

**THE CHINESE UNIVERSITY OF HONG KONG**

*Department of Statistics*

will present a seminar entitled

**The Adaptive COSSO for Multiple Predictor Function Estimation**

by

**Professor Curtis Storlie  
University of New Mexico**

on

**Tuesday, 15 April 2008  
2:00pm – 3:00pm**

in

**Lady Shaw Building C5  
The Chinese University of Hong Kong**

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**Abstract:**

We propose a new regularization method for simultaneous model fitting and variable selection in nonparametric regression models in the framework of smoothing spline ANOVA. This method is an improvement on the COSSO which penalizes the sum of component norms, instead of the squared norm employed in the traditional smoothing spline method. Here we introduce an adaptive weight to be used in the COSSO penalty which allows for more flexibility to estimate important functional components while giving heavier penalty to unimportant functional components. We call this method the Adaptive COSSO (ACOSSO). Theoretical properties including consistency and the rate of convergence of the ACOSSO are established. Furthermore, we show that ACOSSO possesses a nonparametric analog of the oracle property. This is the first result of this type for any nonparametric regression estimator. The utility of ACOSSO is illustrated on several examples including its use as a meta model for a complex computer model.

**All are Welcome**