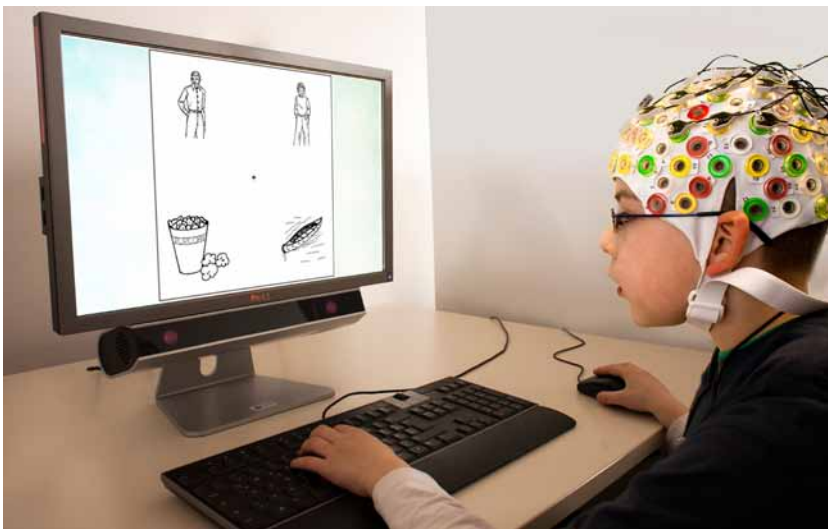


Eye Tracking & EEG

Integration of Visual Experience and Neural Activity

- Studies of event-related and fixation-related potentials (ERPs, FRPs) & more...
- Eye tracking devices for microsaccade detection, for free head movement at scientific grade data quality and for mobile co-registration studies
- Low latency for accurate synchronization of SMI products with EEG data
- Configurable trigger signals for easy synchronization of data streams
- Definition of TTL trigger associated with Areas of Interest (AOI)



Pierluigi Castellone, General Manager Brain Products



“Thanks to the configurable synchronization signals of SMI software we could effectively import and synchronize SMI eye tracking data with our EEG data stream. The new module for BrainVision Analyzer software offers integrated analysis of visual input and brain activity.”

Dr. Sascha Tamm, Free University of Berlin



“...SMI provides easy access to the eye movement data via flexible interfaces. Based on this, it was very easy to integrate the eye tracking results recorded with the SMI RED500 device with EEG data during our study on children with dyslexia...”

www.smivision.com

SMI solutions for integration of visual experience and neural activity

The integration of eye tracking and EEG data helps to identify and interpret event-related potentials (ERPs) or fixation related potentials (FRPs) in order to determine the emotional engagement of consumers, diagnose damages to the visual system of patients, compare brain activity with behavioral activity in cognitive psychology or develop multimodal interaction interfaces.

High-speed, remote or mobile eye tracking

SMI offers a broad range of hardware solutions for the co-registration of eye tracking and EEG and provides several digital and analog data outputs for flexible setup options.

The iView X™ Hi-Speed system scores with the highest spatial resolution for micro-saccade detection. The SMI RED series is a contact-free line of systems that offers binocular sampling rates of up to 500Hz. The RED devices provide a large freedom of head movement at scientific grade data quality. SMI Eye Tracking Glasses are the unobtrusive and robust tool of choice for mobile co-registration studies in both real-world and virtual environments. SMI also offers special eye tracking systems for co-registration in fMRI and MEG environments.



SMI Eye Tracking Glasses

Accurate synchronization due to the reliable low latency of SMI devices

SMI Eye Tracking devices excel by a low latency for accurate synchronization of eye movement and EEG data. Latency of SMI eye tracking systems has been extensively tested, proving reliable performance measures for experiment setup and analysis.

Configurable trigger signals and free SDK tools

The stimulus presentation program SMI Experiment Center™ is able to send and receive configurable trigger signals for synchronization of eye tracking and EEG data.

The SMI iView X™ Software Development Kit (SMI SDK) is free of charge, and integrates SMI eye tracking systems with popular stimulus environments including PST E-Prime®, NBS Presentation and custom applications written in MATLAB®, Python, C/C++ and .NET.

The SMI SDK offers additional high level functions such as the definition of TTL trigger signals associated with Areas of Interest defined as x,y positions on the stimulus screen. It also provides easy access to real-time streaming of eye movement and pupil size data.

References and partners

SMI has 20 years of experience in developing top notch scientific measurement devices proven to work reliably with EEG systems in a variety of co-registration studies conducted by renowned customers. Our systems are compatible with EEG solutions of leading manufacturers such as Brain Products, ABM, ANT, BioSemi, EGI, eMotiv and Neuroscan.

Selected Reference Paper: Coregistration of eye movements and EEG in natural reading: Analyses and review. Dimingen, O.; Sommer, W.; Hohlfeld, A.; Jacobs, A.; Kliegl, R., Journal of Experimental Psychology: General

More information: www.smivision.com/coregistration

SMI Solutions for Integration of Eye Tracking & EEG

SMI Eye Tracking Devices for Co-Registration

- iView X™ Hi-Speed, SMI RED series, SMI Eye Tracking Glasses, iView X™ MRI/MEG

Performance Measures and I/O Interfaces

- Sampling rates up to 1250 Hz
- Accuracy up to 0.25°
- Latency down to 2ms
- Communication: Ethernet (UDP), serial port (RS-232)
- Data access: analog output and digital TTL trigger I/O

SMI Software Solutions

- SMI Experiment Suite™ including SMI Experiment Center™ for stimulus presentation and configurable trigger signals
- SMI SDK for the integration in popular stimulus environments incl. definition of AOI triggers and real-time streaming of eye movement data

Compatibility

- Brain Products, ABM, ANT, BioSemi, EGI, eMotiv, Neuroscan...

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