Providing Computer Accessibility for the Physically Disabled

Virtual accessibility for everybody!

Computers and mobile devices have become a significant part in the daily lives of many students, workers, and older citizens. However, for the estimated 10% of people that experience some form of disability, the use of these devices is limited or impossible. This project focuses on the complications arising from various physical disabilities, which can significantly reduce an individual’s ability to easily and effectively use computer interfaces.

Because of the great benefits of virtual emersion, and the implications towards enhancing physical therapy, it is paramount for engineers and medical professionals to work together to develop user friendly and accessible computer interfaces.

Sensible interface design

The conventional keyboard mouse interface has been replaced by an eye-tracker and data-glove. The eye-tracker will monitor eye-gaze positions and links these directly to camera rotations. The data-glove will register hand gestures and translate these into video game controls like walking, grabbing, jumping, or throwing.

A beautiful and engaging virtual environment

The user will find him- or herself on a tropical island. This nature-rich environment is meant to create a relaxing experience and should inspire the user to walk around and explore.

The user can interact with various components of the island, including a few mini-games. These games can be played using natural hand gestures like picking up, dropping, and throwing. The user is not required to do anything however! There is no pressure or time-constraints.

Making gaming possible, and physical therapy fun.

The initial benefit will be the facilitation of human-computer interaction.

At the same time, the alternative modus of control will inspire users to perform actions recommended by their physicians. They might even forget they’re exercising.

Tracking Patient Progress

As the user plays with the gaming system, both physical and virtual performance can be observed and acted upon by the physician.

The data-glove input device also collects physical performance data. The physician can track the patient’s physical performance, and choose to adapt the physical requirements when desired.

Secondly, the virtual performance can also provide useful insights on the patient’s progress. This may inspire the physician to increase the challenge if the user performs exceptionally well.