Bitbrain

Minimal biosignal device

Wearable and wireless device for real-world monitoring of GSR and BVP.

Bitbrain

About Bitbrain

We fusion neuroscience and engineering to develop the latest generation of practical neurotechnology integrated in solutions with high value for our society.

Bitbrain was founded in 2010 as a spin-off company of a research team from the University of Zaragoza (Spain), a pioneer in approaching brain-computer interface applications outside research labs. Its DNA holds all knowledge in neurotechnology, biomedical engineering, artificial intelligence and data science accumulated at the university since 1998.

Today, the company is a reference with over 600 individual institutions in more than 35 countries relying on our products to advance the penetration of neurotech research and development in our society.

Equipment

Innovative and practical EEG, biosignals, eye trackers and other complementary human monitoring technologies to approach real world research.

Bitbrain Viewer Software

Software for data acquisition and visualization, with large compatibility with real-time I/O and data processing third parties.

Bitbrain Software Development kit

Software kit consisting of different scripts that allow communication and control of the hardware used. It is a starting point for the development of brain-computer interface applications.

Human Behaviour Research Lab

Labs for experimental design and data collection with 30+ sensor modalities seamlessly synchronized, and data analysis including a wide range of emotional and cognitive biometrics.

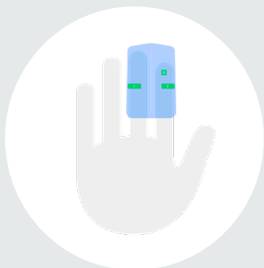
Minimal biosignal device

Wearable and wireless device for real-time monitoring of GSR and BVP in real-world applications.

Ring is a wearable and wireless monitoring device for real-life scenarios. This device has an ultralight and comfortable design with two key biosensors for a basic estimation of emotions (**galvanic skin response - GSR**, and **blood volume pressure - BVP**), and a 3-axis solidary **accelerometer** to estimate the noise generated by finger movements. Its ergonomics, reliability and ability to self-positioning open an infinite range of possibilities. For example, it can be used in or out of the lab scenarios, such as workplaces, shopping centres, etc.

In addition to this, it is possible to combine (seamlessly sync) biometric devices and scientific research software platforms for even deeper insights into human behaviour.

Products



Ring

Wearable and wireless device for real-world monitoring of GSR, BVP and movement (accelerometer).

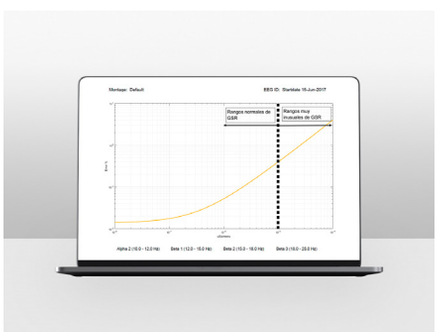
Key features

Real-world applications
Wearable GSR and BVP that provide great comfort and freedom of movement to the user, in order to capture natural behaviour in real-world applications.

Optimized to track emotions
Wearable device with the most widely accepted sensors used by the research community to estimate emotions (GSR and BVP).

Clean and with zero maintenance
The device is easily stored, transported and cleaned with wipes. No expenses on consumables (jars of gels, syringes, shampoo, etc.), and no additional maintenance costs.

Very easy and intuitive set-up
The set up time is less than 10 seconds on average. With an intuitive operation, it can be easily self-placed without previous experience.

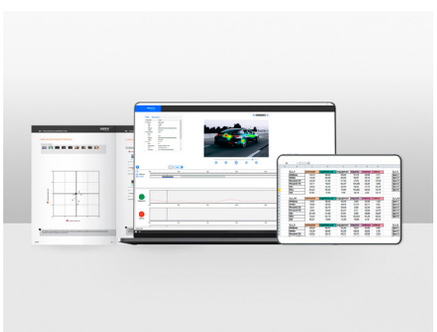


Highest standards of data quality
Sensors located over the optimal measurement points as agreed by the research community (2nd finger phalanges), and with an accelerometer to filter artifacts caused by finger movements.

High acceptance by the user
Designed with advanced ergonomics for maximum comfort. No need to apply electrolytic substances, which increases user acceptance and eliminates the need to wash skin or the device after each use.

Data stream and recording
Real-time streaming of raw data via Bluetooth and on-board SD card recording. Develop applications on Windows and Linux using the SDK, and export data to CSV.

Sync with other biometrics
Seamless integration with more than 30 complementary technologies such as EEG, eye trackers, indoor/outdoor positioning systems, microphones and cameras, and many more.



