

// MACHINE LEARNING-BASED QUANTITATIVE PHOTOACOUSTIC TOMOGRAPHY

Ref-Nr: TA-P-1284

HINTERGRUND

Photoacoustic imaging allows viewing various metabolic, anatomical, histologic properties of tissues and other physiological phenomena. It has many advantages over conventional scanning methods (such as MRI) since it is high resolution, real-time and in particular non-ionizing. Furthermore it can be used to acquire functional information. In clinical practice and animal research it can be applied to cancer diagnosis and therapy amongst others. One of the current challenges in the PAT market is that not a single image processing-based method for fast and accurate quantitative photoacoustic imaging tomography has been developed. The state-of-the-art relies on overly complex hardware set-ups, time-consuming computations and retrospective image analysis. Our technology offers the solution with fast, accurate and machine-learning image processing.

The proprietary technology includes a method, a computer program and an apparatus for estimating an optical property of a tissue from a photoacoustic image in a fast, simple and accurate manner allowing real-time, in vivo application. Specifying the optical properties of a tissue is vital for interpreting diagnostic measurements, designing devices and planning therapeutic protocols (e.g. photodynamic therapy).

LÖSUNG

- Estimating an optical property of a tissue from a photoacoustic image in a fast, simple and accurate manner allowing real-time, in vivo application

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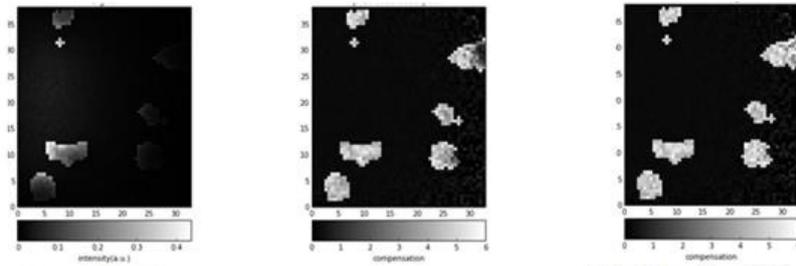
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ENTWICKLUNGSSTAND

Prototyp

CATEGORIES

//Research Tools //Medizinische
Geräte



(i) Simulated PAT image

(ii) Estimated image of optical absorption

(iii) Ground truth image of optical absorption

VORTEILE

- Image processing for fast and accurate quantitative photoacoustic tomography (PAT)
- Machine learning method to estimate optical property of tissue
- Fully-integrated apparatus and software for medical photoacoustic imaging analysis

ANWENDUNGSBEREICHE

- The method has been successfully tested and demonstrated in silico.
- Technology is available for in-licensing or codevelopment.

PUBLIKATIONEN & VERWEISE

Quantitative spectroscopic photoacoustic imaging: a review by Cox B, Laufer JG, Arridge SR, Beard PC. J. Biomed. Opt. 0001;17(6): 061202-1-061202- 22. See at: <https://www.ncbi.nlm.nih.gov/pubmed/?term=22734732> .doi:10.1117/1.JBO.17.6.061202.