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Research Edition Overview

**Emotiv SDK Research Edition**
The Emotiv SDK Research Edition is a single user license for companies/researchers that are creating proprietary applications and/or are also developing new applications/detections using raw EEG data from the Emotiv EPOC.

The Emotiv SDK includes a high resolution, neuro-signal acquisition and processing wireless neuroheadset, TestBench, and our proprietary software toolkit that exposes our APIs and detection libraries.

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

**Cognitiv™ Suite**
The Cognitiv suite reads and interprets a player’s conscious thoughts and intent. Gamers can manipulate virtual objects using only the power of their thought! For the first time, the fantasy of magic and supernatural power can be experienced.

**Expressiv™ Suite**
The Expressiv suite uses the signals measured by the neuroheadset to interpret player facial expressions in real-time. It provides a natural enhancement to game interaction by allowing game characters to come to life. When a player smiles, their avatar can mimic the expression even before they are aware of their own feelings. Artificial intelligence can now respond to players naturally, in ways only humans have been able to until now.
## SDK Headset

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of channels</td>
<td>14 (plus CMS/DRL references, P3/P4 locations)</td>
</tr>
<tr>
<td>Channel names (International 10-20 locations)</td>
<td>AF3, F7, F3, FC5, T7, P7, O1, O2, P8, T8, FC6, F4, F8, AF4</td>
</tr>
<tr>
<td>Sampling method</td>
<td>Sequential sampling. Single ADC</td>
</tr>
<tr>
<td>Sampling rate</td>
<td>128 SPS (2048 Hz internal)</td>
</tr>
<tr>
<td>Resolution</td>
<td>16 bits (14 bits effective) 1 LSB = 1.95µV</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>0.2 - 45Hz, digital notch filters at 50Hz and 60Hz</td>
</tr>
<tr>
<td>Filtering</td>
<td>Built in digital 5th order Sinc filter</td>
</tr>
<tr>
<td>Dynamic range (input referred)</td>
<td>256mVpp</td>
</tr>
<tr>
<td>Coupling mode</td>
<td>AC coupled</td>
</tr>
<tr>
<td>Connectivity</td>
<td>Proprietary wireless, 2.4GHz band</td>
</tr>
<tr>
<td>Power</td>
<td>LiPoly</td>
</tr>
<tr>
<td>Battery life (typical)</td>
<td>12 hours</td>
</tr>
<tr>
<td>Impedance Measurement</td>
<td>Contact quality using patented system</td>
</tr>
</tbody>
</table>
Real-time display of the Emotiv headset data stream, including EEG, contact quality, FFT, gyro (if fitted – custom option), wireless packet acquisition/loss display, marker events, headset battery level.

Record and replay files in binary EEGLAB format. Command line file converter included to produce .csv format.

Define and insert timed markers into the data stream, including on-screen buttons and defined serial port events. Markers are stored in EEG data file.

Marker definitions can be saved and reloaded. Markers are displayed in real time and playback modes.

Export screenshot for documentation.
**Features**

**EEG display:**

5 second rolling time window (chart recorder mode)

ALL or selected channels can be displayed

Automatic or manual scaling (individual channel display mode)

Adjustable channel offset (multi-channel display mode)

Synchronized marker window
Features

FFT display:

- dB mode – power or amplitude calculations
- dB scale
- FFT window methods: Hanning, Hamming, Hann, Blackman, Rectangle
- Predefined and custom sub-band histogram display – Delta, Theta, Alpha, Beta, custom bands
**Features**

Gyro display: (NOTE: custom option – gyros not fitted to consumer headset)

- 5 second rolling time window (chart recorder mode)
- X and Y deflection

**Data Packet display:**

- 5 second rolling graph of Packet Counter output
- Packet loss – integrated count of missing data packets
- Verify data integrity for wireless transmission link
Features

Data Recording and Playback:

Fully adjustable slider, play/pause/exit controls.

Subject and record ID, date, start time recorded in file naming convention. The example below references file “Geoff-test1-22.05.09.18.10.27.edf”