UK Neuroinformatics Node Special Interest Group 1: Electrophysiology (E-SIG).
Meeting: 15 – 16 September 2011, University of York.

David Halliday Rasmus Petersen

Meeting Summary.

The inaugural event for E-SIG was a two day meeting held at the University of York. All members of E-SIG were invited to attend the meeting and give a presentation. A total of 17 presentations were given over the two days covering a wide range of topics: retinal physiology, Neuroendocrinology, state-space model parameter estimation, tracking changes in functional connectivity, multi-scale dynamics of EEG, modelling LFP in silico, information theoretic approaches for spike decoding, long range temporal correlations in brain signals, auditory cortex physiology, network "community" analyses of spike train data, detection of long range temporal correlations, analysis and sharing of data via the CARMEN portal, hybrid brain computer interfacing, contribution of spine morphology to LTP and synaptic plasticity, generalised Bayesian approaches to data analysis using BAYSIG, Granger causality with signal dependent noise, topological analyses of FMRI networks.

The presentations provided an excellent overview of current computational and experimental approaches related to Electrophysiology.

On day two an open discussion session was included. This identified a number of common themes in the presentations: 1) Understanding electrophysiological time series at different time scales, 2) How to fit linear non-linear models to experimental data, 3) How neuronal activity represents information (neural coding).

During the open discussion the context and background to E-SIG was discussed. Suggestions were solicited for the next steps. There was wide support and enthusiasm for a follow up meeting, and a number of possible topics were discussed. Suggestions for suitable topics included: Network construction and analysis, Model construction from experimental data - theory and application, Multi-scale analysis, Scalability, Multi-channel recording technologies, Development of tools – Time series and Information theoretic approaches. A common theme emerged: the challenge of how to effectively analyse complex, high dimensional electrophysiological data sets (e.g., multi-channel MEG/EEG, multi-microelectrode arrays)

It was also suggested that E-SIG should try and increase membership from the experimental community.

The meeting closed with thanks to: The UK Node for funding, all presenters, participants and the organisers.

Participant list

Name	**Institution**
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Tom Jackson	York
Jennifer F. Linden	UCL
Robert Lucas	Manchester
Duncan MacGregor	Edinburgh
David Merry	Manchester
Thomas Nielsen	Leicester
Luis Peraza	York
Rasmus Petersen	Manchester
Alfonso Sanchez	York
Shahjahan Shahid	Ulster
Sohail Siadatnejad	Manchester
Riccardo Storchi	Manchester
John Terry	Sheffield
Richard Tomsett	Newcastle
Mark van Rossum	Edinburgh
Dimitrios Vavoulis	Warwick
Michael Weeks	York
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