

Dragan Gamberger Curriculum vitae

Dragan Gamberger obtained PhD from University of Zagreb, Faculty of electrical engineering and computing, in the year 1986. He is working at Rudjer Boskovic Institute since year 1975 His current position is senior scientist. He is head of Laboratory for Information Systems since year 2000.

The topic of his PhD has been in the field of compute arithmetic. His current interests include machine learning, intelligent data analysis, knowledge discovery, knowledge representation by ontologies, reasoning for decision support, and applications of these techniques in medicine, biology, chemistry, social sciences, economics, and manufacturing. He is teaching curriculum "Knowledge discovery in medical domains" at the University of Zagreb, School of Medicine.

According to Scopus, Dragan Gamberger has 55 publications that have been cited in total 378 times. His h-score is 10. According to WOS he has 41 publications with 165 citations without self-citations and h-score equal 8. According to Google Scholar he has 146 publications. He is co-author of the authored book "*Foundations of Rule Learning*" (Springer, 2012) that presents most of his long-term research results in the field of machine learning. He is author of the handbook for students and scientists "Data Mining for Knowledge Discovery" (in Croatian) that is publicly available from <http://lis.irb.hr/MLAA/index.html>. He is co-author of the public service "Data Mining Server" that is already for more than 10 years available at <http://dms.irb.hr/>. The service integrates the rule learning algorithms developed at Rudjer Boskovic Institute with a very simple user interface appropriate for teaching and data analysis tasks.

1) Most relevant publications in the field of machine learning and artificial intelligence (with number of citations according to Scopus):

Gamberger, D. and Lavrač, N. (2002) Expert-guided subgroup discovery: Methodology and Application. *Journal of Artificial Intelligence Research*, 17:501-527 (IF 1.056, ranking Q3, cited 64 times).

Lavrač, N., Cestnik, B., Gamberger, D., and Flach, P. (2004) Decision support through subgroup discovery: Three case studies and the lessons learned. *Machine Learning*, Vol. 57(1-2): 115-143 (IF 1.467, ranking Q2, cited 38 times).

Gamberger, D., Lavrač, N., and Krstačić, G. (2003) Active subgroup mining: A case study in a coronary heart disease risk group detection. *Artificial Intelligence in Medicine*, Vol. 28 pp.27-57. (IF 1.355, ranking Q2, cited 34 times).

Gamberger, D., Lavrač, N., Železny, F., and Tolar, J. (2004) Induction of comprehensible models for gene expression datasets by subgroup discovery methodology. *Journal of Biomedical Informatics* 37/4:269-284. (IF 2.131, ranking Q1, cited 28 times).

Gamberger, D., Lavrač, N., Krstačić, A. and Krstačić, G. (2007) Clinical data analysis based on iterative subgroup discovery: Experiments in brain ischaemia data analysis. *Applied Intelligence*, 27:205-217 (IF 1.853, ranking Q2, cited 8 times).

2) Most relevant application papers in various scientific disciplines:

Rios-Morales, R., Gamberger, D., Smuc, T., and Azuje, F. (2009) Innovative methods in assessing political risk for business internationalization. *Research in International Business and Finance*, 23:144-156 (cited 6 times).

Lambach, D. and Gamberger, D. (2008) Temporal analysis of political instability through descriptive subgroup discovery. *Conflict Management and Peace Science*, 25:19-32 (cited 3 times).

Baker, J.R., Gamberger, D., Mihelcic, J.R., and Sabljic, A. (2004) Evaluation of artificial intelligence based models for chemical biodegradability prediction. *Molecules*, 9:989-1004 (cited 9 times).

Bejuk, D., Begovac, J., Gamberger, D., and Kučičec-Tepeš, N., (2000) Evaluation of phenotypic characteristics for differentiation of enterococcal species using an example based algorithm. *Diagnostic Microbiology and Infectious Disease*, 38:4;201-205 (cited 11 times).

Gamberger, D., Horvatić, D., Sekušak, S., and Sabljic, A. (1996) Applications of experts' judgement to derive structure-biodegradation relationships. *Environmental Sciences and Pollution Research*. 3:224–228 (cited 12 times).

3) Published books

a) Authored book:

Fuernkranz, J., Gamberger, D., Lavrac, N. (2012). *Foundations of Rule Learning*. Springer.

b) Chapter in edited book:

Lavrac, N. Fuernkranz, J., Gamberger, D. (2010) Explicit feature construction and manipulation for covering rule learning. *Advances in Machine Learning*, edited by Koronacki, Ras, Wierzchon, Kaprzyk, Springer.

4) Lectures:

Invited talk at the symposium (2013) *Descriptive modeling in social sciences*, Knowledge Technologies Symposium on Machine Learning and Computational Creativity, Ljubljana, Slovenia, (available as a video at http://videolectures.net/ktsymposium2013_ljubljana/).

