

# Inteligencia Artificial aplicada a Wearables

[www.blautic.com](http://www.blautic.com)

Javier Soriano - CEO

#BIOVALTRANSFIERE

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Organiza:



Colabora:



Financia:



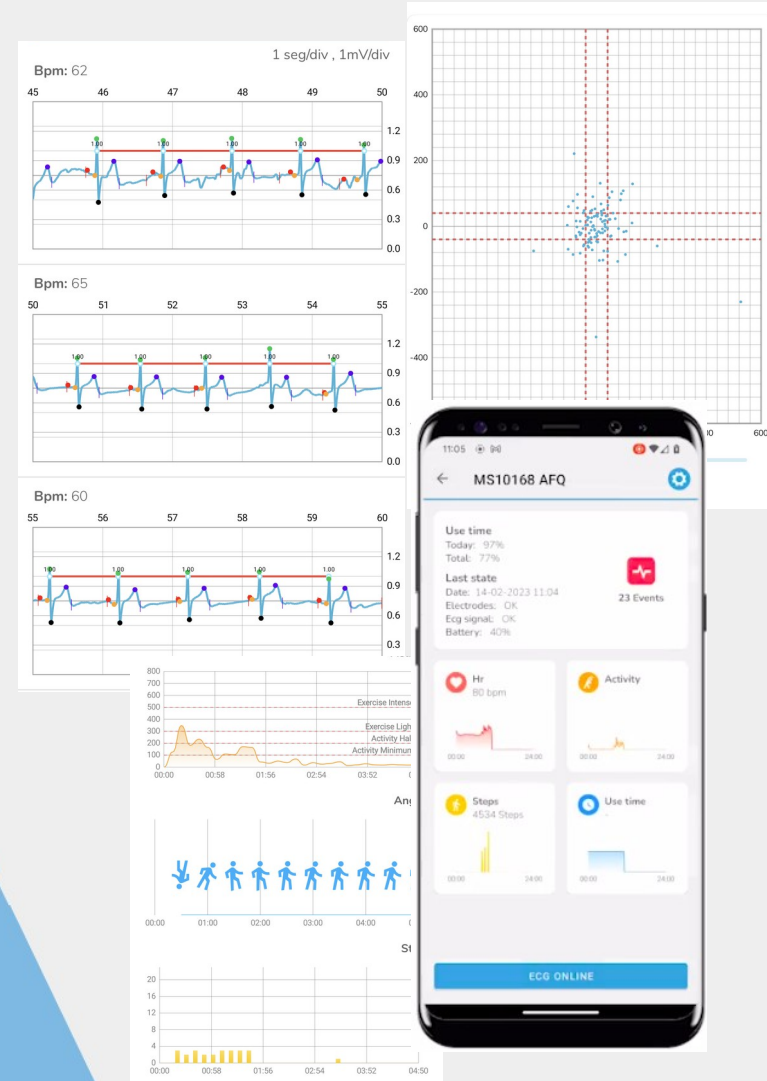
# LÍNEA: familia Ziven

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- 100% Blautic
- Monitorización 24 horas
- ECG (4 canales)
- EMG (4 canales)
- HRV
- Ritmo de respiración
- PPG
- Temperatura
- Índice de actividad física
- Posturas/ángulos
- Pasos
- Machine Learning (modelos personalizados):
  - Calidad QRS
  - Patrones Lorentz
  - Rutinas diarias – Patrones de movimientos/gestos
  - Corrección ejercicios de rehabilitación



# CASO DE USO: Ziven Cardio

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## Ziven Cardio

Análisis de señales biométricas a través de **modelos de Inteligencia Artificial** y algoritmos avanzados para detección de **anomalías cardiacas** y patrones de actividad física

### Proyectos

- PFIZER GLOBAL. IIS LA FE.
- SMARTEES. EUROPEAN PROJECT
- PREDIHEALTH (AVI23). ISABIAL-ITI-UMH

### Colaboraciones

- AITEX – UPV – ITI – ISABIAL – UMH – IIS LA FE

### Necesidades

- TEXTILES INTELIGENTES, CERTIFICACIONES, VALIDACIÓN DATOS, SOPORTE TÉCNICO



# CASO DE USO: Ziven Active

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## BLAUTIC Ziven Active

Sistema inteligente para el control de ejercicios durante la **rehabilitación** y/o entrenamiento mediante análisis de la actividad muscular, del movimiento y aplicación de modelos de I.A.

