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SAICSIT 97
Riverside Sun
Vanderbijlpark

November 1997

ABSTRACT

In general response surface analysis refers to the modeling of experimental or observational data. Computer technology and graphical techniques obviously play a significant role in the representations of these models.

A well known traditional application is the use of hill climbing techniques and the fitting of models to experimental data by statisticians.

In this paper we restrict attention to the analysis of linear response surfaces. In contrast to methods that explore the behaviour of nonlinear response functions in unconstrained situations we look at the behaviour of linear response functions over the convex hull defined by observational data. The use of linear programming and related techniques play a major role in this type of analysis.

A number of researchers have contributed towards these modeling techniques. These contributions are discussed and some advances that have been made with decision support systems based on this methodology are illustrated.

Key words: Response surface analysis. Linear Programming. Convex hull.

REFERENCES

Bruwer P.J.S. "Evaluating the Performance of Computer-Based Information Systems using a Restricted Linear Regression Model", Quaestiones Informaticae, Vol 2, No 3, 1983, pp 1-6.

Bruwer P.J.S. and Hattingh J.M., "Constrained Regression Models for Optimization and Forecasting", ORION, Vol 1, No 1, pp 2-15.

Hattingh J.M. Lecture titled, "Constrained Regression models for Optimization and forecasting" at simposium on "Control and Decision-making in the Industrial Environment" Holiday Inn, Vanderbijlpark, April 1979.

Jordaan D.B., Hattingh J.M., Steyn T., "Die versoening van konflikterende doelwitte in die databasisomgewing met behulp van regressiemetodes", SACJ 10, September 1993, pp 32-36.

Khuri A.I. and Cornell J.A., "Response Surfaces Designs and Analysis", Marcel Dekker Inc., New York, 1987.

Kruger H.A., "Determination of an effective resource allocation strategy based on factors influencing risk with different Computerised systems", Dissertation (PhD) - PU for CHE, Potchefstroom, November 1993.

Roux T.P., "'n Rekenaargebaseerde stelsel om kwalifiseerbare aspekte van Sosio-ekonomiese en Sosio-Politiese faktore van lande te ontleed - 'n Uitvoerbaarheidstudie", Dissertation (M Com) - PU for CHE, Potchefstroom, 1994.

Van Deventer M.H., "Lineêre Responsoppervlakontleding. 'n Stelsel vir Besluitnemingsondersteuning", Dissertation (M Sc) - PU for CHE, Potchefstroom, 1995.