Liberator
A Prentke Romich Company
Communication without limitations

Useful Eye Gaze terminology explained

Eyegaze Process

- *Tracking*: The ability to follow an object as it moves across the visual field. (Smooth Pursuit)
- *Locating*: Finding a stationary object within the visual field.
- *Targeting*: Directing one's eyes towards a known object.
- *Fixating*: Maintaining a gaze on a known object.
- *Selecting*: Holding gaze for an extended period of time to choose an object.
- *Controlling*: Moving or manipulating an object through a combination of Tracking, Locating, Targeting, Fixating, and Selecting.

What is a Saccade? A saccade is a fast movement of an eye, fast jumps from one fixation to the other. Saccades are quick, simultaneous movements of both eyes in the same direction. Regressive saccades and saccade pattern can reveal confusion and problems in understanding

What is a Fixation? Fixations occur when the eye is resting on a target. Typical duration of fixations are 100 – 600 milliseconds. Information from scene is gathered during this period the brain starts processing data during this stop period and the length of fixation often indicates information processing and/or cognitive activities.

Smoothing: The frequency of which the eye data is calculated to determine where the cursor (or pointer) should be drawn. The value can range from 2 to 45. The higher the number, the slower the cursor responds. The lower the number, the faster the cursor responds.
The calculation can be conducted in 3 ways:

- "Stream" [DEFAULT]: Works well for most users and at all ranges of smoothing. This setting moves with the eye wherever the user looks on the screen.
- "Snap": Works well for users who have dramatic shifts in gaze (poor visual attention, frequent and constant head movement, severe nystagmus). Very robust and makes the cursor feel "sticky".
- "Group": Works well for users who have frequent shifts in gaze (mild to moderate nystagmus) around a central point.

Filter Method: Filter Method can be adjusted to separate an individual's saccades and fixations. The saccadic movements can be calculated as they are fast and usually have short durations. Fixations requires stability over a longer period of time. NuEye can determine the difference between a saccade and fixation and therefore apply separate methods to each eye event. [DEFAULT is to apply Stream to both the saccade and fixation.]
Other options include:

- Stream + Snap
- Stream + Group

Fixation Window: Increase the size of the fixation window to make target selection easier for users with ocular motor or visual attention issues that may be impacting their ability to select targets. Decrease the size of the fixation window to improve the precision of the selection made for more advanced users.
If you increase the number, less stability of the individual's gaze is required. You can increase or decrease each axis independently. For example if a user has a mild to moderate lateral nystagmus, you may increase the fixation window along the (x) axis and maintain the default settings along the (y) axis. This would give the user some level of compensation for their uncontrolled movement.

Another example would be that if a user has difficulty with vertical movement of the eye and they need greater tolerance along the y axis, than you increase the fixation window's (y) axis setting.

The Fixation Window is the area in which fixations are detected. Fixation default setting is 50px by 50px (NEW DEFAULT SETTING should be 200px by 200px) and can be ranged from 1px to 600px. The smaller the fixation window, the greater amount of stability will be required to make a selection. The larger the window the faster a selection will be detected. The fixation window allows you to balance precision and robustness.
The fixation window only applies to the pointer in Nuvoice and selections made in Windows. The fixation window has no bearing on the cursor.

- **Fixation Window X:** this is the horizontal or width of the window, this increased the depth of the target making it easier to select horizontally.
- **Fixation Window Y:** this is the vertical or depth of the window, this increases the depth of the target making it easier to select vertically.

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