

EyeLink Psychtoolbox Example Scripts

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The examples bundled with the Psychtoolbox installation demonstrate how to integrate EyeLink eye trackers into your projects using the EyeLink Toolbox. The toolbox is a wrapper for the EyeLink API and is natively supported within Psychtoolbox.

Installation Instructions

1. **Install Psychtoolbox:** Install the latest version of Psychtoolbox for Matlab or Octave <http://psychtoolbox.org/>.
2. **Install EyeLink Developers Kit:** Install the latest version of the EyeLink Developers Kit for your operating system (Windows, macOS, or Linux) from <https://www.sr-research.com/support>.

Note: While the EyeLink Developers Kit is cross-platform, Psychtoolbox has specific system requirements. Always check the official Psychtoolbox documentation for required dependencies (e.g. GStreamer).

Testing Your Installation

- Before running example scripts, recent versions of Psychtoolbox require you to run the `InitializePsychSound` command in MATLAB.
- To confirm your setup, run one of the example scripts below.

Example Scripts

Directory: `<Psychtoolbox>/PsychHardware/EyelinkToolbox/EyelinkDemos/SR-ResearchDemos`

- **SimplePicture:** A passive viewing example that records eye movements while an image is displayed, ending the trial on a keypress.
- **StereoPicture:** A binocular presentation example that records eye movements during a stereo stimulus, supporting both split-screen and dual-monitor setups.
- **PursuitTarget:** A dynamic tracking example featuring a smooth pursuit task where the user tracks a target moving in a sine-wave pattern for 5 seconds per trial.
- **SimpleVideo:** A media playback example that records eye movements while a video plays until the spacebar is pressed; includes animated calibration targets.
- **MRI_BlockRecord:** An fMRI simulation example utilizing continuous block-level recording (2 blocks of 3 trials) that waits for a keyboard trigger ('t') to begin trials within a block.
- **GazeContingent -> FixWindowBufferedSamples:** A sample buffer example where continuous gaze within a central window for 500ms triggers the presentation of an image.
- **GazeContingent -> FixWindowFastSamples:** A fast online gaze sample example where continuous gaze within a central window for 500ms triggers the presentation of an image.
- **GazeContingent -> GCBufferedEvents -> BufferedEndSacEvents:** An online saccade event example that updates the location of an overlaid red dot based on the end x, y coordinates of each detected saccade.
- **GazeContingent -> GCBufferedEvents -> BufferedFixUpdateEvents:** An online fixation event example that updates the location of an overlaid red dot every 50ms based on the average x, y

coordinates of the current fixation.

- **GazeContingent -> GCFastSamples:** A raw online sample example that continuously updates the location of an overlaid red dot based on the x, y coordinates of the latest retrieved gaze sample.

EyeLink Data Viewer Integration

Beyond marking event times, these examples demonstrate how to send specially formatted messages to your EyeLink Data File (.edf) to improve integration with Data Viewer. These messages allow Data Viewer to automatically parse your experiment's structure, including trial start/end times, trial variables, interest areas, and other stimulus information.

Documentation & Resources

- **EyeLink Programmer's Guide:** Documentation for the core C API functions that the EyeLink Toolbox wraps. Note that while function names and syntax will differ from the MATLAB implementation, the core logic is analogous.
- **Data Viewer User Manual:** Contains the complete integration messaging protocol (accessible via Help > Contents > "Protocol for EyeLink Data to Viewer Integration", and also as a download at [Data Viewer User Manual](#)).
- **Getting Started with Psychtoolbox:** Additional resources, including video tutorials and webinars covering EyeLink integration, are available on the SR Research Support Forums <https://www.sr-research.com/support/>.