Summaries

Dawid Winiarski: **The use of EMG signal in human-machine interface** • Automatyka/ Automatics 2015, Vol. 19, No. 2

In this paper, the analysis and processing algorithms of EMG signals have been presented. The main purpose of the research was to verify the usefulness of EMG signals in controlling a bionic prosthesis or exoskeleton. The physiological nature of the EMG signal has been introduced. An original measurement system has been presented. Analysis of the time and frequency domains of the signal has been conducted to extract vital information that the signal carries. Methods of using the EMG signal as a control signal for devices that operate in a human-machine interface have been proposed. The result shows that a processed EMG signal can be used as a basis for a simple control system.

Keywords: *biomedical signals, EMG, digital signal processing, instrumental amplifier*

Szymon Firlej: **Design, construction and control of a spherical rolling robot with internal two-wheel cart** • Automatyka/ Automatics 2015, Vol. 19, No. 2

This elaboration presents a spherical rolling robot with a 2-wheel cart. The custom design of the hardware and control software is presented to demonstrate the solution. The robot was started to realize an autonomous task. The embedded robot control system is based on a 32-bit microcontroller and uses a Bluetooth module for wireless communication. The simplified model has been proposed and its parameters identified. The results obtained at the simulation and experimental stages are shown and compared. Finally, the robot's motion was recorded and analyzed with the support of image signal processing techniques.

Keywords: *spherical robot, sphere, mobile robot, Lagrange, internal two-wheel cart*