Invention novelty: This invention is an eye tracking technology that uses retinal reflections to determine eye gaze positioning and does not require any optics.

Value Proposition: Most current eye trackers detect eye position from the reflection of a point light source in the front of the cornea, the bright or dark pupil or the back crystalline lens of the eye. This current technology uses reflection from the fovea to determine eye gaze positioning. This technology is advantageous because;
- The true focus point is determined and is therefore a more accurate and precise eye tracking technology.
- No intermediary optic is required between target and eye.
- There are no moving parts.
- Can be used with minimal optics for ophthalmic diagnostics.

Technical Details: Johns Hopkins researchers have developed a system with methods to enable retinal based eye tracking without an optic between the eye and device and to detect fixation on a light source point without calibration. The technology is based on detecting the focus point of the retinal fovea. When a subject looks at a target, the target is focused at the fovea. When the fovea is subject to polarized near-infrared light a reflection of the same size, shape and location is generated depending on the polarized light. This allows for precise detection of fovea position. By using a near infrared laser, a small amount of light passes twice through the birefringent nerve fiber causing polarization dependent on the focal spot of the light. This polarized light is reflected toward the source where it is detected by sensors. By combining several emitter:sensor sites the position of the retina can be determined quickly. When calibrated this system can identify the direction of gaze.

Looking for Partners: To develop and commercialize the technology as an eye tracking technology or an ophthalmic diagnostic

Stage of Development: Pre-Clinical

Data Availability: Under CDA/NDA


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