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a non-destructive technique to infer the internal conductivity characteristics of a body was first suggested by Henderson and Webster...

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tomography is a noninvasive type of medical imaging in which the electrical conductivity, permittivity, and impedance of a part of the body is inferred from surface electrode measurements and used to form a tomographic image of that part. Electrical

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conductivity varies considerably among various biological tissues or the movement of fluids and gases within tissues. The majority of EIT systems apply small alternating currents at a single frequency, however, some EIT systems u

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Tomography (EIT) is
an emerging medical
imaging technology
that estimates the
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properties of the
region of interest
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tomography (EIT) has
been around for some

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time (the first systems were built in the mid-1980s) but is yet to break into

mainstream clinical practice. As the editor writes in the introduction, the

continuing attraction to EIT seems to come from the fact that "it doesn't clearly work"

but "it usually almost works, which is an

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enticement to
redouble our efforts.□.

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Tomography (EIT)
was investigated for
use as a pressure
sensor with
electrodes limited only
to the boundary of the

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active sensor area for enhanced artificial skin implementation.

A one-step regularized solver using the Difference Imaging method was used for pressure measurement and profile depiction.

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Electrical impedance tomography (EIT) permits visualization of the spatial distribution of ventilation and hence any functional regional inhomogeneity. 23-26 Briefly, EIT takes advantage of differences in conductance of electricity by different

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biological tissues. The resistivity of lung tissue is

approximately five times greater than

that of most other soft tissues in the thorax, and it increases

considerably when air moves into the alveoli during inspiration so that the electrical ...

~~Electrical Impedance~~

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Electrical impedance tomography (EIT) uses non-invasive and non-radiative imaging to detect inhomogeneous electrical properties in tissues. The inverse problem of EIT is a highly nonlinear, ill-posed problem, which causes inaccuracy in

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target size calculation.

~~Discretized Target
Size Detection in
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History The technique evolved from techniques of electrical prospecting that predate digital computers, where layers or anomalies were sought rather

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than images. Early work on the tomography mathematical problem in the 1930s assumed a layered medium (see for example Langer, Slichter).

~~Electrical resistivity tomography~~
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Abstract: In this work,
we propose and
analyse a weak
Galerkin method for
the electrical
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a bounded variation regularization. We use the complete electrode model as the forward system that is approximated by a weak Galerkin method with lowest order.

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This paper proposes a deep learning method based on electrical impedance tomography (EIT) to estimate the thickness of abdominal subcutaneous fat. EIT for evaluating the thickness of abdominal subcutaneous fat is an absolute imaging problem that aims at

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distributions from
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data. Existing
reconstruction
methods based on
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Isaacson D, Cheney

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M. Process for producing optimal current patterns for electrical impedance tomography. US Patent 5588429 1996; Li T, Kao T, Isaacson D, Newell JC, Saulnier GJ. Adaptive Kaczmarz method for image reconstruction in electrical impedance tomography. *Physiol*

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The objective of
electrical impedance
tomography is to
deduce information
about the conductivity

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inside a physical body from electrode measurements of current and voltage at the object boundary.

In this work, the unknown conductivity is modeled as a random field parametrized by its values at a set of pixels.

~~Stochastic Galerkin~~

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~~Finite Element Method with Local ...~~

To date, few methods have been accepted for clinical use to set the appropriate PEEP. The aim of this study was to test the feasibility of PEEP titration guided by ventilation homogeneity using the global inhomogeneity (GI)

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In recent years, there
has been steady
progress in the
research of electrical
impedance
tomography (EIT),
leading to important

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developments. These developments have excited interest in practitioners and researchers from a broad range of disciplines, including mathematicians devoted to uniqueness proofs and inverse problems, physicists dealing with bioimpedance, electronic engineerers

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impedance
involved in developing
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clinicians wishing to
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powerful new imaging
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an up-to-date review of the progress of EIT, the present state of knowledge, and a look at future advances and applications. Divided into four parts, the book presents an interdisciplinary approach. The first part discusses reconstruction algorithms while the

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second part describes the aspects of EIT instrumentation, including frequencies and electrodes. The third part features various EIT studies, such as breast cancer screening and artificial ventilation in intensive care units. The final part surveys new developments in magnetic induction

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tomography and magnetic resonance EIT (MREIT) as well as offers insight into three of the most productive and longstanding EIT research groups. The book also includes two nontechnical appendices that provide a brief and simple introduction to bioimpedance and the

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methods of EIT.

Written in a style accessible to all related backgrounds, this reference will be helpful in establishing new methods and experiments of EIT, hopefully leading to radical breakthroughs in mainstream clinical practice.

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from leading
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researchers, this
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fully updated
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developments in the
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electronic engineers involved in developing and extending its applications, and clinicians wishing to take advantage of this powerful imaging method. Key

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Overview of the
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Overview of related
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This book presents
the proceedings of the
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Austria, in August
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themes, namely,
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