

ShowCase

CardioID 'The heart in hands palm'

Products

- Cardio Wheel
- BikeYourHeart
- CardioID

Project Details

The public recognition that the company had, in 2013, as 1st Place of the InovPortugal Contest, with the VitalID project, generated a visibility that the founders of CardioID knew how to take advantage of.

The company was selected by the European Community's Fiware Program and is part of the SoulFI (Startup Optimizing Urban Life with Future Internet) consortium.



Introduction

CardioID Technologies is a Portuguese company that has developed a technology that allows the electrocardiogram (ECG) to be acquired through the hands or fingers without altering the user's interaction pattern with the objects, which allows the user to obtain a continuous identity and simultaneously monitor their behavior and status health. The project concept goes under the area of Physiological Computing, especially regarding the development of signal processing and pattern recognition methods for the automatic analysis of biosignals such as the electrocardiogram (ECG), electrodermal activity (EDA), electromyogram (EMG) and electroencephalogram (EEG).

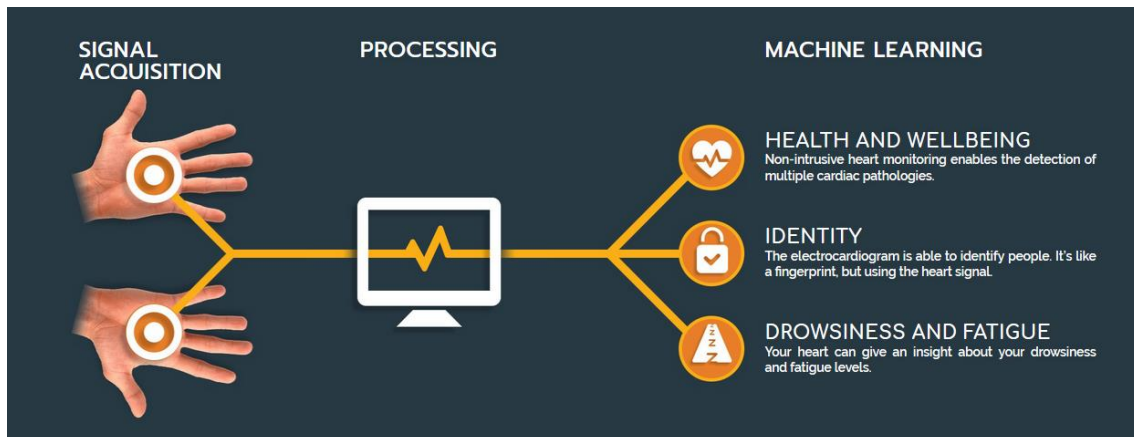
One fundamental step is the acquisition of these signals, which requires robust hardware equipment, typically at a high price. To contain costs, they developed their own hardware, which eventually led to the creation of BITalino, a low-cost toolkit to prototype applications using body signals. This toolkit was complemented with BioSPPy, a suite of signal processing methods, written in Python, to easily analyze the acquired signals.

The core of their research revolved around the ECG, a tremendously rich signal, being continuously available, related to the psychophysiological state of the subject, and easy to acquire unobtrusively in an off-the-person approach. **CardioID** is able to have an accurate measure of the cardiac signal using just two electrodes placed at the hands, without using any gel. This setup is simple enough to be embeddable into many everyday-life objects.

Additionally to being an established wellbeing indicator, the ECG can be used to identify and distinguish individuals, much like a fingerprint. This application led to the dynamization of the VitalID project, which won the first place of the InovPortugal challenge in 2013. Following further product development, they officially launched their company, now called **CardioID Technologies**, with the goal of exploiting the use of the ECG for identity recognition, as well as other innovative applications built around this signal.

This showcase has been collected in the framework of the Erasmus+ project *Internet of Things for European Small and Medium Enterprises* (pr. n° 2016-1-IT01-KA202-005561), funded by European Commission. For more information: www.iot4smes.eu

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Challenges

(Challenges facing, needs to cover...)

Solution

AUTOMATIVE



CardioWheel is their product for the Automotive Industry. It's an Advanced Driver Assistance System (ADAS) that can help the user to prevent drowsiness and automatically detect the identity of the driver.

SPORTS

For all bicycle riders, casual or professional, that want to monitor heart rate without wearing any device. **BikeYourHeart** consists on two conductive handgrips and electronic circuit to continuously acquire the heart signal and immediately provide the user with robust heart rate information.



CRITICAL FACILITIES

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Tedious and repetitive tasks frequently lead to worker fatigue and performance degradation. This is especially relevant in critical facilities, where continuous concentration is paramount. **CardioID** provides solutions to mitigate fatigue-related incidents, while simultaneously verifying worker identity, contributing to the improvement of safety and security.

INTERNET OF THINGS

Their technology can be easily embedded into virtually any everyday life object. TV remotes, gaming controllers, smartphones, among others, can host our heart sensing technology. With that information, they are on the lookout for dangerous factors, and they can also change the user experience based on your unique identity. It's the Internet of You!



PROJECTS

Generation Mobi

Generation Mobi is a Research & Development project that aims at developing and validating a dynamic mobility management system for new generation services. It is based upon the concept of social network of interactive bikes, which are interoperable with the city ecosystem. Date: March 2016 – September 2018



CardioWheel

SOUL-FI funding allowed us to develop a pilot program with a transportation company to test CardioWheel in real world scenarios. To that end, we applied our technology to a steering wheel cover connected with an electronic unit, that autonomously processes all the data, and an M2M interface that exchanges information with a set of cloud services powered by FIWARE technology. Date: January – July 2016



References

<https://www.cardio-id.com/>

<https://www.cardio-id.com/cardiowheel>

<http://www.acreditaportugal.pt/casos-de-sucesso/cardioid/>