The Other Side of Me: An Arduino Based Game for Bilateral Integration in Autism Spectrum Disorder

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Autism Spectrum Disorder affects one in sixty-eight children in the United States and awareness and coordination of the two sides of the body, known as mid-line awareness is a common issue. Seventy percent of autism spectrum patients experience this problem and require occupational therapy to learn the skills needed to use both sides of the body in a coordinated manner. Traditional Occupational therapy exercises are part of the rehabilitation process, however, this can be time consuming and expensive. The goal of this project was to design and implement an interactive wireless game using an Arduino processor – which will allow for home-based therapeutic exercises that encourage mid-line awareness in children with autism spectrum disorder. TIB, or Therapist in a Box, is a visual perceptual processing video game on a monitor or television, which leads children through a series of movements that guide the left and right hands to reach across the mid-line of the body to increase bilateral awareness. Visual based learning systems using computer games have been shown to be very effective in therapeutic outcomes with autism patients. The TIB prototype was designed, tested and refined in proof of concept assessments until the basic design goals were achieved. Behavioral observations of 223 subjects were collected in an unrestricted public setting. The results of the survey after the observations revealed that all design goals and game attributes met or exceeded the seventy percent threshold that was established as an indicator of positive engineering goal attainment. TIB can provide a simple, affordable, video based therapeutic system for bilateral integration in alternative rehabilitative settings such as home, school or primary care environments.

Awards Won:

Second Award of $2,000

International Council on Systems Engineering - INCOSE: First Award of $1,000

International Council on Systems Engineering - INCOSE: First Award of $3,000

Synaptics, Inc.: First Physical Science Award of $2,000