### Proyectos

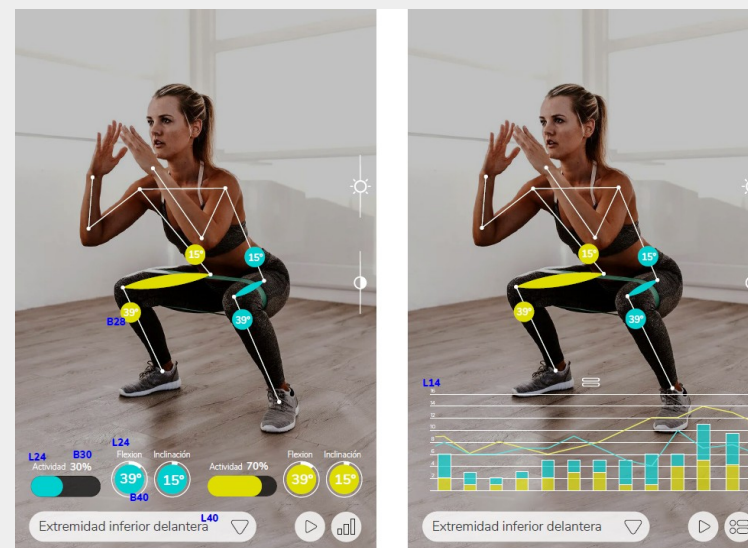
- EUHUBS4DATA
- SMARTX
- CPI-AVI-SGISE
- EXERMETER

### Colaboraciones

- ITI - AITEX

### Necesidades

- TEXTILES INTELIGENTES, CERTIFICACIONES, VALIDACIÓN DATOS, SOPORTE TÉCNICO



BLAUTIC  
Health

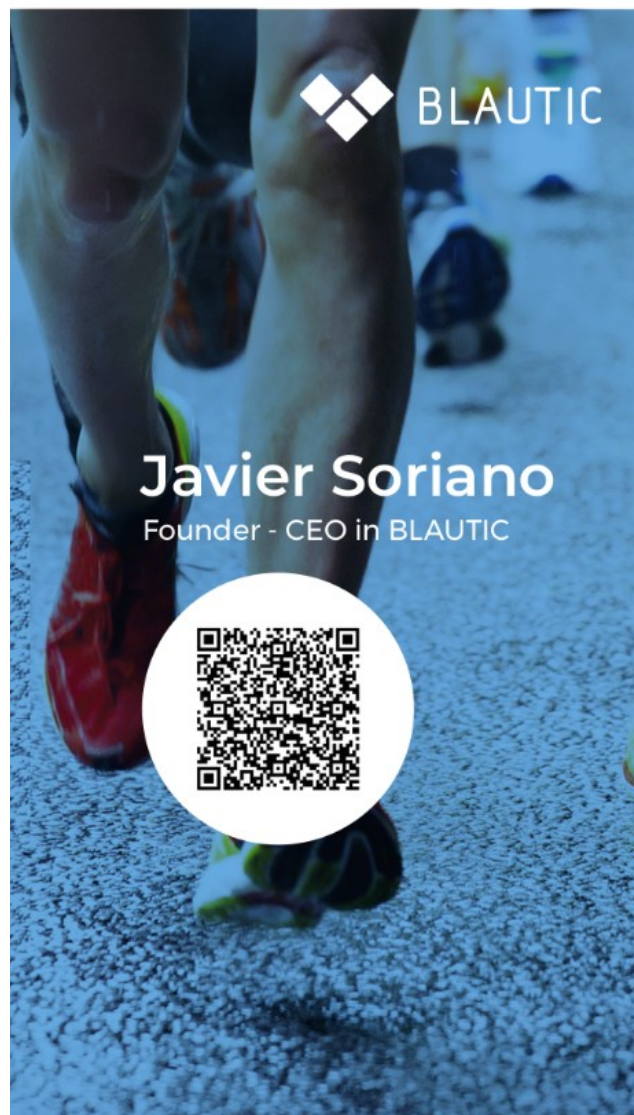




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¡GRACIAS!





