

# **NCTI Technology in the Works Competition**

## **Look Mom, No Hands: The NIA as an Alternative Computer Interface**

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### **Abstract**

The goal of our research is to provide an alternative input mode for people who, due to motor limitations, cannot use standard computer input devices (e.g., keyboard, mouse, or joystick). The collaboration between the Department of Psychology at Wright State University and Brain Actuated Technologies, Inc. will further the development of the Neural Impulse Actuator (NIA) for hands-free interactions with and through the computer. The NIA, which is now available for the computer gaming industry ([http://www.ocztechnology.com/products/ocz\\_peripherals/nia-neural\\_impulse\\_actuator](http://www.ocztechnology.com/products/ocz_peripherals/nia-neural_impulse_actuator)), is the latest version of Brain Actuated Technologies' Brainfingers system. This system measures electrical potential at the forehead and filters it to create separate 'brainfingers' or 'actuators' for different frequency bands associated with EMG, EOG, and portions of the EEG spectrum (Alpha and Beta ranges). These actuators can be mapped to computer functions as either discrete switches (e.g., key presses) or continuous signals (e.g., cursor movement). This system has been used as an assistive technology, as a special education tool, and as a gaming interface. The focus of the development work would be to enhance some of the capabilities of the NIA software - e.g., including a richer set of options for proportional control.