

Program til Todages møde i Dansk Selskab for Teoretisk Statistik den 14-15. maj 2013 Aarhus Universitet

Tirsdag den 14. maj: Auditorium G2 (1532-122)

14.30-15.15: Jacob v.B. Hjelmberg:
On the modeling of twin data

Abstract:

Twin studies may provide a frame for genetic analysis and etiology of human traits, however certain biological phenomena and disease etiology suggest measures of within pair correlation that captures non-linear dependence. We consider classical and recent information-theoretic measures of dependence leading to the problem of estimation of a functional of a bivariate density. Possible generalization of the notion of heritability is discussed (work in progress jointly with Andreas Kryger Jensen, Dept. of Biostatistics, SDU.).

15.15-15.45: Kaffe og kage

15.45-16.30: Anders Bredahl Kock:
Oracle Inequalities for High Dimensional Vector Autoregressions

Abstract:

This paper establishes non-asymptotic oracle inequalities for the prediction error and estimation accuracy of the LASSO in stationary vector autoregressive models. These inequalities are used to establish consistency of the LASSO even when the number of parameters is of a much larger order of magnitude than the sample size. We also give conditions under which no relevant variables are excluded.

Next, non-asymptotic probabilities are given for the Adaptive LASSO to select the correct sparsity pattern. We then give conditions under which the Adaptive LASSO reveals the correct sparsity pattern asymptotically.

We establish that the estimates of the non-zero coefficients are asymptotically equivalent to the oracle assisted least squares estimator.

This is used to show that the rate of convergence of the estimates of the non-zero coefficients is identical to the one of least squares only including the relevant covariates.

16.30-17.15: Emil Hedevang Lohse Sørensen:
Stochastic modelling of turbulence

Abstract:

Using ambit fields we construct spatial and spatio-temporal models for the turbulent velocity vector field. An ambit field is a suitably defined integral of a kernel function with respect to a possibly volatility modulated Lévy basis. A Lévy basis is an infinitely divisible, independently scattered random measure. Focusing on the homogeneous isotropic spatial case, we demonstrate how to derive the kernel from the correlation tensor of the field. We apply the machinery to a turbulent velocity vector field obtained through a direct numerical simulation of the Navier-Stokes equations and investigate how the conceptually simple ambit field model is able to reproduce the stylised features of turbulence. Homogeneity and isotropy simplify calculations but are not necessary for the machinery to work. Indeed, ambit fields allow inhomogeneity and anisotropy to be introduced in simple ways. Applications to wind energy are sketched.

18.00-22.00: Middag i Matematisk kantine, bygning 1536

Onsdag den 15.maj: Auditorium G2 (1532-112)

09.00-09.45: Susanne Ditlevsen:

Dynamical Systems Interdisciplinary Network, University of Copenhagen – mathematical modeling and statistical analysis across econometrics, psychology, physiology, neuroscience and bioinformatics.

Abstract:

Recently, seven research teams across three faculties at University of Copenhagen received a major grant running over four years, see www.dsin.ku.dk. We will explore how researchers from different disciplines can collaborate to deepen our understanding of essential questions asked within different fields.

Many biological, physical and social systems are characterized by their dynamical nature. The dynamics arise from intrinsic mechanisms in individual components of the system, from non-linear interactions between components, and from ex- or internal random perturbations.

Examples are physiological (e.g. molecular, cardiovascular, neural and metabolic) systems, and financial and macro-economic systems. The overall aim is to develop mathematical models and statistical methods suited for the analysis of empirical data obtained from such systems to better understand the dynamics, regulatory properties as well as how the dynamics are affected by random perturbations.

I will tell about the project.

09.45-10.30: Jørgen Hoffmann-Jørgensen:

Stochastic inequalities

Abstract:

Stochastic inequalities play an important role in all parts of probability theory. In particular, inequalities concerning tail probabilities for sums of independent random variables. In the talk I will give a survey of some of these inequalities and their applications. For instance: the Bernstein inequality, the Kolmogorov inequalities I and II, the Lévy inequality, the Ottaviani inequality, the exponential inequality, the prophet inequality and the subgaussian inequality.

10.30-11.00: Kaffe og kage

11.00-11.45: Christian Bressen Pipper:

Estimation of odds of concordance based on the Aalen additive model

Abstract:

When analyzing time to event data the Odds of Concordance may provide a simple and appealing summary measure of effect. One advantage is that, contrary to the much used hazard ratios, Odds of Concordance is meaningful outside a specific regression context. In this talk we review some current methods for estimation of odds of concordance and their shortcomings. We then propose a modified odds of concordance measure and provide a simple estimation procedure based on the Aalen additive model.

11.45-12.30: Erik Thorlund Parner:

Events per variable for risk differences and relative risks using pseudo-observations

Abstract:

A method based on pseudo-observations has been proposed for direct regression modeling of functionals of interest with right-censored data, including the survival function, the restricted mean and the cumulative incidence function in competing risks. The models, once the pseudo-observations have been computed, can be fitted using standard generalized estimating equation software. Regression models can however yield problematic results if the number of covariates is large in relation to the number of events observed.

Guidelines of events per variable are used often in practice. These rules of thumb for the number of events per variable have primarily been established based on simulation studies for the logistic regression model and Cox regression model. In this talk I will present a simulation study examining the small sample behavior of the pseudo-observation method to estimate risk differences and relative risks for right-censored data. I will investigate how coverage probabilities and relative bias of the pseudo- observation estimator interact with sample size, number of variables and average number of events per variable.

12.30: Sandwich og afgang

Praktiske informationer

Sted: Matematisk Institut, Aarhus Universitet

Tilmelding: Registrering sker ved email til oddbjorg@imf.au.dk, Institut for Matematik senest den 6. maj 2013.

Pris: 250 kr. for studenter (ekskl. Ph.D. studerende) og 500 kr. for alle andre.

Betaling sker til DSTS, Jyske Bank, Reg. nr. 7853, konto nr. 1117188.

Angiv venligst klart hvilke(n) personer betalingen gælder for.