Medical Imaging with Better Temporal Fidelity Can Streamline Stroke Care

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WARF: P130041US01

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method that removes blurring caused by low temporal resolution and enables increased sampling density for contrast dynamics.

Overview

The outcome of a stroke can hinge on the time spent on diagnosis and intervention. Perfusion imaging is a critical step in the process, wherein a patient is scanned to identify salvageable tissue. These perfusion studies can take hours to schedule and perform. Transporting patients between imaging and intervention suites is a race against time.

Health care could be streamlined if perfusion studies were performed with the same c-arm computed tomography (CT) system used for intervention. Two major challenges hinder this. First, these systems are too slow to accurately record 'contrast dynamics,' or factors that vary with time (such as an imaging agent injected in a subject). Also, the number of acquired time frames is too few to estimate perfusion information from time density curves.

Software that would enable the current hardware to perform perfusion imaging is highly desirable.

The Invention

UW–Madison researchers have developed a method that increases temporal fidelity, sampling density and/or reduces noise of image frames obtained with a system such as CT, MRI or X-ray c-arm. After the images are acquired, a window function is selected and temporally deconvolves the image frames using a minimization technique. A temporal sampling density also may be selected and used in the temporal deconvolution.

Applications

- Perfusion imaging software

Key Benefits

- Better imaging with higher temporal fidelity
- Clearer depiction of time-varying image contrasts
- Increased temporal sampling density and/or reduced temporal noise
- No hardware modification

Additional Information

For More Information About This Invention

- Guang-Hong Chen

Related Technologies

- WARF reference number P08127US describes a method called PICCS (Prior Image Constrained Compressed Sensing) for high quality imaging from undersampled data.

Tech Fields

- Medical Imaging : CT
- Medical Imaging : MRI
- Medical Imaging : Other diagnostic imaging

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