

OPTICAL MICROPHONE TO THE DISTANT DETECTION OF SOUND AND VIBRATIONS

INVENTION DESCRIPTION

The distant detection of sound, movement and vibrations associated to such movement could be extremely useful for a wide range of applications, such as surveillance and security, health and biomedicine, industrial production or civil engineering. Nowadays there are several methods to the automatic identification of the movement, through the detection of the acoustic, optic, electronic or mechanic movement. Notwithstanding, there is a current need to improve the sensibility, accuracy and focusing ability of these movement identification methods.

Researchers from Universitat de València, and Bar-Ilan University of Israel, have developed a revolutionary technology that allows identifying the sound from a distance, through the detection of the movement associated to such sound.

Based on a high speed camera and a laser light source, this device is able to detect, from distances up to several hundreds of meters, loud and low sound sources, such as a combustion engine, the human voice or the heartbeat of a subject. Low sounds such as heartbeats, are efficiently isolated from the background sounds, being able to register information as complete as an electrocardiography. The technology presents no restrictions regarding the orientation of the speaker or the sound source.

BUSINESS APPLICATION SECTORS

Health and Biomedicine: Applying the technology to the skin, it is possible to detect microscopic variations of the surface, and thus identify variations in biological data of the subject, such as the blood pressure, heart rate, or blood sugar levels.

Civil Engineering: To monitor the vibrations of engines, buildings or any infrastructure from a distance, as well as structures with difficult accessibility.

Security and surveillance: To ensure the protection of public infrastructures, such as airports.

TECHNICAL ADVANTAGES AND BENEFITS

The main advantages provided by the invention are:

- Easy and versatile configuration of the optic detection
- High efficacy to detect and focus the sound sources, isolating them from the background noise.
- The technology is based on interference, but does not require the use of expensive and complex equipment such as interferometers.

DEVELOPMENT STATUS OF TECHNOLOGY

The technology has been prototype tested. Currently the research team is developing the medical applications of the technology, such as devices to help hearing impaired people, or devices to the noninvasive measurement of the intraocular pressure.

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INTELLECTUAL PROPERTY RIGHTS

The technology is protected through the following patents:

International patent application PCT/IL2008/001008, titled "Motion detection system and method". Protection extended in several countries, such as EPO, USA, Australia or Canada.

International patent application PCT/IL2012/050029, titled "Method and system for non-invasively monitoring biological or biochemical parameters of individual".

COLLABORATION SOUGHT

- License agreement, manufacturing or marketing.
- R & D project to complete the development or apply to other sectors.
- Subcontracting agreement with another company.
- Possible spin-off (looking for partners)

CONTACT

Oficina de Transferència de Resultats d'Investigació (OTRI)
Universitat de València
Avda. Blasco Ibáñez, 13, nivel 2
46010, Valencia - SPAIN
Tel: +34 96 386 40 44
e-mail: otri@uv.es
Web: www.uv.es/otri