

# FH-Prof. PD DI Dr. Stephan Winkler

October 2018



## CURRENT POSITION

University of Applied Sciences Upper Austria, School for Informatics, Communications and Media  
Professor at Department for Medical and Bioinformatics  
Head of Bioinformatics Research Group  
Member of Heuristic and Evolutionary Algorithms Laboratory

## PERSONAL DATA

Name: Dipl.-Ing. Dr. Stephan M. Winkler  
Business address: FH OÖ (University of Applied Sciences Upper Austria), Hagenberg Campus  
Softwarepark 11, 4232 Hagenberg  
Date and place of birth: October 26th, 1980, Linz, Austria  
Nationality: Austrian  
Marital status: Married

## EDUCATION

1985 – 1990 Elementary schools in Newark, Delaware, USA and Linz, Austria  
1990 – 1998 Secondary school, high school: Bischöfliches Gymnasium Kollegium Petrinum, Linz, Austria  
1999/10 – 2004/09 Studies in computer science at Johannes Kepler University, Linz, Austria  
2004/09 Graduation; diploma thesis: “Identifying Nonlinear Model Structures Using Genetic Programming”  
2004/10 – 2008/04 PhD studies in engineering sciences at Johannes Kepler University, Linz, Austria  
2008/04 Promotion; PhD thesis: “Evolutionary System Identification - Modern Concepts and Practical Applications”  
2018/05 Venia docendi at Johannes Kepler University Linz for the field “Data based modeling” (computer science);  
Habilitation thesis: “Evolutionary Computation and Symbolic Regression in Scientific Modeling”

## MILITARY SERVICE

1998/08 – 1999/03 PzB 10, Kopal Kaserne, St. Pölten - Spratzern, Austria

## PROFESSIONAL CAREER

1999 Programmer for Programmierfabrik GmbH, Hagenberg, Austria  
2000 - 2010 Programmer and IT counselor for Altenbetreuungsschule des Landes OÖ, Linz, Austria  
since 2002 Plugin developer for HeuristicLab (<http://dev.heuristiclab.com>)  
since 2003 Member of the Heuristic and Evolutionary Algorithms Laboratory (<http://heal.heuristiclab.com>)  
2003 – 2004 Tutor for computer science at Johannes Kepler Universität, Linz, Austria  
2004/10 – 2006/01 Research assistant at the Institute for Design and Control of Mechatronical Systems, Johannes Kepler Universität, Linz, Austria  
2005/02 – 2006/03 Junior researcher at Linz Competence Center in Mechatronics (LCM)  
2005/03 – 2005/06 Lecturer at Johannes Kepler Universität; courses in Mechatronics  
2006/02 – 2009/01 Research assistant, Translational Research Program project L284-N04 “GP-Based Techniques for the Design of Virtual Sensors”, funded by the Austrian Science Fund (FWF)  
2006/02 – 2009/01 Research assistant at Research Center Hagenberg, University of Applied Sciences Upper Austria  
since 2006/10 Lecturer at University of Applied Sciences Upper Austria, Hagenberg Campus; courses in Software Engineering, Information Engineering and –Management, and Bioinformatics  
since 2009/02 Professor at the Department for Medical and Bioinformatics, University of Applied Sciences Upper Austria, Hagenberg Campus, School for Informatics, Communications and Media, Campus Hagenberg  
since 2011/02 Head of Bioinformatics Research Group, University of Applied Sciences Upper Austria, Hagenberg Campus (<http://bioinformatics.fh-hagenberg.at>)  
2014/04 – 2014/07 Visiting scholar at BEACON, an NSF Center for the Study of Evolution in Action at Michigan State University, East Lansing, MI.  
2015/04 – 2015/05 Guest professor at Department for Applied Mathematics, Universidad de Alcalá de Henares, Madrid, Spain

