

## Alternative Mouse Devices

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The Eyegaze System, EyeWare, and Quick Glance are communication systems for people with disabilities that are not able to use their hands. These systems are run with your eyes. And are used by many different types of disabled children and adults. These disabilities may include spinal cord injury, brain injury, cerebral palsy, multiple sclerosis, brainstem stroke (Locked-In syndrome), muscular dystrophy, and Werdnig-Hoffman syndrome.



### How Eyegaze System Works?

The way this system works is the user sits in front of the monitor and an infrared sensitive video camera that will observe the user's eyes by using an LED to illuminate the eye. The LED reflects a small bit of light off the surface of the cornea. The light shines through the pupil and reflects off the retina and causes a bright pupil effect that enhances the camera's image of the pupil and makes it easier for the image processing functions to locate the center of the pupil. Then the computer coordinates where the user is looking on the screen

based on the relative positions of the pupil center and cornea reflection within the video image of the eye.

The average accuracy is about a quarter of inch or better. These observations are analyzed by image processing software that determines where the user is looking on the screen.

Users of this device must have good eye control of at least one eye, adequate vision, and ability to maintain a position in front of the monitor. They must be able to look up, down, left, right and fix their gaze on all areas of the computer monitor.

The Eyegaze System must be used in an environment with limited ambient infrared light, alternative sources of infrared light may interfere with the accuracy or prevent operations of Eyeglaze.

Options include speech synthesis for non-verbal users for quick communication, environment control i.e. lights, shades, doors, etc., telephone which allows the user to place and receive calls, typewriter which uses a visual a keyboard, and games.

### EyeWare

EyeWare basically works the same as Eyegaze, but is unaffected by head position or ambient light. EyeWare offers two designs goggles or an off body mounted camera.

### Quick Glance

Quick Glance offers the same type of system as Eyegaze but mouse clicks are done with a slow eye blink.

### References:

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