Usually the extrapolation of relevant data from the past has been used by the scientific literature to determine different trends. This practice can be less effective in the case of fast changing markets. Moreover, in the recently ongoing world economic crisis, many of the traditional economic forecasting models are proved to be wrong.Expectable changes can much better be forecasted, if the extrapolation is supplemented by a synthesis of opinions from experts and key-players of the sector considering the future. In the paper, a model is set up to elaborate logistics trends by the AHP method.

4 - An integrated approach for global supplier selection decision

Aycan Aytekin, International Trade, Bogazici University, Hisar Campus Bebek, 34342, Istanbul, Turkey, ycnaytekin@yahoo.com, *Arzu Tektas*

Global supplier selection is a significant issue in the competitive international trade environment. The issue is analyzed integrating Analytic Hierarchy Process and Linear Programming (LP). The hierarchy includes criteria like supplier's country risk, competitiveness, international trade characteristics, logistics cost, quality, safety and environmental concern. LP selects the best suppliers to maximize the buyer's total purchasing value. The approach is implemented on a multinational chemical company in Turkey. The results may form a basis for similar studies and applications.

■ MA-24

Monday 08:00-09:20
GSI - S 20

Semi-infinite Optimization

Stream: Semi-Infinite Optimization

Invited session

Chair: *Jan-J Ruckmann*, School of Mathematics, University of Birmingham, Edgbaston, B152TT, Birmingham, United Kingdom, J.Ruckmann@bham.ac.uk

1 - A genetic algorithm framework for multilocal optimization

A. Ismael F. Vaz, Dept. Production and Systems, University of Minho, School of Engeneering, Campus de Gualtar, 4710-057, Braga, Portugal, aivaz@dps.uminho.pt, *Lino Costa*

Multilocal optimization is devoted to determine multiple local optima for an optimization problem. A special interest in the computation of global optima is addressed.
We propose an hybrid algorithm that couples a genetic algorithm with a local search quasi-Newton method. A biobjective approach is used to optimize the objective function simultaneously with the gradient norm of the Lagrangian function.
An useful application of such an algorithm is in the context of reduction type methods for semi-infinite programming. Some numerical results will be shown with a set of test problems.

2 - Explicit solution of the lower level problems for the cooling layout optimization in injection molding

Volker Maag, Optimization, Fraunhofer-Institut für Techno- und Wirtschaftsmathematik, Fraunhofer-Platz 1, 67655, Kaiserslautern, Germany, maag@itwm.fhg.de, *Karl-Heinz Küfer*

Injection molding is an important mass production procedure. Since the cooling of the mold has an essential influence to the production costs and the product quality, the design of the cooling system must be optimal. The geometric constraints of the problem are complex and of semi-infinite type. Yet, it is possible to model them in such a way that the solution of the lower level problems can be explicitly expressed as a continuously differentiable function. This observation is based on a known generalization of the implicit function theorem and eases solving the problem significantly.

3 - Solving sip by penalty techniques: merit functions and filter method

Ana I. Pereira, Polytechnic Institute of Braganca, Campus de Sta Apolonia, Apartado 134, 5301-857, Braganca, Portugal, apereira@ipb.pt, *Edite M.G.P. Fernandes*

We present a brief review of reduction type methods to solve nonlinear semi-infinite programming (SIP) problems. During the last decades a variety of techniques that apply the local reduction theory have been proposed in the literature. Besides the well-known sequential quadratic programming to solve the reduced finite problem, some penalty based techniques have been used with success. In general, they rely on continuous merit functions for SIP. However, the so-called filter method, an alternative to merit functions, has already been tested. Comparisons with both strategies are presented.

■ MA-25

Monday 08:00-09:20
GSI - S 25

Assignment Games

Stream: Cooperative Game Theory

Invited session

Chair: *Tamás Solymosi*, Operations Research, Corvinus University of Budapest, Fovam ter 8, 1093, Budapest, Hungary, tamas.solymosi@uni-corvinus.hu

1 - A glove market partitioned matrix related to the assignment game

Marina Nunez, Economic and Financial Mathematics, University of Barcelona, Av Diagonal, 690, 08034, Barcelona, Spain, mnunez@ub.edu, *Carles Rafels*

To any assignment market we associate the unique exact assignment game defined on the same set of agents and with a core that is a translation of the core of the initial market. Also he kernel and the nucleolus of an assignment game are proved to be the translation of the kernel and the nucleolus of its related exact assignment game by the vector of minimum core payoffs. Agents on each side of the market are classified by means of an equivalence relation and the equivalent classes partition the matrix of the related exact assignment game into glove markets.

2 - Axiomatizations of the Shapley value on the class of assignment games

Miklos Pinter, Mathematics, Corvinus University of Budapest, Fovam ter 13-15., 1093, Budapest, miklos.pinter@uni-corvinus.hu

We consider various axiomatizations of the Shapley value on the class of assignment games. We conclude that the class of assignment games is a very pathological class from the uniqueness point of view, since except to van den Brink's special characterization, all axiomatizations we consider fail to characterize the Shapley value. As byproducts, we give some examples on the relations between some of the axioms.

3 - Longest paths to the core in assignment games

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