## عنوان مقاله:

Impact of feature selection and extraction methods on classification accuracy for EMG based hand movements

## محل انتشار:

کنفرانس ملی کاربرد فناوری های نوین در علوم و مهندسی، برق و کامپیوتر و IT (سال: 1396)

تعداد صفحات اصل مقاله: 13

## نویسنده:

Rouhollah Kian Ara - *Department of Electronics and Telecommunications, AGH University of Science and Technology, Poland*

## خلاصه مقاله:

Electromyography (EMG) signals are outcomes of skeletal muscle activities. In this study EMG signal is read non-invasively from the skin surface by placing electrodes on the skin of specified muscle (surface EMG - SEMG). The main aim of this paper is to apply various fea-ture selection and extraction methods on SEMGs measured from four hand muscles; Extensor carpi radialis, Palmaris longus, Pronator quadratus and Flexor digitorum superficialis to navi-gate a prosthetic hand. The SEMGs for five hand movements; finger flexion, wrist flexion, wrist extension, pronation, supination have been acquired. From each muscle (channel), peak value of the envelope, the mean frequency obtained with discrete Fourier transform are em-ployed as features. The features have been computed from the whole 0.512, 0.256, 0.128 sec-ond segment and halves of the segment. The different combination of these features has been classified with support vector machine. Among the feature combinations(Peak value, Mean frequency, Peak value, Mean frequency) computed from the halves of 0.512s slice provides the best performance with SVM classifier. Two females and one male attended to experiment. Intra subject classification has been poor (less than 50% in average). The right-hand classifica-tion average was 90.37%, while the left-hand categorization average was 92.83%. Interesting-ly, the left-hand versus right-hand and the right-hand versus left-hand classification success was obtained .71.49%

## کلمات کلیدی:

Electromyography, support vector machine, classification, feature extraction