## ACTIVITIES IN RESEARCH PROJECTS

LCM / JKU (DesReg)	Cooperation with VA-I: "Fault Detection and Isolation"; 2004–2005 [researcher]
	Cooperation with AVL: "Automatic Measurement and Plausibility Analysis"; 2004 [researcher]
	Cooperation with VA-I: "Pre-Assessment of Quality of Steel Products"; 2005–2006 [researcher]
F&E FH OÖ	FWF-Project "GP-Based Techniques for the Design of Virtual Sensors"; joint execution by FH OÖ, JKU (DesReg), and LCM; 2006–2009 [researcher]
	Cooperation with Hofer Powertrain: "Data Based Modeling"; 2006 [researcher]
	Cooperation with VA-S: "Using Genetic Programming in the Identification of Model Structures in Measurement Data"; 2007–2008 [researcher]
	Cooperation with Gunytronic: "Identification of Model Structures in Measurement Data"; TIM project, 2008 [researcher]
	Cooperation with MAS Alzheimerhilfe Bad Ischl: "Identification of Influences and Relationships in Data of Patients Suffering from Alzheimer's Disease Using Genetic Programming"; FFG project, 2008 [researcher]
	Josef Ressel Centre for Heuristic Optimization " <i>Heureka!</i> "; since 2009 [researcher]
	Cooperation with Borealis: "Data Based Modeling"; 2010 [researcher]
	Basic research project "Tschechow": Opinion Mining and Bioinformatical Information Retrieval; sponsored by FH OÖ 2010 – 2011 [project leader]
	Research project "MS Amanda": Bioinformatics research project in cooperation with IMP Vienna; 2011 – 2012 [senior researcher]
	Basic research project "DETECTOR + $\mu$ -Prot": Design and Implementation of a Framework for Optimized Structure Analysis in Microscopy Images + Analysis of the Influence of Secondary Substances in Plants on Protein-Protein Interactions in Living Cells; sponsored by FH OÖ 2011 – 2013 [project leader]
	Basic research project "MOdoPS": Model Based Design by Open Source; sponsored by FH OÖ; 2011 – 2013 [senior researcher]
	Research Project "SESAM": Bioinformatics research project in cooperation with IMP Vienna, sponsored by the Austrian Research Funding Agency (FWF); 2013 – 2016 [deputy project leader, research partner]
	Research Project "NanoDetect": Bioinformatics research project in cooperation with Blutzentrale des RK OÖ, Olympus Austria, and Trauma Care Consult, sponsored by the Austrian Research Funding Agency (FFG); 2013 – 2016 [project leader]
	Research Project "Transplant": Bioinformatics research project in cooperation with Blutzentrale des RK OÖ, sponsored by the European Union and the Upper Austrian Government within the Research Programme Regio13; 2013 – 2015 [deputy project leader, research partner]
	Research Project "TOMO3D": Bioinformatics research project in cooperation with Blutzentrale des RK OÖ and Olympus Austria, sponsored by the Austrian Research Funding Agency (FFG); 2014 – 2018 [project leader]
	Basic research project "Immune Profiler"; 2014 – 2016 [senior researcher]
	Basic research project "GlucoStar"; 2014 – 2016 [deputy project leader]
	K-Project "HOPL": Heuristic Optimization in Production and Logistics; sponsored by FFG; 2014-2018 [senior researcher]

## AWARDS

2002, 2003	Scholarships of the Technical Faculty at the Johannes Kepler University for excellent merits in studies in the years 2002 and 2003.
2004/04	Best Paper Award of EMCSR 2004 conference for the contribution "Identifying Nonlinear Model Structures Using Genetic Programming Techniques" in the session "Theory and Applications of Artificial Intelligence"
2005/07	Best Paper Award of WMSCI 2005 conference for the contribution "Solving Multiclass Classification Problems by Genetic Programming" in the session "Management Information Systems"
2008/12	Junior Researcher Award 2008 of University of Applied Sciences Upper Austria
2010/02	Best Teacher Award (First Rank) of the Studies "Medical and Bioinformatics", "Biomedical Informatics" and "Bioinformatics" at Upper Austria of Applied Sciences, Campus Hagenberg
2011/09	Best Paper Award of the 8 <sup>th</sup> International Mediterranean and Latin American Modeling Multiconference (IMMM 2011) conference for the contribution "On the use of estimated tumor marker classifications in tumor diagnosis prediction" in the 23 <sup>rd</sup> European Modeling & Simulation Symposium (EMSS 2011)
2011/09	Best Teacher Award (Second Rank) of the Studies "Medical and Bioinformatics", "Biomedical Informatics" and "Bioinformatics" at Upper Austria of Applied Sciences, Campus Hagenberg
2015/12	Researcher Award 2015 of University of Applied Sciences Upper Austria

