging : CT](#)

OK

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846



WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

OK



WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850