



Emotiv EPOC Introduction

Hello Hackers! Thank you for your interest in using Emotiv EPOC in your hack. Here is a quick guide to help you get started.

What is EPOC?

Emotiv EPOC is a consumer EEG headset. Our brains are made up of a hundred billion nerve cells called neurons. When neurons interact through a chemical reaction, they naturally emit a measurable, electrical impulse. Electroencephalography (EEG) is the process of observing brainwaves through these pulses. EPOC was released in December 2009 and has been used by more than 60,000 people in over 100 countries. It provides high-definition, contextualized EEG data from a portable 14-channel neuroheadset.

What can I do with EPOC?

EPOC translates brainwaves into metrics that can be easily understood. There are 3 categories of detections:

Facial Expressions

The Facial Expression detection suite uses the signals measured by the EPOC to interpret facial expressions in real-time. It provides a natural enhancement to game interaction by allowing game characters to come to life. When a user smiles, their avatar can mimic the expression even before they are aware of their own feelings. Artificial intelligence can now respond to users naturally, in ways only humans have been able to until now.

Performance Metrics

Performance Metrics monitors player emotional states in real-time. It provides an extra dimension in game interaction by allowing the game to respond to a user's emotions. Characters can transform in response to the user's feeling. Music, scene lighting and effects can be tailored to heighten the experience for the user in real-time. This detection suite can be used to monitor user state of mind and allow developers to adjust difficulty to suit each situation.

Mental Commands

Mental Commands detection suite reads and interprets a user's conscious thoughts and intent. Users can manipulate virtual objects with only the power of their thought! For the first time, the fantasy of magic and supernatural power can be experienced.



Many of the applications fall under roughly four categories:

1. Education:

EPOC has been used in performance enhancement for people with learning disabilities such as ADD and ADHD. Measure attention, engagement, and focus level in students. Assess a lecturer's effectiveness by measuring a selective group's EEG during the lecture.

2. Neuromarketing and usability testing

EPOC has been paired with eye-tracking devices to measure how people react to a commercial, how people feel about different areas inside a store, their engagement and interest levels towards any stimulus. There is a recent research done to measure stress levels in urban areas verses rural areas.

3. BCI, Brain-Computer Interface

EPOC has allowed people to bypass traditional controls - for games, driving a car, creating music, and controlling prosthetic limbs, etc.

4. Medical and research

Anyone that can utilize contextualized raw EEG data in their research project. Our users span from NASA scientists to artists and musicians and people with disabilities.

Check out YouTube videos in our [channel](#).

Where to download SDK?

- [Windows SDK](#)
- [Mac SDK](#)

Key order number and serial key during installation:

Neurogaming and **82ff94c49918eadcfd597b1c3d0a0b5f**

Please also download the Control Panel and TestBench software to help you try out our detections. Skip the cloud account creation in Control Panel.

For an overview of the SDK, check out this [webinar](#).

How to Wear the Headset

Here is a very useful [video](#) and our [quick start guide](#) on the EPOC and preparing it prior to fitting it on your head.



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Tips:

- When you hydrate the sensor units, make sure they are fully saturated and feel wet on your scalp. If they signals stay black, add more saline.
- Do not overly stretch the headband when you put it on. It should glide down your head and the two front arms should be about 3 fingers width above your eyebrows.
- Press down on the short sensors around your ears to help create the initial connection. (See image below) Once they go green, press each sensor to help them connect with the scalp. It will require more saline when you have thicker hair, and it may require parting hair near the sensor locations to reveal the scalp.



Where to find more information?

- Emotiv [Knowledge Base](#)
- Emotiv [Forum](#)
- We're updating our wiki, so unfortunately the information may not be accurate at the moment. Please refer to the documentation and examples installed with your SDK.

Please email joyce@emotiv.com should you need additional assistance. Good luck and have fun! We wish you an awesome weekend!