## REVIEWING, PARTICIPATION IN PROGRAM COMMITTEES

2005	Reviewer for the International Mediterranean Modeling Multiconference (I3M'05)
2006	Reviewer for the Workshop on Nature Inspired Distributed Computing (NIDISC'06)
2006	Reviewer for the Workshop on Medical Applications at the Genetic and Evolutionary Computation Conference (GECCO 2006; MedGEC '06)
2008	Reviewer for the Workshop on Soft Computing and Modelling & Simulation at the 20th European Modeling and Simulation Symposium (EMMS 2008)
2009	Reviewer and program committee member for the International Conference on Computer Aided Systems Theory (EuroCAST 2009)
2009	Reviewer for the Workshop on Parallel Evolutionary Systems at the Genetic and Evolutionary Computation Conference (GECCO 2009)
2009	Reviewer for the Track on Simulation and Modeling in Medicine and Biology at the 21st European Modeling and Simulation Symposium (EMMS 2009)
2009	Reviewer for the International Symposium on Logistics and Industrial Informatics (LINDI 2009)
2009	Reviewer for IEEE Transactions on Evolutionary Computation
2009	Reviewer for IEEE Transactions on Neural Networks
2009	Reviewer for Bentham Science Publishers, Recent Patents on Computer Science
2010	Reviewer for the Workshop on Parallel Evolutionary Systems at the Genetic and Evolutionary Computation Conference (GECCO 2010)
2010	Review of PhD Thesis of Zahid Halim, National University of Computer & Emerging Sciences Islamabad, Pakistan: "Measuring Entertainment and Automatic Generation of Entertaining Games"
2010	Review of PhD Thesis of Amjad Iqbal, National University of Computer & Emerging Sciences Islamabad, Pakistan: "Function Optimization and Clustering using Computational Intelligence Techniques"
2010	Review of PhD Thesis of Hasan Mujtaba, National University of Computer & Emerging Sciences Islamabad, Pakistan: "Learning to Learn: An Automated and Continuous Approach to Learning in Imperfect Environments"
2010	Reviewer for 14th IEEE International Conference on Intelligent Engineering Systems (INES 2010)
2010	Reviewer for 22nd European Modeling and Simulation Symposium (EMMS 2010)
2011	Reviewer for the Foundations of Genetic Algorithms XI (FOGA 2011)
2011	Reviewer and program committee member for the International Conference on Computer Aided Systems Theory (EuroCAST 2011)
2011	Reviewer for the Workshop on Parallel Evolutionary Systems at the Genetic and Evolutionary Computation Conference (GECCO 2011)
2011	Reviewer for IEEE Transactions on Evolutionary Computation
2011	Reviewer for IEEE Transactions on Neural Networks
2011	Reviewer and program committee member for the 23rd European Modeling and Simulation Symposium (EMMS 2011)

2012 Program Committee Member of the International Asia Pacific Conference on Computer Aided System Theory (APCAST 2012)

2012 Reviewer for the International Journal of Simulation and Process Modelling

2012 Reviewer for the Workshop on Parallel Evolutionary Systems at the Genetic and Evolutionary Computation Conference (GECCO 2012)

2012 Reviewer for the 24th European Modeling and Simulation Symposium (EMMS 2012)

2013 Reviewer and program committee member for the International Conference on Computer Aided Systems Theory (EuroCAST 2013)

2013 Reviewer for the Workshop on Parallel Evolutionary Systems at the Genetic and Evolutionary Computation Conference (GECCO 2013)

2013 Reviewer for the International Journal of Simulation and Process Modelling

2013 Reviewer for IEEE Transactions on Evolutionary Computation

2014 Program Committee Member of the International Asia Pacific Conference on Computer Aided Systems Engineering (APCASE 2012)

2014 Reviewer for Springer Soft Computing (SOCO)

2014 Reviewer for Journal of Healthcare Engineering

2014 Reviewer for the Genetic Programming Track at the Genetic and Evolutionary Computation Conference (GECCO 2014)

2014 Reviewer for the Workshop on Evolutionary Computation Software Systems at the Genetic and Evolutionary Computation Conference (EvoSoft 2014)

2014 Reviewer for Springer Genetic Programming and Evolvable Machines (GPEM)

2014 Reviewer for the 26th European Modeling and Simulation Symposium (EMMS 2014)

2015 Reviewer and program committee member for the International Conference on Computer Aided Systems Theory (EuroCAST 2015)

2015 Reviewer for Springer Soft Computing (SOCO)

2015 Reviewer for the Genetic Programming Track at the Genetic and Evolutionary Computation Conference (GECCO 2015)

2016 Reviewer for Springer Soft Computing (SOCO)

2016 Reviewer for the Genetic Programming Track at the Genetic and Evolutionary Computation Conference (GECCO 2016)

2017 Reviewer and program committee member for the International Conference on Computer Aided Systems Theory (EuroCAST 2017)

