Statistics Seminar Series

Session 1, 2007

Victor Solo

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Neural Information Encoding by Point Process Adaptive Filtering

The study of animal and human brains has undergone a revolution in the last decade or so. Numerous modalities have developed or advanced to allow human and animal brains to be studied dynamically on a number of temporal and spatial scales. In this talk we discuss one such modality namely multi-electrode recordings of awake animals. We review the remarkable phenomenon of place fields in which an animal (a rat in our case) forms a physical representation of its location in its hippocampus (a small brain structure associated with learning). We then describe nonlinear tracking methods (point process based adaptive filters) that allow the formation of these fields (i.e. the learning process) to be followed in real time from spike train recordings taken directly from CA1, a strucutre in the hippocampus. For the mathematically inclined we even have some new related results on stochastic averaging of adaptive algorithms.

About the speaker: Victor Solo is Professor of Systems and Control in the School of Electrical Engineering and Telecommunications at UNSW. He has made many important contributions to the statistical literature, particularly in time series analysis, medical imaging and signal processing.

Time: 4pm, Friday, 1st June
Location: Room 4082, Red Centre

Please join us after the seminar for wine and cheese in the staffroom.

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