(2009)

45th Gregynog Statistical Conference
Programme

The talks will take place in Seminar Room 1 (2nd Floor, far end).

Friday 20 March	16.00	*Tea*	
	17.00	**Dr John Aston** *An Introduction to Statistical Neuroimaging I: Space*	**Warwick**
	19.00	*Dinner*	
	20.15	**Postgraduate workshop on Neuroimaging**	
Saturday 21 March	08.00	*Breakfast*	
	09.30	**Prof Sofia Olhede** *Multiscale Inference*	**UCL**
	11.00	*Coffee*	
	11.30	**Dr John Aston** *An Introduction to Statistical Neuroimaging II: Time*	**Warwick**
	13.00	*Lunch*	
		Afternoon free	
	16.00	*Tea*	
	17.30	**Dr Daniel Farewell** *Missing Data and Generalized Estimating Equations*	**Cardiff**
	19.00	*Dinner*	
	20.15	**Prof Vern Farewell** *From Brownlee to Hill: The development of modern medical statistics in the UK.*	**MRC, Cambridge**
Sunday 22 March	08.00	*Breakfast*	
	09.30	**Dr Trevor Cox** *What does the consumer think? Some multivariate analysis techniques to find out.*	**Unilever**
	11.00	*Coffee*	
	11.30	**Dr John Aston** *An Introduction to Statistical Neuroimaging III: Space-Time*	**Warwick**
	13.00	*Lunch and finish*	

Abstracts

Dr John Aston Warwick

An introduction to Statistical Neuroimaging (3 talk mini course)

The aim of the short course will be to introduce the main concepts in statistical neuroimaging, in particular those of importance in Positron Emission Tomography and Magnetic Resonance Imaging. The course will consist of three components, the analysis and use of spatial information, time series analysis, and a combined spatial temporal analysis of brain image data. Techniques including random field theory, wavelets and functional data analysis will be used to explore these massive data sets. In addition, the issues of hierarchical analysis in its many forms will be considered.

If participants have laptops with MATLAB installed on them, it will be possible to explore some of the data and investigate some of the potential problems that might exist for statistical analysis. Having an individual laptop is certainly not required, as we will endeavour to form groups each with a laptop to explore the data together.

Dr Trevor Cox Unilever

What does the consumer think? Some multivariate analysis techniques to find out.

Fast Consumer Goods Industries collect data relating to consumer perception of their products. The data are collected in several different ways, are usually multivariate in nature, and require a variety of techniques to analyse them. This talk discusses some of these multivariate techniques and outlines some theoretical developments, based around multidimensional scaling, made at Unilever. The audience will be invited to offer suggestions on how to analyse some atypical data.

Dr Daniel Farewell Cardiff

Missing Data and Generalized Estimating Equations

Maximum likelihood analyses remain valid provided any missing data are 'missing at random'. In general, the same is not true of estimating equation approaches. I'll compare three possible modified estimating equations, each of which aims to accomodate different types of dependencies between longitudinal data and the observed pattern of missingness.

Prof Sofia Olhede UCL

Multiscale Inference

Observed data frequently has structure associated with many different length scales. For instance the canonical examples are multiphysical and are governed by different physical laws at different scales. To fully capitalize on this hierarchy of structure, analysis methods must acknowledge the scales of importance inherent to a given problem, and use this structure to improve our understanding of the problem. A single framework must be built that permits us to move between length scales, and consistently understand variability at given scales.

We discuss multiscale structure in vortex time series from oceanographic and high-frequency financial applications, and show how the nature of the data can directly be understood in terms of local properties in these two disparate contexts. To be able to make inferences, physical understanding of the data must be worked into the model at appropriate scales. With the successful application of tools from harmonic analysis the structure of the data can be shown to much simplify, and analysis reduced to basic statistical methods. Direct study of the application problems demonstrates the power of the proposed methods.

Speakers

Dr John Aston	Warwick
Dr Trevor Cox	Unilever
Dr Daniel Farewell	Cardiff
Prof Vern Farewell	MRC, Cambridge
Prof Sofia Olhede	UCL

Aberystwyth
John Lane

Bangor
Chris Whitaker Rhiannon Whitaker Zoe Hoare

Birmingham
Jen Marsh

Cardiff
Frank Dunstan Terry Iles

Keele
Peter Jones

Southampton
Russell Cheng

Swansea
Alan Watkins Adam Shore

Warwick

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Jane Hutton
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~~Fabio Rigat~~
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Giorgos Minas
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Erica Visibelli
Jaffer Zaide
Mouna Akacha
Robert Goudie
Chris Jewell
Duy Pham
Fiona Sammut
Piotr Zwiernik