

S4-1.5

Encephalographic Signal LabView Processing

I.C. Roșca¹, C. Drugă¹, I. Șerban¹, and R.D. Necula²

¹Transilvania University/Product Design, Mechatronics and Environment Department, Brașov, Romania

²Transilvania University/Department of Medical and Surgery Specialties, Brașov, Romania

The research presented in the present paper concern the treatment of signals obtained from monitoring the encephalic function through electroencephalogram. The signal processing is based on the creation of a routine in named Labview software, which allow analyzing both electrocardiographic and electroencephalographic (EEG) signals.

Automatic interpretation of an EEG implies analyzing a large diversity of normal and abnormal wave forms on a great number of channels. EEG monitoring aims the detection of significant changes either for slow and fast waves (spikes).

A routine was created in LabVIEW software for processing the EEG signal and to indicate anesthesia degree (cerebral state index). After caption and filtering, the signal is distributed through four channels corresponding the electroencephalographic frequencies. Further, the signal was transformed as to be possible its graphic representation and, the Cerebral state index was estimated by implementing its specific formula and expressed by a numerical value.

This application has the advantage to save data in in different formats as to be visualized and interpreted by other software giving the graphic representations (Excel, Origin etc.). It also allows to be used for a great number of subjects, depending on PC memory, and it is easy and friendly to use for persons that have no specific IT education. The last but not the least, it is very low cost: LabVIEW license and low cost for acquisition board and little other accessories.