Plenary talk at the conference (2013) *A novel way of integrating rule based knowledge into a web ontology language framework*, Thirteenth EFMI Special Topic Conference "Data and Knowledge for Medical Decision Support", Prague, Czech Republic.

Plenary talk at the conference (2012) *Descriptive modeling of systemic banking crises*, 15th International Discovery Science Conference, Lyon, France.

Plenary talk at the conference (2008) *Handling Unknown and Imprecise Attribute Values in Propositional Rule Learning: A Feature-Based Approach*, Pacific Rim International Conference on Artificial Intelligence, Hanoi, Vietnam.

5) Organization of conferences and participation in organization committees:

a) Organization of conferences and workshops:

14th European Conference on Machine Learning, 2003, Cavtat.

7th European Conference on Principles and Practice of Knowledge Discovery, 2003, Cavtat

Rule Learning Algorithms and their Applications (2013), Zagreb, Croatia (http://lis.irb.hr/MLAA/Invitation_Rule_Learning.pdf).

7th International Ljubljana-Zagreb Workshop on Knowledge Technologies (2011), Porec, Croatia (<http://lis.irb.hr/KT2011/>).

KDSA 2008 Workshop on Knowledge Discovery in Scientific Applications (2008), Porec, Croatia (<http://lis.irb.hr/KDSA2008/>).

b) Program committee member of following conferences:

International Conference on Data Warehousing and Knowledge Discovery (DaWaK), International Conference on Discovery Science (DS), International Conference on Informatics in Control, Automation and Robotics (ICINCO), International Symposium on Methodologies for Intelligent Systems (ISMIS), Intelligent Data Analysis in bioMedicine and

Pharmacology (IDAMAP), Medical Informatics in Europe (MIE), Pacific Rim International Conference on Artificial Intelligence (PRICAI), Pacific-Asia Conference on Knowledge Discovery (PAKDD), Asian Conference on Machine Learning (ACML).

6) Previous projects

National project 2007-2013, project leader: Machine learning algorithms and their applications, <http://lis.irb.hr/MLAA/index.html>.

National program 2007-2013, program leader, Computational knowledge discovery in scientific applications, <http://lis.irb.hr/KDSA/>.

FP7 STREP project 2010-2012, researcher, An e-Laboratory for Interdisciplinary Collaborative research in Data mining and Data-Intensive Sciences, e-LICO, <http://e-lico.eu/>.

FP6 STREP project 2006-2009, work-package leader: A Knowledge Based Platform of Services for Supporting Medical-Clinical management of Heart Failure within Elderly Population (HEARTFAID), <http://lis.irb.hr/heartfaid/>.

Bilateral Croatia-Slovenian project 2009-2011. project leader: Inductive Learning of Rules (ILR), <http://lis.irb.hr/IRL2009/>

BICRO development program IRCRO 2008-2010, researcher, Electronic document exchange for document management system Centrix.

7) Current projects:

FP7 FET project 2013-2016, researcher: Foundational research on multilevel complex networks and systems, Multiplex, <http://www.multiplexproject.eu/>. Project task is to characterize, observe, and control the dynamics of real multi-level networks.

FP7 FET project 2011-2013, researcher: Forecasting financial crises, FOC, <http://www.focproject.eu/>. Project task is to understand systemic risk and financial instability by using integrated and network oriented approaches.

8) Mentorship:

Marin Prcela:

Prcela, M., Gamberger, D., Jovic, A. (2008) Semantic web ontology utilization for heart failure expert system design. *Studies in Health Technology and Informatics*, pp.851-856 (cited 8 times).

Prcela, M., Gamberger, D., Smuc, T., Bogunovic, N. (2010) Information gain of structured medical diagnostic tests: Integration of Bayesian networks and ontologies. In *Proc. of Third International Conference on Health Informatics HEALTHINF 2010*, pp. 235-240 (not cited).

Alan Jovic:

Jovic, A., Gamberger, D., Krstacic, G. (2011) Heart failure ontology. *Bio-algorithms and med-systems*, 7(2):101-110 (not cited).

Gamberger, D., Krstacic, G., Jovic, A. (2013) A novel way of integrating rule based knowledge into a web ontology language framework. In *Proc. of Thirteenth EFMI Special Topic Conference "Data and Knowledge for Medical Decision Support"*, IOS Press, pp. 51-55 (not cited).

9) Referee for following international journals:

Advances in Artificial Intelligence, Journal of Computing and Information Technology, Computer Methods and Programs in Biomedicine, The Computer Journal, Data Mining and

Knowledge Discovery, International Journal of Computer & Electronics Research, Conflict Management and Peace Science, Transactions on Information Technology in BioMedicine.

10) Member of editorial boards of international journals:

Bio-Algorithms and Med-Systems, BioData Mining.