In 1879 French scientist Louis Javal, made the discovery that the act of reading did not consist of fluid eye movements. Instead, he found that the eye makes stops along the way with multiple fixation points. These points, followed by periods of movement, are called saccades. The brain’s ability to “blend” these images together into a single continuous stream of visual information is called “Saccadic Processing.” Multiple technologies have been produced that aim to quantify and explain the movements and their role in neural transmissions to the brain.

One example of this type of technology is called Electrooculography (EOG). The technique focuses on measuring the electric potential of the eyes. By placing two electrodes on opposite sides of the eye, a dipole between the retina and cornea is created. Any movement in the eye creates differences in electric potentials which then produce a reading. While there are numerous technologies in existence that measure eye movement, EOG is desirable especially in the case of monitoring REM during sleep. The ability to have non-invasive sensors allows for a convenient procedure.

This technology also allows scientists to measure the effectiveness of pre-existing eye tracking software. Due to the high accuracy of EOG, a participant’s eye movements can be cataloged and checked for errors in the system. Another advantage of EOG is that it can identify different types of movement and focus in the eyes. As an example, during a study done by Chinese researchers, EOG was able to identify the difference between a participant’s fixed gaze from normal gaze shifting.

The ability to effectively judge a system based upon quantifiable data creates better and more reliable interfaces. EOG and technologies like it allow people to have the ability to interface with other technology using the eyes. This type of interface is heavily aimed towards Brain-Computer-Interfaces (BCI’s) and offers a method for attaining reliable results for researchers.


