

# SOME RECENT RESULTS ON OPTIMAL NEURON AND MOVEMENT CONTROL

*Jianfeng Feng*

COGS, University of Sussex, Brighton BN1 9QH, UK  
jianfeng@cogs.susx.ac.uk

## ABSTRACT

Optimal control at neuronal and behaviour levels are challenging tasks in Neuroscience (for example, in the treatments of Parkinson's disease) and might be crucial for us to understand the coding problem. We review recent results (see related papers below) on optimal control of neuronal and movement models with stochastic signals. Analytical and rigorous results are obtained in the case of no feedback signals. Fitting to biological data (arm movement, Parkinson's disease etc.) is presented.

## References

- [1] Feng J., and Tuckwell H.C. (2003) Optimal control of neuronal activity, *Phys. Rev. Letts.* (accepted subject to minor changes).
- [2] Feng J., and Zhang K.W. (2002) Towards A Mathematical Foundation of Minimum-variance Theory, *J. Phys. A* **35**: 7287-7304.
- [3] Feng et al. (2003) , A study on an optimal movement model (submitted)
- [4] Wei G., et al., Feng J.F. (2003) Causality Analysis of STN and EMG Records of Parkinson's Disease Patients (in preparation).