Goran Klepac, Ph.D.

www.goranklepac.com

Goran Klepac, PhD, University College Professor works as a head of Strategic unit in Sector of credit risk in Raiffeisenbank Austria Inc, Croatia, Europe. In several universities in Croatia, he lectures subjects in domain of data mining, predictive analytics, decision support system, banking risk, risk evaluation models, expert system, database marketing and business intelligence. As a team leader, he successfully finished many data mining projects in different domains like retail, finance, insurance, hospitality, telecommunications, and productions. He is an author/coauthor of several books published in Croatian and English in domain of data mining. www.goranklepac.com

Goran Klepac, Ph.D. , College professor

Education

2005. University of Zagreb, **Ph.D. in information science (Temporal data mining)**, Faculty of organization and informatics, Varaždin. Ph.D. these : "Rule recognition by using unique model of time series transformation"

2000. University of Zagreb, Faculty of Economics & Business Zagreb, M.Sc. in Business (IT Management). M.Sc. these : "Recognition of market rules from company perspective using artificial intelligence methods"

1997. University of Zagreb, Faculty of Economics & Business Zagreb, B.Sc. in Economics & computer science.

1991. High School “Nikola Tesla”, Zagreb, majoring in mathematics and informatics

Working experience

2008 - Raiffeisen Bank, Head of strategic development department, Credit Risk Management Division

2004 - 2008 Raiffeisen Consulting, Head of Business intelligence department . From 2005. member of RBA Basel II team, in charge for quantitative modelling.

2001-2004 Raiffeisen Bank- Head of market analysis , Marketing department.

1998-2001 PROFIT-PP, Data mining analyst , Project leader for data mining projects.

1996-1998 PROFIT-PP, Information system designer, programmer, data mining analyst.

1993-1996 Part-time work for different IT companies Information system designer, programmer, analyst.

Realized projects in area of data mining in Croatia and South-Eastern Europe

Projects in domain of retail business, insurance, hostility, finance, car industry, telecommunication and was related to :

Segmentation models development
Credit scoring model development (generic, statistical)
Collections scoring models development (generic, statistical)
Scoring models development (BASEL II)
Risk assessment models
Respond rate models development (direct marketing)
Fuzzy expert systems for scoring purposes
Fuzzy expert systems for segmentation purposes
Early warning system development in retail, insurance, finance, telecommunication
Fuzzy expert system models for decision support in retail, insurance, finance, telecommunication
Prospective customer calculation models
Retrospective customer calculation models
Loyalty evaluation of the customers models
Churn detection models in retail, insurance, finance, telecommunication, finance
Fraud detection models in insurance, finance, telecommunication
Market simulation models
Cross selling models
Time series predictive models
Classification data mining models for segmentation purposes in retail, insurance, finance, telecommunication
Leading Customer Relationship Management projects and model design for analytical CRM
Designing and development data mining models for decision support for marketing campaigns in retail, insurance, finance, telecommunication
Designing and development data mining models for decreasing costs in retail warehouses
Designing and development data mining solutions and algorithms for specific problem types
Knowledge elicitation for expert system design purposes in insurance, finance, telecommunication, retail

Published books / chapters in books :

Klepac, G., Kopal, R., & Mršić, L. (2015). **Developing Churn Models Using Data Mining Techniques and Social Network Analysis** (pp. 1-361). Hershey, PA: IGI Global. doi:10.4018/978-1-4666-6288-9

Churn prediction, recognition, and mitigation have become essential topics in various industries. As a means for forecasting and managing risk, further research in this field can greatly assist companies in making informed decisions based on future possible scenarios.
Developing Churn Models Using Data Mining Techniques and Social Network Analysis provides an in-depth analysis of attrition modeling relevant to business planning and management. Through its insightful and detailed explanation of best practices, tools, and theory surrounding churn prediction and the integration of analytics tools, this publication is especially relevant to managers, data specialists, business analysts, academicians, and upper-level students.
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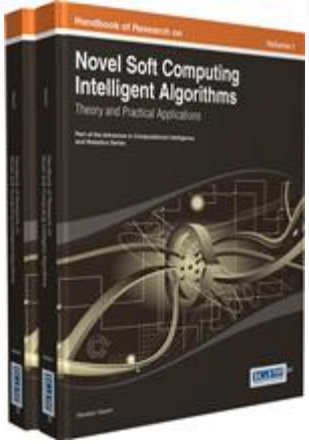

