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Parametric Probability Deduction for Stretch Controlled Contending Takes a Chance with Information

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Introduction

We develop a Bayesian nonparametric mixture modeling framework for quantal bioassay settings. The approach is built upon modeling dose- dependent response distributions. We adopt a structured nonparametric prior mixture model, which induces a monotonicity restriction for the dose–response curve. Particular emphasis is placed on the key risk assessment goal of calibration for the dose level that corresponds to a specified response. The proposed methodology yields flexible inference for the dose-response relationship as well as for other inferential objectives, as illustrated with two data sets from the literature. We propose a new variable selection criterion designed for use with forward selection algorithms; the Score Information Criterion (SIC). The proposed criterion is based on score statistics which incorporate correlated response data. The main advantage of the SIC is that it is much faster to compute than existing model selection criteria when the number of predictor variables added to a model is large, this is because SIC can be computed for all candidate models without actually fitting them. A second advantage is thatit incorporates the correlation between variables into its quasi-likelihood, leading to more desirable properties than competing selection criteria. Consistency and prediction properties are shown for the SIC. We conduct simulation studies to evaluate the selection and prediction performances, and compare these, as well as computational times, with some well-known variable selection criteria. We apply the SIC on a real data set collected on arthropods by considering variable selection on a large number of interactions terms consisting of species traits and environmental covariates. In this article, we present a new variational Bayes approach for solving the neuro electromagnetic inverse problem arising in studies involving Electroencephalography (EEG) and magnetoence phalography (MEG). This high-dimensional spatiotemporal estimation problem involves the recovery of time-varying neural activity at a large number of locations within the brain, from electromagnetic signals recorded at a relatively small number of external locations on or near the scalp.

Reconstructing neural activities using non-invasive sensor arrays outside the brain is an ill-posed inverse problem since the observed sensor measurements could result from an infinite number of possible neuronal sources. The sensor covariance-based beam former mapping represents a popular and simple solution to the above problem. In this article, we propose a family of beam formers by using covariance thresholding. A general theory is developed on how their spatial and temporal dimensions determine their performance. Conditions are provided for the convergence rate of the associated beam former estimation. The implications of the theory are illustrated by simulations and a real data analysis.

Despite modern effective HIV treatment, Hepatitis C Virus (HCV) co-infection is associated with a high risk of progression to End-Stage Liver Disease (ESLD) which has emerged as the primary cause of death in this population. Clinical interest lies in determining the impact of clearance of HCV on risk for ESLD. In this case study, we examine whether HCV clearance affects risk of ESLD using data from the multicenter Canadian Co-infection Cohort Study. Complications in this survival analysis arise from the time-dependent nature of the data, the presence of baseline confounders, loss to follow-up, and confounders that change over time, all of which can obscure the causal effect of interest. Additional challenges included non-censoring variable messiness and event sparsity. A matched case-control study of 430 acute ischemic stroke patients was conducted at Massachusetts General Hospital (MGH) in order to identify specific brain regions of acute infarction that are associated with Hospital Acquired Pneumonia (HAP) in these patients. There are 138 brain regions in which infarction were measured, which introduce nearly 10,000 two-wayinteractions, and challenge the statistical analysis.

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