

## ABSTRACT

The work is on the problem of multi-stage recognition for the control of a robotic hand prosthesis. In contrast to the classic approach, a solution has been proposed in which the control process is started before the end of recording the full signal. The proposed multi-stage recognition controller interacts with the classic motion recognition system. It is used for kinematic control of the end device, which is a robotic prosthesis. It allows the prosthesis movement to begin before the end of the actual signal assignment to one of the classes by combining these classes into movement groups and classifying the signal into one of such groups.

Along with the increasing length of the recorded signal, the number of classes in the group is systematically decreasing. Because of the rejection of mismatched classes during the measurement, it is possible to start the movement even before the end of the data acquisition stage.

The presented approach assumes that in the early stages of recording a measurement signal, a signal can be classified into a set of several movements. The algorithm does not yet decide what the final command of the system will be, but allows the prosthesis to start moving. Subsequent iterations of the algorithm reduce the number of classes in the group to which the signal belongs, and thus make the intention of the traffic more precise (see chapter 4.6).

**Keywords:** *decision control, electromyography, robotic prosthesis, extraction, selection, classification, pattern recognition, sequential recognition*

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