ZHELTA: Contactless, Programmable Keyboards for People With Disabilities

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People with a limb paresis disability cannot freely use a traditional computer keyboard. Such people often have difficulties working on a computer or other electronic devices. I decided to work on a device that could solve this issue. The device is to be compliant with the DFA (Design for Assembly) process and be designed with ease of assembly in mind, effectively reducing assembly time and cost. A unique, innovative, and programmable computer keyboard dedicated to people with disabilities was designed. The device was developed entirely from scratch. The most notable difference from traditional keyboards was the unique magnetically activated key switch design. Each keyboard key can be activated magnetically using a pointer with a magnet attached. The project's final result – a whole range of ZHELTA keyboards, each designed to help with designated tasks done on a computer – was designed, produced, and assembled. These devices were tested in a relatively simple but accurate way: by simply having any person wear a cap with the pointer attached and asking them to type out specific phrases on the keyboard. All such tests were successful; a person with limb paresis could use such a keyboard. ZHELTA keyboards have proven helpful for people with disabilities using computers or other electronic devices equipped with a USB port. In addition, the device can help a wide range of people with more or less complex disabilities and can be adapted to individual needs.

Awards Won:

Third Award of $1,000

IEEE Foundation: All recipients of IEEE awards will receive a 4-year membership to IEEE

IEEE Foundation: Second Place Award of $600