



## Statistical Noise Map for Reducing X-Ray Exposure

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**WARF: P130056US01**

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method to account for noisy data during X-ray imaging.**

### Overview

Iterative image reconstruction techniques can be used to produce high quality tomographic images from noise-contaminated data. It is known that a statistical weight is critical for great image quality. However, getting a good estimate of statistical noise means repeating the data acquisition process many times. These multiple scans inflict higher X-ray exposure on the imaged patient.

### The Invention

UW-Madison researchers have developed a system and method for estimating a statistical noise map from a single X-ray exposure. This map accounts for noise acquired with X-ray imaging systems, including computed tomography (CT), tomosynthesis and C-arm systems.

The method reconstructs an image from acquired data using any standard filtered back projection (FBP) algorithm. This image is used as a baseline to estimate a noise standard distribution map. The raw projection data represents a typical measurement among many repeated measurements under the same experimental conditions. Therefore, this data can be used to generate several (e.g., 20 or more) noisy data sets.

These data sets are used to reconstruct noisy images that can be subtracted from the original image, resulting in a statistical noise map. This map accounts for a physical model of noise.

### Applications

- Diagnostic X-ray imaging

### Key Benefits

- Capable of producing a statistical noise map from a single acquisition
- Cuts X-ray exposure to patient
- Can significantly boost reconstruction speed

### Additional Information

#### For More Information About the Inventors

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Related Technologies

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- [For more information about reconstructing high quality images while reducing radiation dose, see WARF reference number P100141US01.](#)

#### Tech Fields

- [Information Technology : Image processing](#)
- [Medical Imaging : CT](#)
- [Medical Imaging : X-ray](#)

For current licensing status, please contact Jeanine Burmania at [jeanine@warf.org](mailto:jeanine@warf.org) or 608-960-9846

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