2017 Reviewer for the Genetic Programming Track at the Genetic and Evolutionary Computation Conference (GECCO 2017)

2017 Reviewer for Elsevier Applied Soft Computing

2017 Reviewer for Springer Soft Computing (SOCO)

2018 Reviewer for the Genetic Programming Track at the Genetic and Evolutionary Computation Conference (GECCO 2018)

2018 Reviewer for Elsevier Applied Soft Computing

2018 Reviewer for Springer Soft Computing (SOCO)

# FH-Prof. PD DI Dr. Stephan M. Winkler:

## Lists of Publications and Patents

### 2018-10

#### Publications in Peer-Reviewed Journals:

- Gabriel Kronberger, J. Manuel Colmenar, Stephan M. Winkler, and J. Ignacio Hidalgo: **Population Diversity Dynamics in Grammatical Evolution and Genetic Programming**. Submitted to *IEEE Transactions on Evolutionary Computation*, 2018.
- Gabriel Kronberger, Michael Kommenda, Edwin Lughofer, Susanne Saminger-Platz, Andreas Promberger, Falk Nickel, Stephan M. Winkler, and Michael Affenzeller: **Using robust generalized fuzzy modeling and enhanced symbolic regression to model tribological systems**. *Applied Soft Computing*, Vol. 69, pp. 610–624. Elsevier, 2018.
- Viktoria Dorfer, Sergey Maltsev, Stephan M. Winkler, and Karl Mechtler: **CharmeRT: Boosting peptide identifications by chimeric spectra identification and retention time prediction**. *Journal of Proteome Research*, 17 (8), pp. 2581–2589, 2018.
- Sebastian Dorl, Stephan M. Winkler, Karl Mechtler, and Viktoria Dorfer: **PhoStar: Identifying Tandem Mass Spectra of Phosphorylated Peptides before Database Search**. *Journal of Proteome Research*, 17 (1), pp. 290–295, 2018.
- Almedina Kurtaj, Christoph Hillebrand, Gerda Fichtinger, Eva Hattinger, Melanie Lietzenmayer, Yoan Machado, Sandra Scheiblhofer, Angelika Stoecklinger, Theresa Thalhamer, Susanne Suessner, Martin Danzer, Sabine Keplinger, Johannes Weinberger, Susanne Schaller, Stephan M. Winkler, Christian Gabriel, Josef Thalhamer, and Richard Weiss: **Natural protective immunity against grass pollen allergy is maintained by a diverse spectrum of response types**. *Journal of Allergy and Clinical Immunology*, 140(6), Elsevier, 2017.
- J. Ignacio Hidalgo, J. Manuel Colmenar, Gabriel Kronberger, Stephan M. Winkler, Oscar Garnica, and Juan Lanchares: **Data Based Prediction of Blood Glucose Concentrations Using Evolutionary Methods**. *Journal of Medical Systems*, 41(9), 2017.
- J. Rafael Sendra and Stephan M. Winkler: **A Heuristic and Evolutionary Algorithm to Optimize the Coefficients of Curve Parametrizations**. *Journal of Computational and Applied Mathematics*, 305, p. 18-35, Elsevier 2016.
- Daniela Borgmann, Sandra Mayr, Helene Polin, Susanne Schaller, Viktoria Dorfer, Christian Gabriel, Stephan M. Winkler, and Jaroslaw Jacak: **Single Molecule Fluorescence Microscopy and Machine Learning for Rhesus D Antigen Classification**. *Scientific Reports* 6, article no. 32317, <https://www.nature.com/articles/srep32317>, 2016.
- Verena Stadlbauer, Renate Haselgrübler, Peter Lanzerstorfer, Birgit Plochberger, Daniela M. Borgmann, Jaroslaw Jacak, Stephan M. Winkler, Klaus Schröder, Otmar Höglinger, and Julian Weghuber: **Biomolecular Characterization of Putative Antidiabetic Herbal Extracts**. *PLOS ONE* 11(1), 2016.
- Stephan M. Winkler, Susanne Schaller, Gabriel Kronberger, Michael Affenzeller, Bonifacio Castaño, and Sergio Luengo: **Heterogenous model ensembles for short term prediction of stock market trends**. *International Journal of Simulation and Process Modelling*, Vol. 11, No. 6, pp. 504-513, Inderscience, 2016.
- Stephan M. Winkler, Susanne Schaller, Michael Affenzeller, and Gerald Petz: **Data Based Prediction of Sentiments Using Heterogeneous Model Ensembles**. *Soft Computing, Special Issue on Hybrid and Ensemble Techniques in Soft Computing: Recent Advances and Emerging Trends*, 19:3401-3412, Springer, 2015.
- Johannes Weinberger, Raul Jimenez-Heredia, Susanne Schaller, Susanne Suessner, Judith Sunzenauer, Roman Reindl-Schwaighofer, Richard Weiss, Stephan Winkler, Christian Gabriel, Martin Danzer, and Rainer Oberbauer: **Immune Repertoire Profiling Reveals that Clonally Expanded B and T Cells Infiltrating Diseased Human Kidneys Can also Be Tracked in the Blood**. *PLOS ONE* 10(11), 2015.
- Jaroslaw Jacak, Susanne Schaller, Daniela M. Borgmann, and Stephan M. Winkler: **Characterization of the Distance Relationship between Localized Serotonin Receptors and Glia Cells on Fluorescence Microscopy Images of Brain Tissue**. *Microscopy and Microanalysis*, Vol. 21, No. 4, Cambridge University Press, 2015.
- Susanne Schaller, Johannes Weinberger, Raúl Jiménez Heredia, Martin Danzer, Rainer Oberbauer, Christian Gabriel, and Stephan M. Winkler: **ImmunExplorer (IMEX): A Software Framework for Diversity and Clonality Analyses of Immunoglobulins and T Cell Receptors on the Basis of IMGT/HighV-QUEST Preprocessed NGS Data**. *BMC Bioinformatics*, Vol. 16, No. 252, 2015.

