

Technology Request

Medical imaging company for human applied thermo-photo-acoustic imaging prototype development.

Summary

A French public research laboratory dedicated to photonics, electromagnetism, signal & image analysis is working on applications of thermo-acoustic and photo-acoustic imaging. They are promising non-invasive and non-ionizing technologies whereas current techniques imply a certain complexity in capturing and processing the signals to locate a tumor. The laboratory looks for a company in medical imaging sector able to develop a prototype in human through a technical cooperation agreement.

Reference TRFR20160301001

Details

Description

The laboratory team has developed an invention which relates to a method based on thermo- and photo-acoustics for locating at least one target in an electromagnetically absorbent environment. It also relates to a corresponding computer program and device, as well as an application of this method for detecting and locating tumors in biological tissues.

Context:

The photoacoustic or thermoacoustics imagery is growing rapidly now in the biomedical field, in particular because it is deemed to be non-invasive and nonionizing. Photoacoustics, or thermoacoustics, applied to the locating of heterogeneities (or targets) embedded in an environment characterized by electromagnetic and acoustic properties that are different from these heterogeneities. This is for example the case of heterogeneities such as tumors in biological tissues.

Thermo- and photo-acoustics combine the high contrast in electromagnetic absorption between healthy and cancerous tissue with the high resolution of ultrasound. However, current approaches require multiple acquisitions and downstream complex processing to locate tumors. Moreover, current approaches limit the use of the acoustic signal resulting from the emission of the excitation signal to the electromagnetic inhomogeneity of the tumors.

Invention:

The technology developed by the laboratory overcomes current photo- and thermos-acoustics limits through a smarter use of marginal signals (acoustic heterogeneities of tumors) with the aim to improve the localization of tumors more quickly and with greater precision.

Indeed, this leads to detecting, in addition to the first response resulting from a first acoustic disturbance caused by the electromagnetic heterogeneity of the tumor in the biological tissue, a second response resulting from a second acoustic disturbance caused by the acoustic heterogeneity of the tumor.

As such, with a single emission, two pieces of information are available, the source-tumor distance and the tumor-sensor distance, in order to locate the tumor more precisely.

Market applications:

Breast cancer is one of the most important cancer for woman. Actual detection techniques for breast cancer are ionizing and/or not very accurate and/or painful. There is a real need for an accurate tumor localization system and the invention developed by the French team could be this system.

Other medical applications: cancer, angiology and dermatology

Other application : materials characterization is also another possible application (e.g. geology).

Now the French team needs a technical cooperation agreement to develop a prototype in human: the French laboratory has started developing this innovative solution to improve the localization of tumors (more quickly and with greater precision) and is now seeking a company in the medical imaging sector providing technological expertise and the ability to help them further and develop a prototype in human through a technical cooperation agreement.

Technical Specification or Expertise Sought

The laboratory is looking for a medical software or device company having an expertise for development regulation and commercialisation of medical devices (example : software and equipment manufacturers for tomography).

Stage of Development

Under development/lab tested

Comments Regarding Stage of Development

Ongoing technological maturation to validate performances on animals, develop a prototype working in human and validate the prototype in human clinical trials. The laboratory is looking for an industrial partner for technical cooperation in human.

IPR Status

Patent(s) applied for but not yet granted

Comment Regarding IPR status

PCT Publication

Priority date: May 2013

National phases: US, Europe, Japan

Keywords

Technology

01003012	Imaging, Image Processing, Pattern Recognition
06001003	Cytology, Cancerology, Oncology
06001005	Diagnostics, Diagnosis
06001012	Medical Research
09001001	Acoustic Technology related to measurements

Market

05001001	Diagnostic services
05002	Medical imaging
05002003	Ultrasound imaging
05004001	Electromedical and medical equipment
05005014	Oncology

NACE

Q.86	Human health activities
Q.86.1	Hospital activities

Network Contact

Issuing Partner

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Open for EOI : **Yes**

Dissemination

Send to Sector Group

Healthcare

Client

Type and Size of Organisation Behind the Profile

University

Year Established

2012

Already Engaged in Trans-National Cooperation

Yes

Experience Comments

One-stop shop organization for transfer and commercialization of innovative technologies from Public Research.

Languages Spoken

English

French

Client Country

France

Partner Sought

Type and Role of Partner Sought

The French laboratory is currently looking for an industrial partner with relevant experiences in medical software or device development having an expertise for regulation and commercialisation of medical devices - and interested in developing the prototype in human.

For example, the team is seeking for software and equipment manufacturers for tomography.

The type of partnership sought is a technical cooperation agreement.

Type and Size of Partner Sought

SME 11-50, SME <10, >500 MNE, 251-500, SME 51-250, >500

Type of Partnership Considered

Technical cooperation agreement