

EMGLAB WEBSITE FOR EMG DECOMPOSITION

Kevin C. McGill¹ and Edward A. Clancy²

¹ VA Palo Alto Health Care System, Palo Alto, CA, USA

² Worcester Polytechnic Institute, Worcester, MA, USA

E-mail: mcgill@va51.stanford.edu Web: <http://emglab.stanford.edu>

INTRODUCTION

The website <http://emglab.stanford.com> is a forum for sharing software, data, and information related to EMG decomposition. Its goals are to promote decomposition as a research tool, to promote the exchange of EMG data, to encourage attention to accuracy, and to encourage algorithm innovation.

STATUS

Open-source software includes the EMGlab program for viewing and manually decomposing EMG signals (McGill, 2005), an automatic decomposition program (Florestal et al., 2006), and an EMG simulator (Hamilton-Wright and Stashuk, 2005).

The online database contains sample signals from nine institutions illustrating a variety of recording techniques, muscles, and experimental conditions. It includes a set of over 1000 signals from healthy subjects and patients with neuromuscular disorders (Nikolic, 2001). A subset of signals will have "blue ribbon" annotations verified by a panel of experts.

We are developing standards for exchanging EMG decomposition results (annotations), and for estimating and reporting the accuracy of decomposition results.

We tested several existing decomposition methods using the same real EMG signals. All the methods tested were able to reliably identify and extract MUAP trains.

CONCLUSIONS

The EMGlab website is intended to be a resource for the EMG decomposition community. We welcome contributions of software and data, and we hope to encourage advances in the art and practice of EMG decomposition

REFERENCES

- Hamilton-Wright, A., Stashuk D.W. (2005). *IEEE Trans Biomed Eng*, **52**, 171–183.
Florestal, J.R., et al. (2006). *IEEE Trans Biomed Eng* **53**, 832-839.
McGill, K.C. et al. (2005). *J Neurosci Methods*, **149**, 121-133.
Nikolic, M. (2001). PhD Thesis, Univ. of Copenhagen.

ACKNOWLEDGEMENTS

P. Bonato, A. Hamilton-Wright, J. Florestal, G. Kamen, Z. Lateva, H. Marateb, P. Mathieu, M. Nikolic, D. Stashuk, Z. Tumbey, J. van Dijk, and A. Velisar have contributed to the website. This work was funded by NIH grant 5-R01-NS051507.