The Office of Technology Management

UNIVERSITY OF TEXAS ARLINGTON

Tech ID: UTA 13-30

3D Point-of-Gaze Headset

INVENTOR: Christopher D McMurrough

TECHNOLOGY NEED

Traditional human-machine interface inputs such as keyboards and mouse have become highly inaccessible in numerous applications and also proves to be ineffective for users with impairments. In the past, similar eye-tracking devices have allowed the user to interact with a computer, which in turn, communicated messages to a system. While the technology has been revolutionary, it does not facilitate the interaction between the user and the system. Knowledge of a user's point of gaze can be a powerful data modality in intelligent systems by facilitating intuitive control, perception of user intent, and enhanced interactive experiences. Also currently available head mounted eye gaze systems facilitate interaction with 2D images or displays, whereas it is not compatible with the real world environment.

INVENTION DESCRIPTION/SOLUTION

To address this requirement, researchers at UT Arlington have developed a 3D Point-of-Gaze (PoG) Headset that has the ability to scan and analyze the user's eye movements and the surrounding environment to potentially enable the user to interact with the environment and the system involved. The 3D PoG headset tracks the movement of the eye and analyzes the objects in the user's gaze through 3D image processing of the environment. This point of gaze information could be used to potentially interact with the object and give commands. The 3D PoG headset can be utilized to optimize performance of Augmented Reality experiences by focusing system resources specifically where the user is currently looking. It can also be utilized to identify or study the behavior of users towards a product or service in a system.

APPLICATIONS

- Assistive technology
- Intelligent human-machine interface
- Electrical wheelchair assistance
- Industrial operations
- Augmented Reality

KEY BENEFITS

- Real-time eye trackings
- 3D point-of-gaze estimation
- Recognition and localization of objects in a home environment
- Hands-free control of electric wheelchairs and other mobile platforms

STAGE OF DEVELOPMENT

Prototype

INTELLECTUAL PROPERTY STATUS

Patent Issued

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