Compatibility with scientific platforms
Compatible with Matlab (EEGLAB, BCILAB, etc), Python (MNE), LabStreamingLayer (BCI2000, OpenVibe, NeuroPype, etc), and with Bitbrain Human Behaviour Lab.

Ring

Wearable and wireless device for real-time monitoring of GSR and BVP in real-world applications.

- **Adaptable and adjustable**
  Very comfortable technology that can be set up easily in less than 10 seconds.
- **GSR, BVP and ACC sensors**
  Dry-sensors located on the fingers´ first and second phalanges (optimal measurement points).
- **Advanced electronics**
  Signal acquisition layer optimized to improve SNR, while reducing external artifacts.

- **Mechanical support**
  The technology mitigates artifacts produced by finger movements (anyway are measured by the solidary accelerometer).
- **Connectivity and storage**
  Bluetooth real time data streaming and local SD storage.
- **Battery**
  10+ hours in streaming and in SD storage.

Some applications

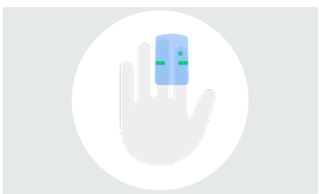
Explore new research scenarios in **psychology and neuroscience** with fast and easy monitoring in and out-of-the lab.

Understand physiological correlates in real-world applications, such as **education, UX** or in **professional workspaces**.

In **clinical research**, perform biofeedback applications for stress, or assessments based on physiological responses.

Learn about the physiological patterns of human behaviour i**n combination with EEG, biometrics, VR technologies, etc**.

Technical overview



Layout optimized for measurement of GSR and BVP (cardiac activity), often used to estimate emotional states.

Wireless, mobile, compact and ultralight (60g). Very easy to use, and allows for self-placement.

Reliable biosignal monitoring at 32Hz and 16 bits during 10+ hours on Bluetooth streaming.

Easy to transport.

Hardware specifications

Sensors	
Biosignal channels	1 x EDA (µS), 1 x BVP (bpm), 1 x ACC (3-axis)
Wireless amplifier	
Sampling rate	32 SPS (samples per second)
Resolution	16 bits
Bandwidth	DC – 16Hz (2º order LPF)
Integrated sensors	Integrated Accelerometer (3 axis)
Input range and noise	0.1 - 100 µS, (GSR) 0 - 250 bpm (BVP) ± 4G (Accelerometer)
Data backup	Removable micro SD card
Indicators	On/off/connection state LED battery sate LED micro SD card state LED
Data streaming and store	
Data transmission and range	Bluetooth 2.1 + EDR with 10 meters in direct sight.
Data files	CSV
Power	
Battery	Rechargeable lipo battery. Charging time <3.5h
Autonomy	> 10 h
General	
Weight	60g
Cleaning and maintenance	Wipes moistened in tap water.
Warranty	2 years
Certifications	CE and CB, with EN 60950, EN 55032, EN 55024

Software specifications

Bitbrain Software Kit (included with equipment)	
Bitbrain real-time SDK	In C/C++ with Python bindings for Windows and Linux.
Bitbrain data acquisition and visualization suite	Live visualization, streaming and/or memory card recording, data export in CSV and raw data visualization.
Third parties real-time I/O	LabStreamingLayer LSL compatibility (Matlab, Python).
Third parties data processing	Matlab, Python, etc.

Bitbrain software platforms (optional)	
Bitbrain Viewer Software	Software for data visualization and recording, with large compatibility with real-time I/O and data processing third parties.
Bitbrain Software Development Kit	Software kit consisting of different scripts that allow communication and control of the hardware used. It is a starting point for the development of brain-computer interface applications.
Bitbrain Human Behaviour Research Lab	Practical research platform for experiment design and data acquisition with 30+ sensor modalities seamlessly synchronized and analyzed with a wide range of emotional and cognitive biometrics available.

Bundle includes

- Wearable device
- Cable USB-microUSB
- Instructions
- Packaging box
- Bitbrain Software Kit

Additional services

Online training available
Our team provides a training course that includes the installation of your hardware and software, plus resources including quickstart guides, a knowledge base, etc.

Real-world research and applications

Bitbrain

Europe

Zaragoza, Spain
Calle. Sta. Teresa de Jesús, 32,
50006 Zaragoza
+34 931 444 823

America

New York, United States
228 E 45th Street. Suite 9E
New York, NY 10017

Email
info@bitbrain.com

Website
www.bitbrain.com