信号处理 2010, 26(10) 1534-1538 DOI: ISSN: 1003-0530 CN: 11-2406/TN

本期目录 | 下期目录 | 过刊浏览 | 高级检索

[打印本页] [关闭]

应用

基于独立分量分析和小波变换的膈肌肌电信号降噪

伍飞云,杨智,范正平,罗远明

中山大学信息科学与技术学院

摘要:

提出了一种基于独立分量分析(ICA)和小波变换的处理方法,用于去除膈肌肌电信号中的心电干扰。首先利用独立成 份分析法从膈肌肌电信号分解出心电独立成份,并对该心电成份选择合适的高通滤波器加以滤除,其它为膈肌肌电信 号的独立分量进行五尺度小波分解以去除含心电的近似分量,再对各层细节分量进行小波重构,然后将处理后的全部 独立分量反射投影回原始信号空间,最后,对临床采集的5路膈肌肌电信号进行实验分析,并与传统ICA方法进行对比, 结果表明本文方法有更好的降低心电干扰性能。

关键词: 信号处理:独立分量分析;小波变换;膈肌肌电信号;心电干扰信号

Research of De-noising Method for EMGdi Signal Based on Independent Component Analysis and Wavelet Transformation

WU Fei-Yun, YANG Zhi, FAN Zheng-Ping, LUO Yuan-Ming

School of Information Science and Technology, Sun Yat sen University, Guangzhou

Abstract:

A de-noising method based on independent component analysis and wavelet transformation is proposed in this paper to remove ECG interference. Firstly, the independent components of ECG are gotten by employing ICA to EMGdi signals. Select a suitable high-pass filter to remove the ECG components, and the approximate weight of other EMGdi components are removed after wavelet decomposition at the fifth <u>▶范正平</u> scale, on the other hand, the details are reconstructed. Finally, reflect these processed independent components back to the original signal space. Experiment on collected 5 channel clinical EMGdi signal is presented. Comparing the results with the traditional ICA method, it shows that the method proposed is better than the traditional ICA method in removing ECG interference.

Keywords: signal processing independent component analysis wavelet transformation EMGdi signal ECG interference signal

收稿日期 2009-06-15 修回日期 2010-01-04 网络版发布日期 2010-10-25

DOI:

基金项目:

国家自然科学基金资助项目(60704045)

通讯作者:

作者简介:

作者Email: wfyfly@126.com

参考文献:

本刊中的类似文章

文章评论

扩展功能

本文信息

- ▶ Supporting info
- PDF(1327KB)
- ▶ [HTML全文]
- ▶参考文献[PDF]
- ▶参考文献

服务与反馈

- ▶把本文推荐给朋友
- ▶加入我的书架
- ▶加入引用管理器
- ▶引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶浏览反馈信息

本文关键词相关文章

信号处理:独立分量分析:小 ▶波变换; 膈肌肌电信号; 心电 干扰信号

本文作者相关文章

- ▶伍飞云
- ▶杨智
- ▶ 罗远明

PubMed

- Article by Wu, F. Y.
- Article by Yang, Z.
- Article by Fan, Z. P.
- Article by Luo, Y. M.

反馈人	邮箱地址	
反馈标题	验证码	8560

Copyright by 信号处理