## Biography

**Blautic Designs, SL** ([www.blautic.com](http://www.blautic.com)) is a Spanish high-tech company specialised in the development and manufacturing of electronic products based on wireless technologies, advanced sensors, artificial intelligence and fully customised mobile applications.

Blautic has extensive experience in project development with universities, technological institutes, and private companies, both nationally and internationally. A brief description of these activities is shown next:

- Research and Development (R&D). Design and development of electronic systems fully customized to the project requirements of research laboratories: miniaturization, geometry, type of sensors, functionality algorithms, enclosures and specialized technical support.
- Sports and LifeStyle Design of biomechanical control systems using accelerometer, gyroscope, strength and elongation sensors located on shirts or individual holders.
- Health. Design of devices capable of monitoring vital signs such as electrocardiogram, heart rate, electromyography, respiration, skin conductivity and body temperature. Assessment for devices for postural and life habits, muscular electro stimulation or control of heating elements for rehabilitation.

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Among the most important projects carried out in the field of biosensors to gather biometric signals the following can be mentioned:

**2023** European project **EUHUBS4DATA** ([euhubs4data.eu](http://euhubs4data.eu)). Project Title: AI4REHAB: Trainable AI system with muscle activity and movement for physical training and rehabilitation.

**2022** Pfizer Global Project (AFEDI). Project Title: "Atrial Fibrillation Early Detection Improvement in cardiac ATTR (AFEDI-cATTR)". Atrial fibrillation detection for patients from Hospital La Fe de Valencia, Hospital Puerta del Hierro de Madrid y Hospital Son Llatzer de Mallorca.

**2022**. European Project (SMARTEES). <https://smartees.eu/>. Project Title: FMK Advanced. Design of flexible boards with PPG data for smart textiles and wearable with 3 leads ECG.

**2021**. European Project from "European Smart Textiles Accelerator" (SmartX) within the framework of the Programme H2020-INNOSUP-2018-1. Project Title: Pikku active: a smart textile to add muscle activity to the pikku® system. <https://www.smartx-europe.eu/>  
Development of a Electromyography Smart Band with conductive electrodes and magnet connectors to integrate movement and muscle activity data in Artificial Intelligence models for injury recovery and gesture recognition.

**2020**. European Project granted by ELIIT (European Light Industries Innovation and Technology) funded by COSME (EU's programme for the competitiveness of enterprises and small and medium-sized enterprises). [https://ec.europa.eu/growth/tools-databases/eliit/project\\_en](https://ec.europa.eu/growth/tools-databases/eliit/project_en)  
Design of a device for monitoring a 6-lead ECG signal through smart electrodes created by knitted natural elastic fibres integrated in cloths.

**2018**. European project granted: Worth Partnership (<https://www.worthproject.eu>) with the project "Feel More Knitwear" along with Greek Partners: Pepper Vally.  
Integration of woven electrodes using natural conductive yarn to obtain heart rate, respiration rate, conductivity skin and body temperature.

**2017**. European project participation. Smartlife: <http://www.smartlifeproject.eu>  
Integration of devices in garments for monitoring physical activity in young students during games designed to reduce a sedentary lifestyle.

**2016**. European project Alfred: <http://alfred.eu>  
Development and testing of a T-shirt-integrated device with smart electrodes for monitoring physical activity, cardiological signals (ECG and heart rate variability) in elderly people.







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Regarding **intellectual property** rights to protect inventions, Blautic is co-owner of the following utility model registered in the Spanish Patent Office:

*Utility Model Id No ES1238435, owned by UNIVERSITAT DE VALÈNCIA, UNIVERSITAT POLITÈCNICA DE VALÈNCIA, UNIVERSIDAD CATOLICA SAN ANTONIO DE MURCIA and BLAUTIC DESIGNS, S.L. Date of registration: 25/02/2020. Granted 10 years life.*

Regarding **scientific publications** using Blautic's advanced technological products, the following articles can be mentioned (mostly in the field of biomechanics):

