

عنوان مقاله:

Extracting and study of synchronous muscle synergies during fast arm reaching movements

محل انتشار:

بیستمین کنفرانس مهندسی پزشکی ایران (سال: 1392)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Neda Kaboodvand - *Department of biomedical engineering Amirkabir University of Technology Tehran, Iran*

Farzad Towhidkhan - *Department of biomedical engineering Amirkabir University of Technology Tehran, Iran*

Shahriar Gharibzadeh - *Department of biomedical engineering Amirkabir University of Technology Tehran, Iran*

خلاصه مقاله:

The central nervous system (CNS) uses a redundant set of joints and muscles to ensure both flexible and stable movements. How the CNS faces the complexity of control problem is not still clear. Modular control is one of the most attractive hypotheses in motor control. In this hypothesis, some motor primitives (e.g. muscle synergies) are considered as the building blocks that can be combined to present a vast repertoire of movements. EMG signals are required for extracting muscle synergies and NMF (nonnegative matrix factorization) is one of the most accepted methods for extracting synergies. Due to tonic component elimination of EMG signal, the standard NMF method is not applicable to extract muscle synergies. In this paper a modified NMF method, so-called semi-NMF, is applied to resolve the tonic component problem. On the other hand, to improve the accuracy of synergies' estimation, synchronous model has been applied instead of asynchronous model used before. The proposed algorithm was applied to the experimental EMG recorded in arm reaching movement in the frontal plane. The results showed a good improvement both in accuracy and repeatability of extracted synergies.

کلمات کلیدی:

, arm reaching movement , direction-independent synergies , semi-NMF , synchronous muscle synergies

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/340077>