- J. Rafael Sendra and Stephan M. Winkler: **Optimization of Coefficients of Lists of Polynomials by Evolutionary Algorithms.** *Annales Mathematicae et Informaticae*, 2015.
- Gerd Bramerdorfer, Stephan M. Winkler, Michael Kommenda, Guenther Weidenholzer, Siegfried Silber, Gabriel Kronberger, Michael Affenzeller, and Wolfgang Amrhein: **Using FE Calculations and Data-Based System Identification Techniques to Model the Nonlinear Behavior of PMSMs.** *IEEE Transactions of Industrial Electronics*, 61(11):6454-6462, 2014.
- Viktoria Dorfer, Peter Pichler, Thomas Stranzl, Johannes Stadlmann, Thomas Taus, Stephan M. Winkler, and Karl Mechtler: **MS Amanda, a Universal Identification Algorithm Optimized for High Accuracy Tandem Mass Spectra.** *Journal of Proteome Research*, Vol. 13(8):3679-84, 2014.
- Peter Lanzerstorfer, Stephan M. Winkler, Otmar Höglinger, and Julian Weghuber: **Quantification and Kinetic Analysis of Grb2-EGFR Interaction on Micropatterned Surfaces for the Characterization of EGFR-modulating Substances.** *PLOS-ONE*, Vol. 3, No. 9, 2014.
- Peter Lanzerstorfer, Verena Stadlbauer, Lilia Chtcheglova, Renate Haselgrübler, Daniela Borgmann, Jürgen Wruss, Peter Hinterdorfer, Klaus Rudolf Schröder, Stephan M. Winkler, Otmar Höglinger, and Julian Weghuber: **Identification of Novel Insulin Mimetic Drugs by Quantitative Total Internal Reflection Fluorescence (TIRF) Microscopy.** *British Journal of Pharmacology*, 171(23):5237-5251, Wiley, 2014.
- Peter Lanzerstorfer, Jürgen Wruss, Stefan Huemer, Andrea Steininger, Ulrike Müller, Markus Himmelsbach, Daniela Borgmann, Stephan M. Winkler, Otmar Höglinger, and Julian Weghuber: **Bioanalytical Characterization of Apple Juice from 88 Grafted and Nongrafted Apple Varieties Grown in Upper Austria.** *Journal of Agricultural and Food Chemistry*, 62(5):1047-1056, ACS Publications, 2014.
- Stephan M. Winkler, Michael Affenzeller, Gabriel Kronberger, Michael Kommenda, Stefan Wagner, Viktoria Dorfer, and Witold Jacak: **On the use of estimated tumour marker classifications in tumour diagnosis prediction - a case study for breast cancer.** *Int. J. Simulation and Process Modelling*, 8(1):29-41. Inderscience Publishers, 2013.
- Stephan M. Winkler, Gabriel K. Kronberger, Michael Affenzeller, and Herbert Stekel: **Variable interaction networks in medical data.** *International Journal of Privacy and Health Information Management*, 1(2):1-16, 2013.
- Christoph Büschl, Bernhard Kluger, Franz Berthiller, Gerald Lirk, Stephan M. Winkler, Rudolf Krska, and Rainer Schuhmacher: **MetExtract: A new software tool for the automated comprehensive extraction of metabolite-derived LC/MS signals in metabolomics research.** *Bioinformatics*, Oxford Journals, 28(5): 736-738, 2012.
- Stephan M. Winkler: **Structural Versus Evaluation Based Solutions Similarity in Genetic Programming Based System Identification.** Nature Inspired Cooperative Strategies for Optimization, pp. 269-282. *Studies in Computational Intelligence*, No. 284, Springer, 2010.