- Alvaro S. Machado, Jose Ignacio Priego-Quesada, Irene Jimenez-Perez, Marina Gil-Calvo, Felipe P. Carpes, Pedro Perez-Soriano. (2022) Effects of different hydration supports on stride kinematics, comfort, and impact accelerations during running. *Gait & Posture* 2022 <https://doi.org/10.1016/j.gaitpost.2022.07.234>
- Domingo, D., Arnau, M. A., Medina, P., Fernández, E., Cano, O., Osca, J., ... & Zorio, E. (2013). Efecto de la flecanida en la prueba de esfuerzo en pacientes con taquicardia ventricular catecolaminérgica polimórfica. *Revista Latido*. Vol 14, pp 166-175.
- Encarnación-Martínez, A., Gardá-Gallart, A., Gallardo, A. M., Sánchez-Sáez, J. A., & Sánchez-Sánchez, J. (2018). Effects of structural components of artificial turf on the transmission of impacts in football players. *Sports biomechanics*, 17(2), 251-260.
- Encarnación-Martínez, A., Pérez-Soriano, P., Sanchis-Sanchis, R., Gardá-Gallart, A., & Berenguer-Vidal, R. (2021). Validity and Reliability of an Instrumented Treadmill with an Accelerometry System for Assessment of Spatio-Temporal Parameters and Impact Transmission. *Sensors*, 21(5), 1758.
- Encarnación-Martínez, A., Sanchis-Sanchis, R., Pérez-Soriano, P., & Gardá-Gallart, A. (2020). Relationship between muscular extensibility, strength and stability and the transmission of impacts during fatigued running. *Sports Biomechanics*, 1-17.
- Gardá-Gallart, A., Encarnación-Martínez, A., Gallardo, A., Sánchez, J. A., Sánchez-Sánchez, J., & Chicoy, I. (2015). Efectos de la existencia de capa elástica en los sistemas de césped artificial de tercera generación y la velocidad de carrera sobre la respuesta biomecánica de atenuación de impactos en jugadores de fútbol. *Biomecánica*, 2015, vol. 23, núm. 1. Awarded Accésit Congreso SIBB 2015. DOI:10.5821/sibb.23.1.51485

- Hernández Muñoz, V. (2015). Desarrollo de una aplicación móvil en sistema Android para el control remoto de dispositivos mediante la tecnología Bluetooth 4.0 (Final Degree dissertation, Universitat Politècnica de València).
- Izquierdo-Renau, M., Queralt, A., Encarnación-Martínez, A., & Perez-Soriano, P. (2021). Impact Acceleration During Prolonged Running While Wearing Conventional Versus Minimalist Shoes. *Research quarterly for exercise and sport*, 92(1), 182-188.
- Lucas-Cuevas, A. G., Encarnación-Martínez, A., Camacho-García, A., Llana-Belloch, S., & Pérez-Soriano, P. (2017). The location of the tibial accelerometer does influence impact acceleration parameters during running. *Journal of Sports Sciences*, 35(17), 1734-1738.
- Lucas-Cuevas, A. G., Priego Quesada, J. I., Giménez, J. V., Aparicio, I., Jimenez-Perez, I., & Pérez-Soriano, P. (2016). Initiating running barefoot: Effects on muscle activation and impact accelerations in habitually rearfoot shod runners. *European Journal of Sport Science*, 16(8), 1145-1152.
- Lucas-Cuevas, Á. G., Quesada, J. I. P., Gooding, J., Lewis, M. G., Encarnación-Martínez, A., & Perez-Soriano, P. (2018). The effect of visual focus on spatio-temporal and kinematic parameters of treadmill running. *Gait & posture*, 59, 292-297.
- Perez Soriano, P. (2018). Metodología y aplicación práctica de la biomecánica deportiva. Editorial Paidotribo.
- Sanchis-Sanchis (2019): Evaluación de parámetros biomecánicos durante la marcha en adultos mayores tras dos programas de entrenamiento. Tesis Doctoral. Universidad de Valencia. <https://roderic.uv.es/handle/10550/70813>
- Sanchis-Sanchis, R., Blasco-Lafarga, C., Camacho-García, A., Encarnación-Martínez, A., & Pérez-Soriano, P. (2020). Evaluation of impact-shock on gait after the implementation of two different training programs in older adults. *Clinical Biomechanics*, 80, 105131.

