



## Advanced Data Mining Tools and Methods for Social Computing

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### Chapter 6 - A machine learning approach to aid paralysis patients using EMG signals

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#### Abstract

This work focuses on hand movement classification from electromyography (EMG) signals using machine learning algorithms. The use of EMG signals for the human–human interface to move a paralyzed person is discussed. EMG signals are generated when the electric potential of the muscles changes after receiving signals from the brain due to the contraction or expansion of muscles. EMG signals were collected by connecting electrodes to a person's arm and they were recorded using the BYB Spike Recorder App. Features were extracted from these signals and a dataset was obtained using these features. Hand movement of the person using this dataset was classified using various algorithms like k-nearest neighbor (KNN), support vector machine, naive Bayes, and decision tree. All algorithms offered a promising accuracy of around 90%, except KNN, whose accuracy was 60%. Thus, they can be used to control movements of people with disabilities by a human–human interface.

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#### Keywords

EMG signals; Feature extraction; Machine learning; Human–human interface

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