



Ronald R. Hocking Lecture Series

“An Afternoon of Linear Models and Its Applications”

Friday, September 18, 2009

1:00 pm – 5:00 pm

Hilton Hotel and Conference Center, Grand Ballroom



1:00 pm

Welcome

Master of Ceremony, Dr. Simon Sheather, Head of Statistics

Honoree, Dr. Ronald R. Hocking

Professor Emeritus, Texas A&M University

1:15 pm

Dr. Tim Hesterberg

Senior Ads Quality Statistician, Google-Seattle Engineering

Least Angle and L_1 Penalized Regression



Tim Hesterberg

2:15 pm

Dr. Brian Marx

Department of Experimental Statistics, Louisiana State University

Bilinear Varying-Coefficient Surface Models with an Application to Death Counts



Brian Marx

3:15 pm

Break

3:30 pm

Dr. Oliver Schabenberger

Senior Research Statistician, SAS Institute Inc.

Adjusted Inferences in Repeated Measures Designs from a Multivariate and a Mixed Model Perspective



Oliver Schabenberger

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Presented by

TIM HESTERBERG

Senior Ads Quality Statistician
Google Seattle Engineering Office

LEAST ANGLE AND L_1 PENALIZED REGRESSION

ABSTRACT:

Variable selection in regression is a hugely important problem, and difficult. Least angle regression is a promising technique for variable selection applications, offering a nice alternative to stepwise regression and ridge regression. It provides an explanation for the similar behavior of LASSO (L_1 -penalized regression) and forward stagewise regression, and provides a fast implementation of both. The idea has caught on rapidly, and sparked a great deal of research interest. We'll give an overview of Least Angle Regression and the current state of related research.

DATE: Friday, September 18, 2009

TIME: 1:15 pm

PLACE: Grand Ballroom, Hilton Hotel

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Presented by

BRIAN MARX

Department of Experimental Statistics
Louisiana State University

BILINEAR VARYING-COEFFICIENT SURFACE MODELS WITH AN APPLICATION TO DEATH COUNTS

ABSTRACT:

In monthly counts of deaths, we often find strong seasonal patterns, and the strength of such patterns varies over both year and age. A structure like this lends itself to varying-coefficient surfaces (over year and age) modulating the coefficients of (annual harmonic) cosine and sine regressors. However, in many cases, these modulation models can be too simplistic: they perhaps cannot handle relatively sharp peaks in the winter and relatively flat troughs in the summer.

Rather than adding higher harmonics, we assume that there exists a general *carrier wave* (a term borrowed from radio technology), modulated over time and age. We assume the carrier wave is an unknown period twelve vector. This leads to a bilinear model, which we estimate as follows: (1) For a fixed carrier wave, we have a varying-coefficient surface model. (2) For fixed varying coefficients, we estimate the carrier wave using generalized linear regression.

We estimate varying-coefficient surfaces using tensor product p-sp lines, avoiding backfitting. Penalties are attached on both the row and columns of the tensor product coefficients, and optimization of the penalty tuning parameters is based on minimization of a quasi-likelihood criterion. As the data are on a grid, efficient computation can be achieved using array regression techniques. An illustrative example is provided by monthly death counts due to respiratory diseases, for US females during 1959-1999.

This is joint work with Paul Eilers, Jutta Gampe, and Roland Rau.

DATE: Friday, September 18, 2009

TIME: 2:15 pm

PLACE: Grand Ballroom, Hilton Hotel

2009 HOCKING LECTURE SERIES

Presented by

OLIVER SCHABENBERGER

Senior Research Statistician – Linear Models R & D
SAS Institute Inc.

ADJUSTED INFERENCES IN REPEATED MEASURES DESIGNS FROM A MULTIVARIATE AND A MIXED MODEL PERSPECTIVE

ABSTRACT:

Recent work on small-sample approximations for linear rank statistics in factorial repeated measures designs has built on test approximations motivated by Box's (1954) epsilon adjustment and mixed model formulations. Fifty years ago, Greenhouse and Geisser described a method for repeated measures analysis of variance that is also based on work by Box. The multivariate and mixed model approach are examined in this talk and shown to converge for important special cases. As a consequence, some non-parametric ANOVA problems with correlated data can be handled by standard software for multivariate analysis.

DATE: Friday, September 18, 2009

TIME: 3:30 pm

PLACE: Grand Ballroom, Hilton Hotel