Advanced Analytics Seminar Series on 09/12/2011

Seminar Title: Massively Parallel Sequential Monte Carlo for Bayesian Inference
Speaker:
Professor John Geweke, Director and Distinguished Professor
CenSoC - Centre for the Study of Choice
University of Technology Sydney

Date and Time: 1:30pm to 3:00pm, 9th December 2011 (Friday)
Seminar Room: CC05.GD.02, UTS Blackfriars Campus (5 minutes walk from Tower Building CB01 of UTS)
Street Address: 2-12, Blackfriars Street, Chippendale, NSW 2008
Seminar Chairman: Prof Longbing Cao (longbing.cao@uts.edu.au)

Abstract: This work reconsiders sequential Monte Carlo approaches to Bayesian inference in the light of massively parallel desktop computing capabilities now well within the reach of individual academics. It first develops an algorithm that is well suited to parallel computing in general and for which convergence results have been established in the sequential Monte Carlo literature but that tends to require manual tuning in practical application. It then introduces endogenous adaptations in the algorithm that obviate the need for tuning, using a new approach based on the structure of parallel computing to show that convergence properties are preserved and to provide reliable assessment of simulation error in the approximation of posterior moments. The algorithm is generic, requiring only code for simulation from the prior distribution and evaluation of the prior and data densities, thereby shortening development cycles for new models. Through its use of data point tempering it is robust to irregular posteriors, including multimodal distributions. The sequential structure of the algorithm leads to reliable and generic computation of marginal likelihood as a by-product. The paper includes three detailed examples taken from state-of-the-art substantive research applications. These examples illustrate the many desirable properties of the algorithm. and demonstrate that it can reduce computing time by several orders of magnitude.   Link to paper:
http://www.censoc.uts.edu.au/pdfs/geweke_papers/gp_working_9.pdf

Short biography of the speaker:

Education and academic positions: B.S., Michigan State University, Social Science 1966-1970, Ph.D., University of Minnesota, Economics 1970-1975

Assistant, Associate & full Professor of Economics, University of Wisconsin-Madison 1975-1983; Professor of Economics, Duke University 1983-1986; William R. Kenan, Jr., Professor of Economics, Duke University 1986-1990; Professor of Statistics and Decision Sciences, Duke University 1987-1990; Founding Director, Institute of Statistics and Decision Sciences, Duke University 1987-1990; Professor of

Economics, University of Minnesota 1990-2001; McGregor Chair in Economic Theory, Professor of Economics and Statistics, University of Iowa 1999-2009; Distinguished Research Professor and Director, Centre for the Study of Choice, University of Technology Sydney 2009-

Selected Awards and Recognition: Fellow of the Econometric Society 1982- present; Fellow of the American Statistical Association 1990- present; Lifetime Associate, National Academy of Sciences 2002- present.

Principal editorial positions: Co-Editor, Journal of Econometrics 2003; Co-Editor, Journal of Applied Econometrics 1993-2002; Editor, Journal of Business and Economic Statistics 1989-1992; Past Associate Editor: JASA, Econometrica, Journal of Econometrics; Referee several hundred submissions to 69 academic journals

Selected professional service: Founding member, International Society for Bayesian Analysis, President 1999; Founding member, National Institute of Statistical Sciences, Trustee 1994-2003; American Statistical Association Fellows Committee 1999-2001; National Academy of Sciences, various Boards, Commissions, Panels 1991-2008; Research grants and consulting: Continuously funded by ARC, NSF and/or NIH, roughly $3 million total 1976- present.

Published research: Author or co-author of roughly 140 papers in journals or edited volumes. Author of two volumes; editor or co-editor of six topical volumes of collected papers. Over 4,000 ISI citations and listed in isihighlycited.com. Google h-index 47, g-index 109.

Overview to This Seminar Series
The Advanced Analytics Seminar Series presents the latest theoretical advancement and empirical experience in a broad range of interdisciplinary and business-oriented analytics fields. It covers topics related to data mining, machine learning, statistics, bioinformatics, behavior informatics, marketing analytics and multimedia analytics. It also provides a platform for the showcase of commercial products in ubiquitous advanced analytics. Speakers are invited from both academia and industry.

It opens regularly on every Friday afternoon at the garden-like UTS Blackfriars Campus. Each seminar is followed by a 30-minute afternoon tea, and then a open graduate study session teaching basic components in artificial intelligence, machine learning, data mining, business analytics and statistics.

You are warmly welcome to attend this seminar series.

Jinyan Li, Seminar Coordinator
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