Klepac, G. (2014). **Data Mining Models as a Tool for Churn Reduction and Custom Product Development in Telecommunication Industries.** In P. Vasant (Ed.), Handbook of Research on Novel Soft Computing Intelligent Algorithms: Theory and Practical Applications (pp. 511-537). Hershey, PA: Information Science Reference. doi:10.4018/978-1-4666-4450-2.ch017

Chapter represents the business case in the telecommunication company called Veza, in domain of churn prediction and churn mitigation. The churn project was divided into few stages. Due to limited budget and cost optimization, stage one was concentrated on prospective customer value calculation model based on fuzzy expert system. This helps Veza company to find most valuable telecom subscribers. It also helped company to better understand subscriber portfolio structure. Developed fuzzy expert system also helped Veza company in detection of soft churn. Stage two is profiling and customer segmentation based on time series analysis which provided potential predictors for predictive churn model. The central stage was concentrated on developing traditional predictive churn model based on logistic regression. This calculated probability that subscribers will make churn in next few months. The final stage was dedicated to SNA (Social Network Analysis) model development which found out the most valuable customers from the perspective of existing subscriber network. This model gave the answer that subscribers have the greatest influence on other subscribers in a way what is dangerous if they leave Veza company because they will motivate other subscribers to do the same thing. All three stages made complete churn detection/mitigation solution which take into consideration past behaviour of subscribers, their prospective value, and their strength of influence on other subscribers. This project helped Veza company to decrease churn rate and it gave directions for better understanding customer needs and behaviour which were the base for new product development.

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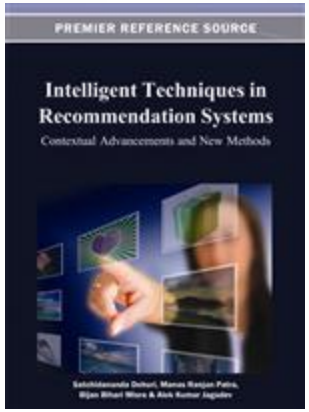
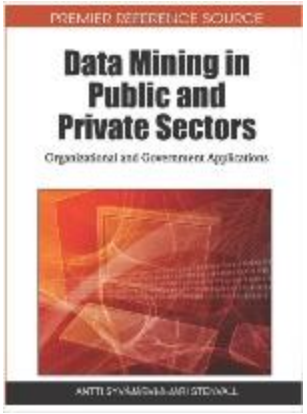


Klepac, G. (2013). **Risk Evaluation in the Insurance Company Using REFII Model.** In S. Dehuri, M. Patra, B. Misra, & A. Jagadev (Eds.) *Intelligent Techniques in Recommendation Systems: Contextual Advancements and New Methods* (pp. 84-104). Hershey, PA: Information Science Reference. doi:10.4018/978-1-4666-2542-6.ch005

A business case describes a problem present in all insurance companies: portfolio risk evaluation. Such analysis deals with determining the risk level as well as main risk factors. In the specific case, an insurance company is faced with market share growth and profit decline. Discovered knowledge about the level of risk and main risk factors was not used to increase premium for the riskiest portfolio segments due to a specific market situation, which could lead to loss of clients in the long run. Instead, additional analysis was conducted using data mining methods resulting in a solution, which stopped further profit decline and lowered the risk level for the riskiest portfolio segments. The central role for the unexpected revealed knowledge in the chapter acts as the REFII model. The REFII model is an authorial mathematical model for time series data mining. The main purpose of that model is to automate time series analysis, through a unique transformation model of time series.
more ...

Goran Klepac : "SUSTAVI POTPORE ODLUČIVANJU", priručnik. Izdavač: Algebra d.o.o., 2011. ISBN 978-953-322-093-2 (Book title translation : **Decision support systems**)

Goran Klepac coautor : KOMPETITIVNA ANALIZA – poslovne i ekspertne kvantitativne analitičke tehnike (2011), Robert Kopal, Darija Korkut, Publisher: Comminus, Effectus učilište. (Book title translation : **Competitive analyse**)



Klepac, G. (2010). **Preparing for New Competition in the Retail Industry**. In A. Syvajarvi, & J. Stenvall (Eds.) Data Mining in Public and Private Sectors: Organizational and Government Applications (pp. 245-266). Hershey, PA: Information Science Reference. doi:10.4018/978-1-60566-906-9.ch013

A business case presents a retail company facing new competitors and consequently preparing a customer retention strategy. The business environment in which the company was operating prior to the arrival of new competitors can be described as a stable market. Bearing in mind the plans and marketing activities of a competitor retail chain and making use of the data mining methods a system is being devised for the purpose of preventing or at least buffering the churn trend. Development of an early warning indicator system based on data mining methods is also being described as a support to the management in early detection of both market opportunities and threats. Research in data mining could also be concentrated on applying existing data mining techniques to find the best solution regarding practical business problems in the public or private sector. Knowledge regarding how some business cases were solved using data mining techniques could contribute in a better understanding of the nature or data mining nature and help solve specific business issues.

