

Electro-Oculogram Control Signal System for Patients with Amyotrophic Lateral Sclerosis Constructed by Using Lab VIEW Technology

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Abstract

As the science and technology develop rapidly in recent years, the use of different special aids tends towards convenient and human-based control; however, it is very difficult for physically and mentally handicapped people (e.g., patients of motion neuron disease, which is the patients with amyotrophic lateral sclerosis) or those with serious body disturbance such as vertebral injury to communicate with others or to control peripheral equipments on their own. Especially, when their families have gone out, and they are looked after by nobody, they lose self-supporting ability. This study used electrooculography to capture eye movement symbols; the weak potential difference in the skin around the eye is measured by using electrode pads, so as to know the direction of eye movement. The captured physiological signals are processed by external hardware preliminarily, and then sent to the computer for analysis and identification by using LabVIEW. The man-machine interface is used for communication or the signals are transferred to the external control circuit for relevant control of equipments. This study proposed a low price eye-controlled system, hoping this system can enhance the independence of patients with amyotrophic lateral sclerosis, reduce their frequent dependence on others' help, and bring a more convenient, comfortable and dignified life to patients.

Key words : Amyotrophic lateral sclerosis; Electro-oculogram;

Eye movement signal; Motion neuron disease