

INVITATION

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# Credit Scoring Workshop

Leuven, Thursday September 25, 2003



**Contactgroep Beleidsinformatici Leuven**  
**Faculty of Economics and Applied Economics**

KATHOLIEKE UNIVERSITEIT  
**LEUVEN**



# Contactgroep Beleidsinformatici Leuven invites you to the CREDIT SCORING WORKSHOP

❖ ARENBERG RESTAURANT, KAPELDREEF 46, 3001 HEVERLEE (EGENHOVEN) ❖

## Presenters

### Prof. Lyn Thomas

is professor of Management Science at the University of Southampton since 2000. He was adjunct professor at Monash University, Melbourne and Edith Cowan University, Perth, Australia. He was formerly Professor of Management Science at the University of Edinburgh, 1985-2000, (Head of the Department of Business Studies 1987-1990 and Head of the School of Accounting, Economics and Management Studies 1999-2000). He was also president of the Operational Research Society 1994 - 1995, Fellow of the Royal Society of Edinburgh 1992, and Member of the EPSRC College since 1995. Professor Thomas has published numerous papers and books on the topic of credit scoring and is a worldwide recognised authority in this field.



### Prof. Jonathan Crook

gained a BA from Lancaster University and an MSc from University College Cardiff, both in Economics. His research specialises in credit scoring, and the demand, supply and competition in the credit industry, both over time and between households. He has published papers on the comparative performance of algorithms for developing credit scoring models, on the demand for debt, on credit constraints, and on predicting when consumers default. He has coauthored / coedited four books, one in its fourth edition. In 1999 together with John Banasik and Lyn Thomas he won the Goodeve Medal of the Operational Research Society for the best paper in an OR Society journal. He has been a Visiting Scholar at the University of Virginia three times, once as a Fulbright Postdoctoral Scholar, and a Visiting Fellow at the University of Warwick and at the European University Institute, Florence. He is currently researching aspects of reject inference and adverse selection in the credit market and has research collaboration with the University of Virginia and EUI.



### Bart Baesens

is a PhD researcher at the Faculty of Economic and Applied Economic Sciences at the K.U.Leuven. His research focuses on the use of machine learning techniques for developing credit scoring systems. He has written several papers on this topic and his findings and results were presented at international conferences.



### Nico Dewaelheyns

holds a Master degree in Applied Economics (1995-1999) and an Advanced Master degree in Financial Economics (2000), both from K.U.Leuven. He is an Assistant in the Finance Group of the Department of Applied Economics at K.U.Leuven and is currently doing PhD research on the corporate finance implications of the 1998 reform of the Belgian bankruptcy legislation.



❖ 12h30 Reception and sandwiches

❖ 13h15 **Opening:**  
**From Business Data to Business Intelligence**  
Prof. Jan Vanthienen (K.U.Leuven, Dept of Applied Economics)

❖ 13h30-14h30 **Using Intelligent Application Agents to Model Consumer Acceptance Probabilities**

Prof. Lyn Thomas (Professor of Management Science, University of Southampton)

This talk investigates how to estimate the likelihood of a customer accepting a loan offer as a function of the offer parameters and how to choose the optimal set of parameters for the offer to the applicant in real time. There is no publicly available data set on whether customers accept the offer of a financial product-the features of which are changing from offer to offer. Thus, we develop our own data set using a Fantasy Student Current Account. In the lecture, we suggest three approaches to determine the probability that an applicant with characteristics will accept offer characteristics using the Fantasy Student Current Account data. Firstly, a logistic regression model is applied to obtain the acceptance probability. Secondly, a linear programming is adapted to obtain the acceptance probability model. To build a model, we assume there is a dominant offer characteristic, where the probability of accepting the offer increases (or decreases) monotonically as this characteristic's value increases. Finally, an accelerated life model is applied to obtain the probability of acceptance in the case where there is a dominant offer characteristic.