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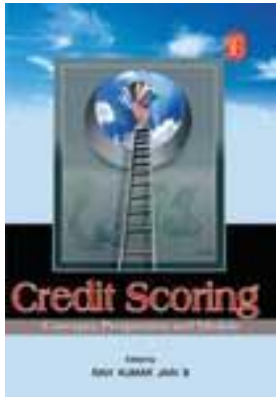
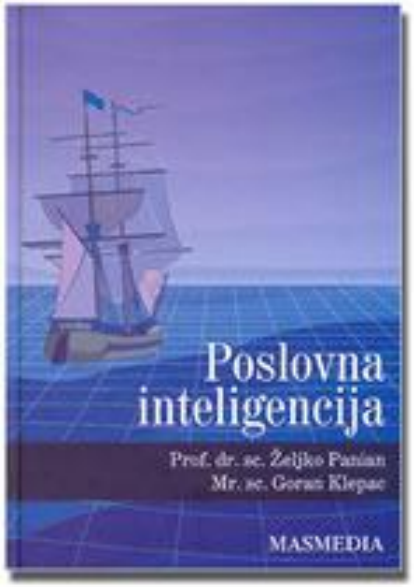


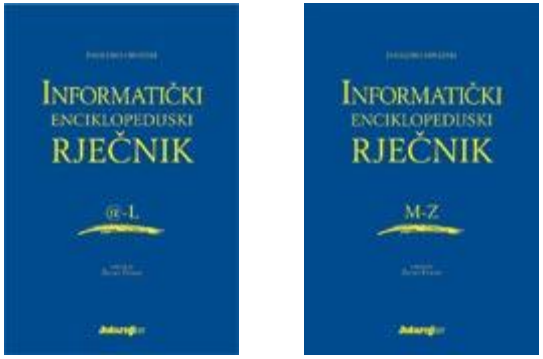
Klepac G. (2008). **Integrating Seasonal Oscillations into Basel II Behavioural Scoring Models.** In Ravi Kumar, Jain B (Eds.) CREDIT SCORING - CONCEPTS, PERSPECTIVES AND MODELS, The Icfai University Press, India, ISBN: 978-81-314-1577-1

Klepac, Goran ; Mršić, Leo: Poslovna inteligencija kroz poslovne slučajeve, Liderpress/TimPress, Zagreb, 2006, ISBN: 953-95472-1-0 (Book title translation : **Business intelligence through business cases**)



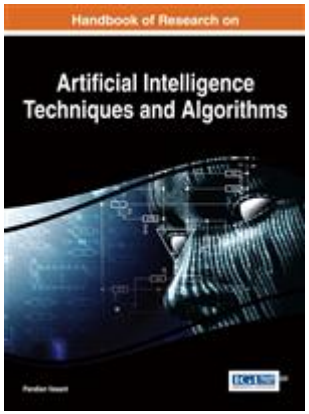
Klepac, Goran ; Panian, Željko: Poslovna inteligencija, Masmedia, Zagreb, 2003, ISBN: 953-157-447-2 (Book title translation : **Business intelligence**)

Klepac, Goran: Primjena inteligentnih računalnih metoda u menadžmentu, Sinergija, Zagreb, 2001, ISBN: 953-6895-01-3 (Book title translation : **Using intelligent computational methods in management**)



Klepac Goran - associate ; Panian Željko - Ed. . : Englesko-hrvatski Informatički enciklopedijski rječnik (A-L), Europapressholding, Zagreb, 2005, izdanje uz Jutarnji list (Book title translation : **English - Croatian informatics encyclopaedic dictionary A-L**)

Klepac Goran - associate ; Panian Željko - Ed.. : Englesko-hrvatski Informatički enciklopedijski rječnik (M-Z), Europapressholding, Zagreb, 2005, izdanje uz Jutarnji list (Book title translation : **English - Croatian informatics encyclopaedic dictionary M-Z**)



Goran Klepac, Ph.D., Robert Kopal, Ph.D Leo Mršić, Ph.D. Chapter: "E**arly warning system framework proposal, based on structured analytical techniques**, SNA and fuzzy expert system for different industries" : "Artificial Intelligence Techniques and Algorithms", IGI global, 2015.

