



The
University
Of
Sheffield.

Faculty
Of
Engineering.

Sheffield Engineering Scholarships

PhD full-fees scholarship for China Scholarships Council scholars from Zhejiang University

Project: *Modelling, Analysis and Interpretation of Coupled Nonlinear Dynamics of EEG Data*

The electroencephalogram (EEG) is an important non-invasive technique used in clinical neurophysiology for medical diagnostics to record activations of brain areas. The interactions between the activated brain areas, which generally involve complex coupled nonlinear dynamics, can only be discovered and quantified by introducing transparent and interpretable data modelling and analysis techniques. There is now a unique opportunity to extend existing collaborations with Dr Sarrigiannis, a neurophysiologist, Hallamshire Hospital, to develop and exploit adaptive nonlinear dynamic modelling and interpretation methods that have been developed within the Department of Automatic Control and Systems Engineering for application in EEG analysis. We have already done some feasibility studies with Dr Sarrigiannis and these show tremendous potential. The unique ability to model dynamic effects and to map these to the nonlinear frequency response functions directly, and to monitor seizures based on short data sets shows great medical promise.

Supervisors: Professor Stephen A. Billings and Dr. Hua-Liang Wei (Automatic Control and Systems Engineering)

Scholarship: Sheffield Engineering scholarships cover the full cost of PhD registration fees for 3 years

Eligibility: Sheffield Engineering scholarships are available to students who secure a CSC scholarship. Applicants must meet the University of Sheffield English Language requirements, full details of which are available at:

http://www.shef.ac.uk/postgraduate/info/notlive_dfiohmihtm.html

Applications: Please send a CV together with a brief covering letter to Professor Geraint Jewell, Faculty of Engineering Director of Research and Innovation at g.jewell@sheffield.ac.uk by **15th March 2009**. Include the title of the project in your covering letter and any English language test results.