A EMG-Controlled Robotic Prosthetic Arm With Neural Network Training

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Objective

The objective of this work is the creation of cheap non-invasive active prosthesis. Its user will be able to use it thanks to a bracelet with integrated sensors (gyroscope, accelerometer and EMG (electromyographic signal sensors)). This bracelet will be placed on the user's arm and will read the parameters of the resident muscular terminations of the user's residual limb.

Materials & Methods

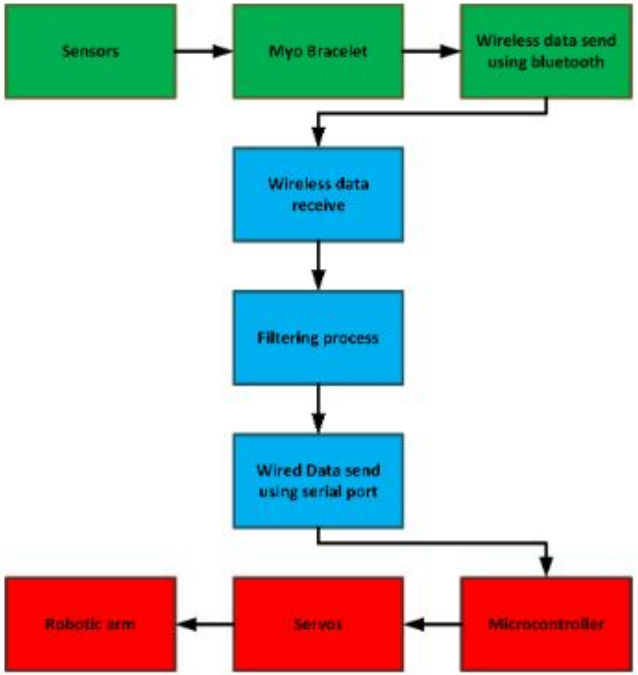

Fig. 1. System block diagram.

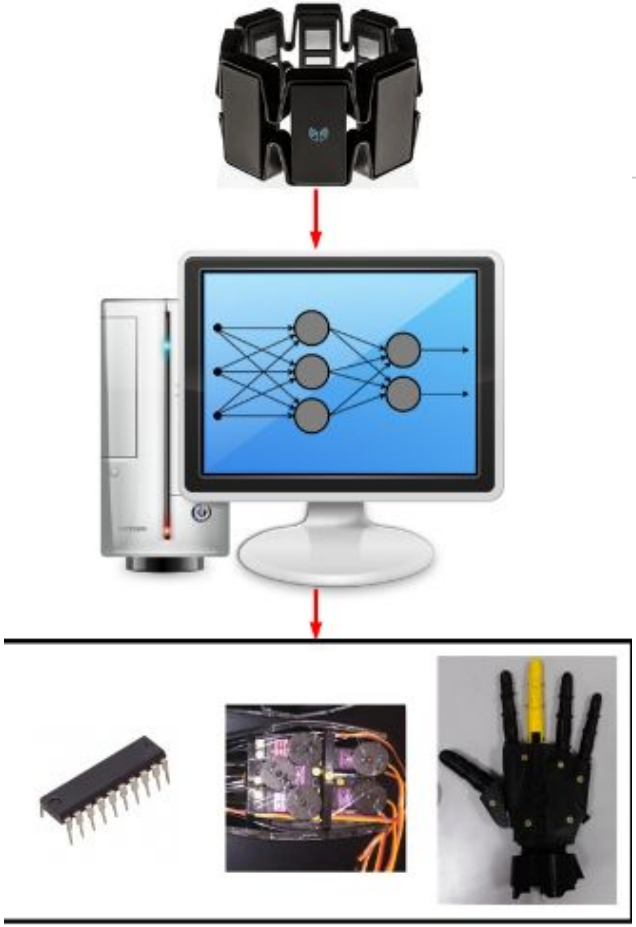

Fig. 2. System block diagram.

Results

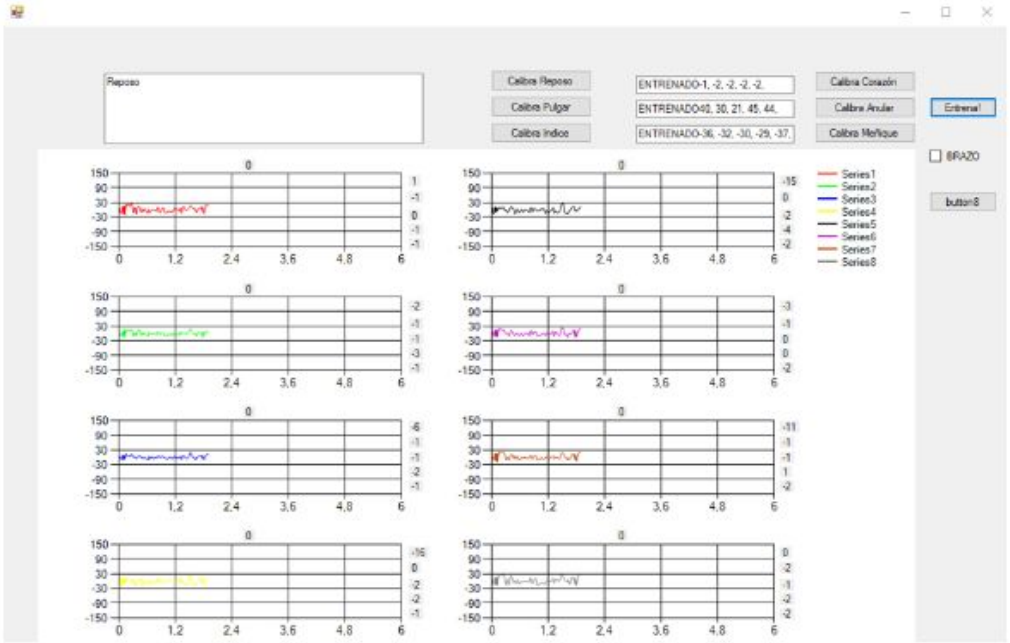

Fig. 3. System block diagram.

Conclusions

- A system based on the movement of a robotic arm through EMG sensors from a bracelet and training the information through neural network has been designed, integrated and tested.
- The success rate after training and testing with 8 subjects was above 85%; the average was above 90% in the classification of the neural system.