Forthcoming chapters in publishing process

- "**Particle swarm optimization algorithm as a tool for profiling from predictive data mining models**", in book : "Handbook of Research on Swarm Intelligence in Engineering“, IGI- Global

- "**Proposal of analytical model for business problems solving in big data environment**", in book : "Strategic Data-Based Wisdom in the Big Data Era“, IGI- Global

Other selected works :

Igor Kaluđer, Goran Klepac, *Credit Risk Early Warning System using Fuzzy Expert Systems*, CECiiS: Central European Conference on Information and Intelligent Systems, 2014,

Goran Klepac, Robert Kopal, Darija Korkut, Early warning systems based on business intelligence methods, Crisis Management, 4th International Scientific Symposium 25 and 26 May 2011, Velika Gorica, Croatia

Klepac, G. (2008.)„Portfolio Sensitivity Model for Analyzing Credit Risk Caused by Structural and Macroeconomic Changes“. Financial Theory and Practice, 32 (4), 463-479..

Klepac Goran: "Time series analysis using a unique model of transformation", Journal of Information and Organizational Sciences, Vol. 31., No. 2, 2007.

Klepac, G. (2007) “Integrating Seasonal Oscillations into Basel II Behavioral Scoring Models”.Financial Theory and Practice, 31 (3), 277-288. .

Klepac G., Kliček B., Mršić L. (2005, September): Temporal pattern discovery in consumer behavior with REFII model. Paper presented at the Consumer Personality and Research 2005 Conference, Dubrovnik, Croatia (Abstract available online:http://abstracts.cpr2005.info

Goran Klepac (2002.): REFII model-Model for recognition patterns in time series, 20th International conference METHODOLOGY AND STATISTIC, University of Ljubljana, Faculty of social sciences, centre of methodology and informatics, Ljubljana, September 15.-18., 2002; Program and astracts, str 53.-55.

Member of team in scientific project financed by ministry of science. Projekt no. 067003, "Modeliranje i simulacija u poslovnoj ekonomiji" - Main researcher Vlatko Čerić (1996.-2000.) (http://bib.irb.hr/)

Member of team in scientific project financed by ministry of science . Projekt no. 0067016, "Metode i modeli potpore odlučivanju“ (2002.- 2006.) (http://bib.irb.hr/)

Member of team in scientific project financed by ministry of science . Adaptibilnost visokotehnoloških organizacija . (2007.- 2011)

Public speaking and workshops

Goran Klepac "Tehnike pripreme podataka za napredne analize"- peta hrvatska konferencijia o kontrolingu, 2013, Sheraton Zagreb.

Robert Kopal, Goran Klepac : seminar "Upravljanje profitabilnošću portfelja primjenom naprednih analitičkih metoda - primjer profitabilnosti retaila -", u organizaciji Hrvatskog instituta za bankarstvo i osiguranje. 2012.

Goran Klepac, Robert Kopal : "Primjena napredne analitike u osiguranju", Hrvatski ured za osiguranje (HUO), jednodnevna radionica, Zagreb, 2012.

Goran Klepac, "Primjena sustava ranog upozorenja u kontrolingu", 4. konfrencija o kontrolingu, hotel Antunović, Zagreb, 2012.

Goran Klepac, " Sustav ranog upozoravanja i ekspertne kvantitativne analitičke tehnike", 5. Konferencija o korporativnoj sigurnosti, Westin, Zagreb, 2012.

Goran Klepac, "Upravljanje profitabilnošću u retailu", Konferencija: "Primjena Business intelligence procesa" u organizaciji Liderpressa i Comminusa, Westin, Zagreb, 2011.

Goran Klepac: "Primjena data mining metoda u bankarstvu" , 2011, Sarajevo.

Goran Klepac: "Primjena data mining metoda u bankarstvu " ,2011., Zagreb

Goran Klepac, Early warning systems based on business intelligence methods, Crisis Management, 4th International Scientific Symposium 25 and 26 May 2011, Velika Gorica, Croatia

Goran Klepac, "Utjecaj kvalitete podataka na realizaciju Business intelligence projekata", Konferencija: "Primjena Business intelligence procesa" u organizaciji Liderpressa i Comminusa, Westin, Zagreb, 2010.

Goran Klepac, "Developing Early Warning Models using Fuzzy expert systems", Wien, Retail Risk conference, Raiffeisen international, 2010.

