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Research Areas

Medical Imaging

This is a very active research area. Every decade a new medical imaging technology appears or matures. The most recent of these is magnetic resonance imaging (MRI).

We are investigating the use of Magnetic resonance imaging for tissue characterization. The goal here is to physically characterize not just the shape of an organ or neoplasm but also the tissues within it.

We are also studying [Electric current density imaging](#) with potential application in electrical safety, therapeutic electrical stimulation, management of electrical burns, impedance tomography, and solution of the inverse problem of the measurement of bioelectric sources.



Our analytical tools include Fourier transforms, singular value decomposition, and phase unwrapping.

We use magnetic resonance imagers to image electric current. We have access to a clinical 1.5 T magnetic resonance imager and an experimental 2T magnetic resonance imager.

Our research is closely related to impedance tomography (the electrical measurement of tissue conductivity) and biomagnetic encephalography (the measurement of the biomagnetic fields produced by neural currents).

The patient group benefiting from our research has not yet been identified.

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