



# Module Descriptions

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Software





BIOMETRIC RESEARCH PLATFORM



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*“iMotions software, the biometric research platform from iMotions, allows us to easily get the data we need for our research. iMotions made it an easy choice – being able to combine EEG, the leading facial expression analysis technology, our choice of eye tracking hardware, so easily out of the box is just something that no one else does. Their support has been great, helping us the entire way. We highly recommend iMotions solutions.”*

iMotions Biometric Research Platform is used by some of the most respected Universities, Corporations, Neuromarketing Media and UX/Usability Agencies in the World





## iMotions Core

### MINIMUM REQUIREMENT (PREREQUISITE)

- **Study Execution:** Allows you to set up a study, present stimuli and record data. The stimuli presentation tool allows to control rotations, randomization, block designs in order to fit even the most complex methodologies.
- **Media types supported:** still images, video, website browsing with scroll compensation, screen recording for desktop applications, games, 3D environments and more.
- **Data Collection:** Synchronization and live stream visualizations of your chosen sensor modalities (eye tracking, FACET, GSR, EEG, ECG, EMG and more depending on your add-on modules). Additionally mouse clicks, mouse position and all user keyboard interactions are recorded and synchronized.
- **Camera:** Connect to webcam in order to record participant during experiments
- **Markers:** Use live or post-processing markers to annotate and segment recordings of all media types. Calculate statistics on the Markers such as average time duration.
- **Exports:** Export complete or partial datasets of raw data and metrics obtained from sensors and user interactions.
- **Reporting:** Export video and image sequences. Choose a specific segment of the time-line to export or export the complete individual and/or batch of videos. Also export snapshot images in batch or individual files.



## Module: API - Import / Export

### PRE-REQUISITE: IMOTIONS CORE

- **Input API** can be used to connect and stream from 3rd party software / hardware and receive data into iMotions from these.
- **Output API** can live export events, markers and triggers from iMotions to 3rd party software.
- **Post Import Data:** Post import externally recorded data for analysis within iMotions, e.g. sensor recordings or video obtained by camera.
- **Loop System:** Create feedback loops into the platform.



## Module: API - Remote Control

### PRE-REQUISITE: IMOTIONS CORE

The remote control API allows external programs to control iMotions i.e. perform certain tasks without interacting with AT's user interface.



## Module: Remote Eye Tracking

### PRE-REQUISITE: IMOTIONS CORE & EYE TRACKING HARDWARE

- Enables iMotions to connect with remote eye trackers and provides a feature rich palette of tools for eye tracking analysis of screen based stimuli (lab based setup).
- Conduct experiments on images, videos, websites, games, software interfaces and 3D environments.

#### Visualizations:

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Individual &amp; Aggregate Gaze Replay</li><li>• Static Areas of Interest (AOI)</li><li>• Dynamic Heatmaps</li><li>• Moving Areas of Interest:</li><li>• Pupil, distance and eye position on the screen are live streamed.</li></ul> | <ul style="list-style-type: none"><li>• Eye tracking metrics such as Time To First Fixation, Time Spent, Ratio, Revisitors, Revisits, Fixations, Mouse Clicks</li><li>• Additionally you will gain access to raw data of X,Y coordinate of eye position, pupil size, inter pupil distance and distance to the screen.</li></ul> |
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## Module: Mobile Eye Tracking

### PRE-REQUISITE: IMOTIONS CORE & MOBILE EYE TRACKING HARDWARE (GLASSES)

- Import data from head mounted eye tracking glasses.
- Analyze recordings using Dynamic Areas of Interest and Markers.
- iMotions integrates the head mounted systems from Tobii & the Mobile Eye-XG Tracking Glasses from ASL.



## Module: EEG

### PRE-REQUISITE: IMOTIONS CORE & EEG HEADSET HARDWARE

- Enables iMotions to connect, record and live visualize EEG data and metrics from ABM or Emotiv.
- Full overview of metric by channel, battery level, signal strength and impedance tests are integrated.

**AMB's B-Alert Cognitive State Metrics integrated & synch:**  
Four EEG-based classifications constituting a continuum from highly engaged & processing sensory inputs to fatigued and inattentive. This is enhanced by Workload, a 2nd Metric, that compliments the B-Alert Cognitive State Metrics for engagement / drowsiness.

