# BIOELECTRONICS, SIGNAL PROCESSING AND ALGORITHMIA UNIT

DESCRIPTION OF THE UNIT

The Bioelectronics, Signal Processing and Algorithmic Unit was created with the aim of promoting and developing the use of medical devices and advanced signal processing, for the optimization of diagnostics and therapeutic applications.

The objective of this Unit is to carry out research and development projects at the request of Hospitals, Research Centers and Foundations, medical and / or technical companies, Startups, spin-offs, etc.
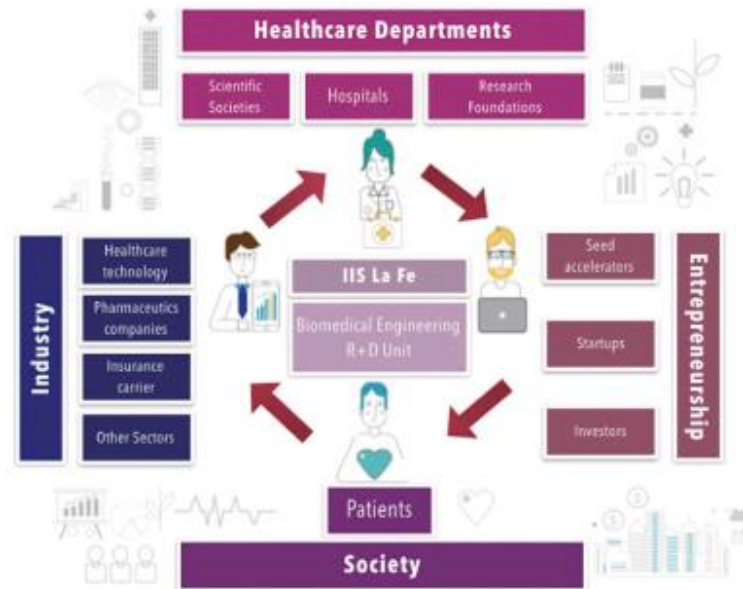
MARKET APPLICATION SECTORS

• Conceptualization, development and validation of Medical Devices for the acquisition of Electrophysiological signals, such as electrocardiography (ECG), electromyography (EMG), electrocephalography (EEG), plethysmography (PPG), electrohysterography (EHG).

• Study of biomedical signals for the compilation of information on the health status of the patient or for the knowledge of the health and functioning of an organ and the new techniques of characterization of the signals or for the elimination of possible interferences. Providing robust and reliable biomedical signal parameters; and obtaining additional information on this type of biosignals.

• Its application in the monitoring and characterization of the activity of organs such as the heart, brain, intestine, stomach, uterus, etc.

• Support in clinical decisión-making for medical diagnoses based on deep machine learning or Medical Devices.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

• Design of "ad hoc" projects: Support in the definition and design of studies and projects for the development of systems and Medical Devices, biomedical signal processing systems, or support systems in clinical decisión-making.

• Development of new products and "turnkey" Medical Devices: Complete development of medical systems reducing the time to market, covering complete processes, and defining specifications and requirements, product design, and product implementation and prototyping. .

• Processing of medical biosignals: Development and implementation of algorithms for the processing of biosignals for the extraction of biomarkers and for the characterization of signals or elimination of possible transfers.

• Support systems in clinical decisión-making: Development and implementation of algorithms to collaborate in diagnostic systems based on biomarkers and learning machines.

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• Embedded systems: Development and implementation of embedded Medical systems (MCU, FPGA) with digital signal algorithm processing (DSP) and Machine learning (ML) for Medical Devices.

COLABORATION SOUGHT

The Bioelectronics, Signal Processing and Algorithmic Unit maintains relationships with biomedical research groups belonging to the public or private sphere, and with external companies, start-ups, spin-offs ...

It offers collaboration and provision of services "on demand", in the design and development of projects related to the development of medical systems and devices, biomedical signal processing systems and related algorithms, and / or support systems in clinical decision making.

RELATED IMAGES

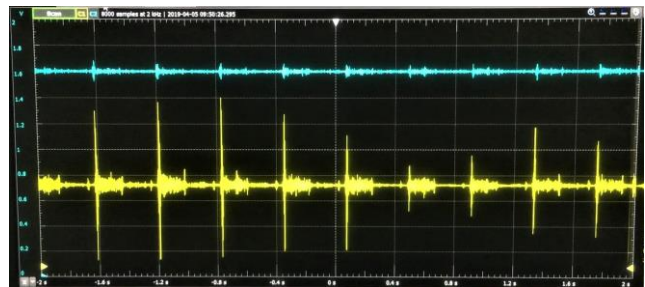*Figure 1: Portable Doppler prototype Doopli Connect S.L.*

Figure 2: Fetal cardiac Doppler signal

CONTACT

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