

Tech Talk: Eye-Tracking & A.I. The Future Of Lie Detection?

October 6, 2017 - Written By [Daniel Golightly](#)

>> **Converus Clarifications to this Article** <<

The last paragraph of this article requires some clarification:

It's important to point out the Converus technology — EyeDetect — is not a polygraph, and vice-versa. They are independent testing technologies using completely different methods to detect deception. Polygraph measures various psychophysiological indices such as blood pressure, pulse, respiration and skin conductivity. EyeDetect measures involuntary ocular motor and other behaviors resulting from an increase in cognitive load in the brain, as the examinee answers a series of true/false statements on a variety of topics, some of which are used for a within-subject comparison. EyeDetect is ideal for screening job candidates and current employees, as well as for verifying if parolees have conducted any parole violations or if specific crimes have been committed.

Polygraph and EyeDetect are viable, proven technologies. Yes, there is a way to determine the accuracy of our “eye-tracking technology.” In fact, EyeDetect has already been scientifically validated in the lab and in the field at 86 percent accurate. (See EyeDetect’s peer-reviewed research: [International Journal of Applied Psychology](#) | [Psychophysiological and Ocular-motor Detection of Deception](#) | [Journal of Experimental Psychology: Applied](#))

EyeDetect tests are standardized and the testing process is automated and uniform. All data collected is securely uploaded to the cloud using bank-level encryption. It’s extremely unlikely this data could ever be hacked.

Lastly, lie detection evidence is not allowed in a U.S. courtroom, except for a handful of states.

Since the introduction of the polygraph, lie detection technology has steadily declined in use around the world due to inconsistencies in accuracy, but new technologies may breath new life into the art of detecting dishonesty. At the forefront of that revival is A.I. and other software solutions driven by eye-tracking hardware and a deeper understanding of the physiological changes a person experiences when they aren't telling the whole truth. Perhaps surprisingly, new technologies fitting into the “lie detector” category are, in fact, already in use in some parts of the world. Development has been ongoing for years. However, even though they are already being used, whether or not they are accurate enough to justify that use, is still up in the air – as are questions on whether or not they should be used at all.

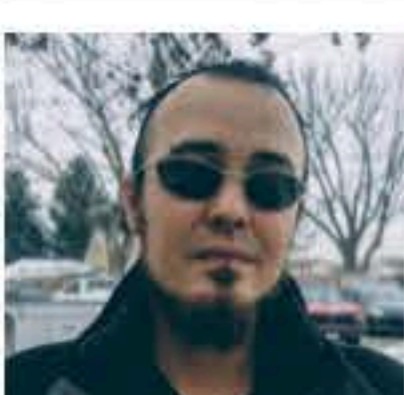
For starters, the debate about the usefulness of prior lie detection methods has already been all but settled in favor of not using them. That’s true for several significant countries around the world. In places like the U.S., for example, they are widely used by some local law enforcement for everything from conducting investigations to filtering through potential new recruits. That may seem a bit odd since polygraphs are not admissible in a court of law or recommended by governing agencies due to their inaccuracies. The same is true in the UK, where the governing body views them as far too unreliable to be legally compelling. That’s mostly because the physical attributes of what a polygraph measures – heart rate, blood pressure, and so on – can be manipulated by the interviewee, or misinterpreted by the interviewer. The result can often lead to false readings which either sum up a lie being told when it hasn't, or a lie being covered up.

That lack of reliability and acceptance is not necessarily something that diminishes the desire for some organizations, business, and agencies to be able to detect lies. The conundrum is that without government backing, in most cases there's no way for polygraphs to be that useful. However, the fact that it is still desirable has spurred new innovations, piggybacking off of recent advances in eye-tracking, machine learning, computer vision, and A.I. **Converus** wants to use sophisticated eye-tracking technologies such as those being **used in VR** entertainment devices to address the problem. It has been working on the problem since at least 2014 and the company's setup, EyeDetect, utilizes similar infrared to track whether a potential fibber's pupil is widening when answering true or false questions. The questions are read off of a screen, eliminating some of the human error associated with current lie detectors. Moreover, the company claims that research shows the technology to be more accurate than polygraphs, in many cases reaching a level of accuracy as high as 90 percent. In addition, machine learning algorithms can not only be taught, the company says, to watch for pupil changes (an indicator that more effort is being put into answering a question), but how quickly a user reads and answers a question can be tracked (another sign that a person is being less than honest), allowing for a second layer to back up the initial results.



Beyond that, technologies such as EyeDetect could solve at least one major hurdle to the widespread, ethically-sound implementation of lie-detection. Current lie-detectors haven't changed much for several decades and tests can cost from as little as a few hundred dollars to as much as a few thousand. Modern technologies, by contrast, improve with a high degree of regularity and rapidly become more affordable over time as a result. Better still, since A.I. is at the center of the technology, owners of similar systems could conceivably improve the accuracy and functionality of those systems through software and firmware updates. One notable exception to that would be in instances where new hardware has been developed that is absolutely required for whatever improvements have been made. In the meantime, Converus says its own tests run between \$50 to \$100 per test after an initial \$4,000 investment into the hardware. With component costs almost certain to fall as use becomes more widespread, the lie-detection technology could cost substantially less under the right circumstances.

Organizations across many countries are already making use of EyeDetect and the U.S. government is set to take a look at Converus scientists' results starting next year. Two examples of the technology's current use includes large banks in South America and several law enforcement agencies within the U.S. In both cases, the technology is used throughout the hiring process, in order to ensure a reduction of corruption and a high level of honesty among employees. That surge in popularity could show that the world is finally ready to leave polygraphs behind, but that doesn't mean there aren't still problems with using new technologies for the task at hand. For one thing, **until A.I. improves** significantly there are still some situations where a polygraph is considerably more well-suited to handing lie detection. That's true even if their use isn't supported by the government or courts. By way of example, there are some cases where simple true-or-false questions simply won't suffice due to the complexity of the circumstances. In those instances, follow-up questions need to be asked to clarify a person's previous answers. Lies detectors in that way can help agencies to know whether or not they may be on the right trail and there's no way of telling how the accuracy of current eye-tracking technologies, as a means to detect dishonesty, would be affected by those more intensive situations. Furthermore, since computer systems could realistically be hacked and re-programmed, there are ethical concerns which could still be raised about their use in a courtroom scenario at all. Bearing that in mind, it will probably be quite some time before there are any truly useful, high-impact scenarios for the use of eye-tracking and A.I. in the realms of lie detection.



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Technology has been an obsession for me, in all of its forms, for most of my life. I enjoy gaming, playing guitar, messing around with home screen customization on my HTC U11, or playing around with anything else that has electricity running through it or engineering behind it. Android has held a special place in my heart from the first device I bought - an HTC Evo.