- High / Low Engagement
- Distraction
- Drowsy
- Workload

**Emotiv EEG metrics integrated & synch:**

- Engagement / Boredom
- Frustration
- Meditation
- Excitement



## Module: Facial Expression Analysis

### PRE-REQUISITE: IMOTIONS CORE & WEBCAM HARDWARE

This module allows you to automatically analyze facial expressions in studies executed from within the iMotions environment via a webcam, including live observation of the emotions expressed through the face as well as to import old videos for new processing of AU's or emotions bundles.

### Emotient Base Package

- Detects Valence: overall positive, neutral & negative responses.
- Detects 7 Basic Emotions:  
Joy, Anger, Surprise, Fear, Sadness, Disgust, Contempt.
- Detects Facial Landmarks: Location of the inner & outer corners of the eyes, the tip of the nose, & mouth.

### Emotient Research Package

- **Base Package plus**
- Detects Action Units as described in the Facial Action Coding System - FACS methodology. Action Units: 1, 2, 4, 5, 6, 7, 9, 10, 12, 14, 15, 17, 18, 20, 23, 24, 25, 26, 28.
- Detects Head Pose: Provides estimates for the pitch, yaw, and roll in degrees.
- Detects Gender & Glasses

### Emotient Advanced Package

- **Research Package plus**
- Detects 2 advanced emotions: Frustration and Confusion



## Module: GSR & Heart Rate

### PRE-REQUISITE: IMOTIONS CORE & GSR & HEART RATE DEVICE HARDWARE

Enables iMotions to connect with GSR & Heart rate instruments from Shimmer and Affectiva. Includes storage & visualization of raw GSR & Heart Rate signal along with accelerometer signals. Full overview of battery level and signal strength.



## Module: ECG/EMG

### PRE-REQUISITE: IMOTIONS CORE & EXG DEVICE HARDWARE

Enables iMotions to connect with the Shimmer EXG Device to record electrocardiogram signals which records the pathway of electrical impulses through the heart muscle, during exercise to provide information on the heart's response to physical exertion. It also records electromyogram signals which measures and records the electrical activity associated with muscle contractions, assesses nerve conduction, muscle response in injured tissue, activation level, or can be used to analyze and measure the biomechanics of human movement.



## Module: Survey

### PRE-REQUISITE: IMOTIONS CORE

- Use the survey module to collect questionnaire data.
- Participant can input answers as text, slider, multiple choice.
- Easy setup, create template surveys for reuse.
- Visualization of results and export in to data files.
- Easy cross segmentation to bio sensor and eye tracking data based on survey answers.



## Module: Scene Camera

### PRE-REQUISITE: IMOTIONS CORE, REMOTE EYE TRACKING MODULE

Mobile Device Testing: Phone, Tablet, Simulator and Live Product Testing.

- Extend the remote eye tracking license with eye tracking for physical objects.
- Mobile devices, phone and tablet interface testing. Required for the Tobii
- Use dynamic areas of interest to analyze and aggregate visual attention.
- Use sensors and facial expressions to measure physiological responses observed during the interaction with the physical stimuli.



## Module: Arousal (Only for Still Images)

### PRE-REQUISITE: IMOTIONS CORE, REMOTE EYE TRACKING MODULE & EYE TRACKING HARDWARE 60 HZ FROM TOBII OR SMI. ONLY FOR STILL IMAGES.

- The pupil signal in the eye tracker is automatically analyzed for emotional response. Outputs the emotional response on a scale from 0-10 for a segment of at least 10 participants, when exposed to a still image.
- Works with selected remote eye trackers such as Tobii and SMI, at least 60 hz is needed for output.
- Automatic inter-slides for removing bias of light intensity in image is created during test setup.



## Module: Reading Detection

### PRE-REQUISITE: IMOTIONS CORE, REMOTE EYE TRACKING MODULE EYE TRACKING HARDWARE 60 HZ FROM TOBII OR SMI

- Use an eye tracker to detect reading behavior.
- Easy aggregation of reading metrics such as number of readers and percent of text read across participants.
- Reading Heatmap to see visualized the distribution of reading activity across selected text-blocks.