In this paper we present the theory and practical aspects of implementing the path following interior point methods for linear optimization LP-IPM, based on kernel function. We will investigate the influence of the choice of the kernel function on the computational behavior of the generic primal-dual algorithm for Linear Optimization. We find that the finite kernel function gives the best results for more than 50 percent of the tested problems.

3 - An infinite version of farkas' lemma and infinite linear programming on a purely linear-algebraic basis

David Bartl, Department of Mathematics, University of Ostrava, 30.dubna 22, 701 03, Ostrava, Czech Republic, bartl@osu.cz

We shall report an infinite version of Farkas' Lemma. The Lemma involves an infinite number of linear constraints and is formulated in an infinite-dimensional vector space where no additional structure, such as topology, is assumed. We shall also report the corresponding Duality Theorem for infinite linear programming. Though the results can be formulated in the setting of two vector spaces over a common (possibly skew) field with linear ordering, one of the two spaces being linearly ordered too, we shall present only the real case of the results for clarity and simplicity.

■ TA-34

Tuesday 08:00-09:20
GSI - S 8

Computational Statistics

Stream: Computational Statistics
Invited session
Chair: *Pakize Taylan*, Mathematics, Dicle University, 21280, Diyarbakir, Turkey, ptaylan@metu.edu.tr

1 - A classification problem of credit risk rating investigated and solved by optimization of the roc curve

Efsun Kürüm, Financial Mathematics, Institute of Applied Mathematics, ODTÜ PTT Subesi ODTÜ, 06531, Ankara, efsun.kurum@gmail.com, *Kasirga Yildirak, Gerhard-Wilhelm Weber*

We try to classify borrower firms into rating classes with respect to their probability of default. This necessitates the finding of thresholds between rating class. We employed ROC analysis to assess the distinction power of our model about default and non-default. Therefore, we optimize the area under ROC curve and imply model accuracy. Thus, a constrained optimization problem is carefully modelled and turned to a penalized sum-of-squares problem of nonlinear regression. We conclude with a discussion of the structural frontiers, an outlook and invitation to future work.

2 - Comparing four methods of handling missing data in partial least square (pls)

Jastini Jamil, Operation and Information Management, School of Management, University of Bradford, Emm Lane, BD9 4JL, Bradford, England, United Kingdom, jbmohdj1@bradford.ac.uk, *James Wallace*

The main objective of this work is to bring up in discussion a problem that could affect the quality of estimators and the validation of the models- the missing data. The techniques used for comparison are expectation maximization (EM), mean substitution (MS), regression imputation (RS) and case wise (CW). To make the comparison, this issue will be applied to a Customer Satisfaction Models (CSM) using data taken from previous research. Overall, it was concluded that EM is the best method to be adopted in case of missing data completely at random.

3 - Model selection using inductively generated set

Vadim Strijov, Computing Center of the Russian Academy of Sciences, Klara Zetkin 13-79A, 127299, Moscow, Russian Federation, strijov@ccas.ru

Model selection is one of the most important subjects of Machine learning. An algorithm of model selection depends on the class of models and on the investigated problems. In the lecture the problems of regression analysis will be observed. Linear as well as nonlinear regression models will be considered. The models are supposed to be inductively generated during the selection process. Properties of Lars, Optimal brain surgery and Bayesian coherent inference algorithms will be analyzed in the light of model selection.

■ TA-35

Tuesday 08:00-09:20
GSI - S 9

Mixed Methods Interventions in Forestry

Stream: Facilitated Modelling Interventions
Invited session
Chair: *Pekka Leskinen*, Research Programme for Production and Consumption, Finnish Environment Institute, Joensuu, Finland, pekka.leskinen@ymparisto.fi

1 - Supporting problem structuring by quantitative techniques in the case of regional forest programmes

Pekka Leskinen, Research Programme for Production and Consumption, Finnish Environment Institute, Joensuu, Finland, pekka.leskinen@ymparisto.fi, *Teppo Hujala, Jukka Tikkanen, Annika Kangas*

In Finland, regional forest programmes promote forest policy in privately owned forests. The decision problem is complex and several, mutually incoherent problem definitions can be used. Various quantitative techniques can be utilized to support problem structuring. We consider so-called Q-method and compare its characteristics to the well-known Likert-scale when assessing stakeholders' opinions towards regional forest policy. We consider also Cognitive Mapping and provide some ideas of how the emerged policy options can be further prioritized by statistical simulation techniques.

2 - Top-down and bottom-up - combining soft and hard methods in the hierarchical planning of state-owned forests

Teppo Hujala, Department of Forest Resource Management, University of Helsinki, P.O. Box 27, FI-00014, University of Helsinki, Finland, Teppo.Hujala@helsinki.fi, *Mikko Kurttila, Veikko Hiltunen, Annika Kangas, Jouni Pykäläinen, Pekka Leskinen*

State forests produce multiple benefits for the society. Participative planning in these forests is a common practice at local levels. Problems may arise when the plans of separate local planning processes are summed up because the result should correspond to national aims. Is it possible to combine meaningfully local, more discursive planning process and the national budget allocation-type decision problems? This presentation responds to the evident need of mixing decision aid methods by illustrating how hierarchical planning might be resolved via hardening the soft and/or softening the hard.

3 - Mapping indicator models: from intuitive problem structuring to quantified decision making in sustainable forest management

Harald Vacik, Department of Forest and Soil Sciences, Institute of Silviculture, Peter Jordanstr. 82, A-1190,