❖ 14h30-15h30 **Does Reject Inference Really Improve the Performance of Application Scoring Models?**

Prof. Jonathan Crook (Director of The Credit Research Centre, The School of Management, University of Edinburgh)

The parameters of application scorecards are usually estimated using a sample that excludes rejected applicants which may prove biased when applied to all applicants. This paper uses a rare sample that includes those who would normally be rejected to examine the extent to which (1) the exclusion of rejected applicants undermines the predictive performance of a scorecard based only on accepted applicants, and (2) reject inference techniques can remedy the influence of his exclusion.

❖ 15h30-16h Coffee break

❖ 16h-16h45 **Survival Analysis for Credit Scoring**

Bart Baesens, Prof. Jan Vanthienen (K.U.Leuven, ETEW)

Traditionally, credit scoring aimed at distinguishing good payers from bad payers at the time of the loan application. However, the issue of when customers become bad is also very interesting to investigate since it can provide the bank with the ability to compute the profitability over a customer's lifetime and perform profit scoring. The problem statement of analysing when customers default is commonly referred to as survival analysis. Many survival analysis techniques have been suggested in a medical context. It is the purpose of this talk to discuss and contrast statistical and neural network approaches for survival analysis in a credit scoring context. When compared to the traditional statistical proportional hazards model, neural networks may offer an interesting alternative because of their universal approximation property and the fact that no baseline hazard assumption is needed. Several neural network survival analysis models are discussed and evaluated according to their way of dealing with censored observations, time-varying inputs, the monotonicity of the generated survival curves and their scalability. We contrast the performance of a neural network survival analysis model with that of the well-known proportional hazards model for predicting both loan default and early repayment using data from a U.K. financial institution.

❖ 16h45-17h30 **Basle II: Catalyzing Default Risk Research**

Nico Dewaelheyns, Prof. Cynthia Van Hulle (K.U.Leuven, ETEW)

The proposed New Basle Capital Accord will have extensive consequences for credit risk management in the financial sector. The adoption of an internal ratings based approach creates a need for well-founded tools to determine e.g. probability of default and loss given default. The resulting increase of attention amongst practitioners has spurred academic research in finance as well. In recent years an impressive number of studies on Value at Risk and default prediction have been conducted. Emphasis has been put on methodological refinements, improved data collection and additional insights from theory. The lecture will give a concise overview of the relevant Basle proposals and recent (non-technical) finance literature and a brief discussion of a prediction model incorporating internal capital market information.

❖ 17h30-18h **Discussion**

❖ 18h Drink and dinner

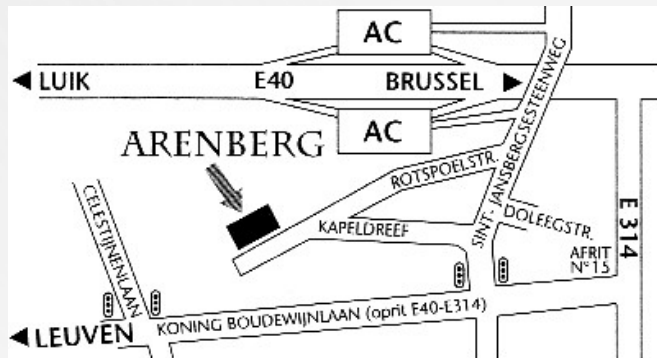
# LOCATION

Arenberg, Restaurant - Seminars

Kapeldreef 46

3001 Heverlee (Egenhoven)

Near E40, exit Leuven



# FEE and REGISTRATION

Registration fee is €350 (all in). The fee includes all handouts, reception, refreshments and dinner.

Please register and provide invoicing details by email before September 15

to: [Bart.Baesens@econ.kuleuven.ac.be](mailto:Bart.Baesens@econ.kuleuven.ac.be)

or using the registration card below.

We will send you an invoice.

For more information: ☎ 016/32 68 84



# REGISTRATION

To: Bart Baesens, K.U.Leuven, Department of Applied Economic Sciences, Naamsestraat 69, 3000 Leuven

FAX 016/32 67 32

Company

Name

First name

Address\*

E-mail

Phone

Job title

will participate in the "Credit Scoring Workshop" on September 25, 2003 in Arenberg Restaurant - Heverlee.

\*Please notify if the invoice address is different