Goran Klepac: "Inteligentno upravljanje portfeljem korisnika", Comminus i VPŠ Libertas, Zagreb, 03.09.2010.

Goran Klepac: " Inteligentno upravljanje portfeljem pomoću metoda data mininga", BI or not BI: Business survival kit seminar (Zagreb, 2009.), CRMT.

Goran Klepac: "Primjena data mining metoda u bankarstvu za analitičare" u organizaciji RBA, 2008.

Goran Klepac: "Primjena data mining metoda u bankarstvu za analitičare" u organizaciji RBA, 2008.

Goran Klepac: "Data mining u bankarstvu" - managerski pristup, Seminar u organizaciji RBA, 2008.

Goran Klepac: "Poslovna inteligencija u primjeni", ORACLE BIH, Oracle Technology Day, Sarajevo, lipanj 2008.

Goran Klepac: "Primjena data mining metoda u elektroničkom poslovanju", Tehničko veleučilište u Zagrebu-stručni studij informatike, studeni 2007.

Goran Klepac, Leo Mršić : "Upravljanje rizičnošću portfelja primjenom metoda poslovne inteligencije", HrOUG, Rovinj, 2007.

Leo Mršić, Goran Klepac : "Upravljanje prekidom ugovornih odnosa/kupnje u trgovini", HrOUG, Rovinj, 2007.
Goran Klepac: "Data mining u bankarstvu", Seminar u organizaciji RBA , 2007.

Goran Klepac: "Data mining u bankarstvu", Seminar u organizaciji RBA , 2007.
Goran Klepac, Leo Mršić : "Prevencija i sprečavanje prekida ugovornih odnosa/kupovine primjenom analitičkih CRM metoda" ,
CRM konferencija, Infoarena, Zagreb, j 2007.
Goran Klepac: "Otkrivanje znanja iz poslovnih podataka u bankarstvu", RBA ,2006.

10.HrOUG konferencija (www.hroug.hr), Umag 2005. "Provođenje scoringa pomoću fuzzy ekspertnih sustava".

"Od kvantitativne analize tržišta/ klijenata do kvalitativnog pristupa odnosima s klijentima", CRM konferencija, Infoarena, Zagreb,2005.

"Otkrivanje znanja iz poslovnih podataka", Seminar u organizaciji Raiffeisen consultinga , 2005.

"Otkrivanje znanja iz poslovnih podataka i competitive intelligence", Competitive intelligence konferencija, Infoarena , 2005.

"Otkrivanje znanja iz vremenskih serija", HrOUG - 9. konferencija, Umag , 2004.

"Data mining i tržišne analize ", Prime, Zagrebački velesajam 2004.

"Poslovna inteligencija", IDC BI Roadshow, Zagreb, 2004.

"Business intelligence- perspectives ", SAS forum Adriatic region ,Opatija,2004.

"Segmentacija tržišta na temelju analiza vremenskih serija", Business intelligence konferencija, 10-11 veljače 2003, HLD

Lecturing activities

Lecturer:

Faculty of organization and informatics, Varaždin, Ph.D. study "Methods of developing and research of business intelligence systems". (2009-)

University of Zagreb, Faculty of Economics & Business Zagreb, Master science degree study "Business intelligence" (2004 - 2009)

University College for Applied Computer Engineering, "Data mining" (2012 -)

University College for Applied Computer Engineering, "Decision support systems" (2009 -)

Polytechnic of Zagreb, "Business intelligence " (2010-)

Polytechnic of Zagreb, “Big data analytics" (2014-)

Libertas Business school, "Business informatics" (2011-2012)

Visiting professor, The University College Effectus – College for Law and Finance

Other activities

Member of editorial board :INTERNATIONAL JOURNAL OF COMPUTING AND OPTIMIZATION
Member of International Editorial Review Board International Journal of Ambient Computing and Intelligence (IJACI)
Section editor : CIT. Journal of Computing and Information Technology, University of Zagreb University Computing Centre - SRCE
Reviewer- Institute of Public Finance – Journal : Financial Theory and Practice

Area of scientific interest

Developing new data mining methods in area of market research and risk assessment
Using methods from chaos theory in data mining
Machine learning algorithms
Artificial intelligence
Big data analytical models
Text mining for developing predictive data mining models in business
Temporal data mining
Social network analysis
Swarm intelligence
Text mining
New solutions based on data mining techniques in area of fraud detection, churn detection, segmentation

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