- Michael Affenzeller, Stephan M. Winkler, and Stefan Wagner: **Effective Allele Preservation by Offspring Selection: An Empirical Study for the TSP.** *International Journal of Simulation and Process Modelling*, Vol. 6, No. 1, pp. 29-39. Inderscience Publishers, 2010.
- Stephan M. Winkler, Michael Affenzeller, and Stefan Wagner: **Using Enhanced Genetic Programming Techniques for Evolving Classifiers in the Context of Medical Diagnosis.** *Genetic Programming and Evolvable Machines*, Vol. 10, No. 2, pp. 111-140. Springer, 2009.
- Stephan M. Winkler, Michael Affenzeller, and Stefan Wagner: **Variables Diversity in Systems Identification Based on Extended Genetic Programming.** *Journal of Systems Science*, Vol. 34, No. 2, pp. 27-34. Oficyna Wydawnicza Politechniki Wrocławskiej, 2008, PL ISSN 0137-1223.
- Stephan M. Winkler, Michael Affenzeller, and Stefan Wagner: **Advanced Genetic Programming Based Machine Learning.** *Journal of Mathematical Modelling and Algorithms*, ISSN 1570-1166 (print), 1572-9214 (online), DOI 10.1007/s10852-007-9065-6. Springer Netherlands, 2007.
- Stephan M. Winkler, Hajrudin Efendic, Michael Affenzeller, Luigi del Re, and Stefan Wagner: **On-Line Modeling Based on Genetic Programming.** *International Journal on Intelligent Systems Technologies and Applications*, Vol. 2, NOs. 2/3, pp. 255-270. Inderscience Publishers, 2007.
- Stephan M. Winkler, Michael Affenzeller, and Stefan Wagner: **New Methods for the Identification of Nonlinear Model Structures Based Upon Genetic Programming Techniques.** *Journal of Systems Science*, Vol. 31, No. 1, pp. 5-13. Oficyna Wydawnicza Politechniki Wrocławskiej, 2005.
- Michael Affenzeller, Stefan Wagner, and Stephan M. Winkler: **GA Selection Revisited from an ES-Driven Point of View.** *Artificial Intelligence and Knowledge Engineering Applications: A Bioinspired Approach*, Lecture Notes in Computer Science 3562, pp. 262-271. Springer, 2005.
- Luigi del Re, Peter Langthaler, Christian Furtmüller, Stephan M. Winkler, and Michael Affenzeller: **NOx Virtual Sensor Based on Structure Identification and Global Optimization.** *SAE Transaction Journal of Engines*, 2005-01-0050. SAE International, 2005.

## Books and Book Chapters:

- Gabriel Kronberger, Lukas Kammerer, Bogdan Burlacu, Stephan M. Winkler, Michael Kommenda, and Michael Affenzeller: **Cluster Analysis of a Symbolic Regression Search Space**. Accepted to be published in *Genetic Programming Theory and Practice XVI*, Springer, 2019.
- J. Ignacio Hidalgo, J. Manuel Colmenar, J. Manuel Velasco, Gabriel Kronberger, Stephan M. Winkler, Oscar Garnica, and Juan Lanchares: **Identification of Models for Glucose Blood Values in Diabetics by Grammatical Evolution**. In C. Ryan et al (eds.): *Handbook of Grammatical Evolution*, pp. 367–393. Springer, 2018.
- Bogdan Burlacu, Michael Affenzeller, Michael Kommenda, Gabriel Kronberger, and Stephan M. Winkler: **Schema Analysis in Tree-Based Genetic Programming**. In *Genetic Programming Theory and Practice XV*, pp. 17–37, Springer, 2018.
- Stephan M. Winkler, Michael Affenzeller, Gabriel Kronberger, Michael Kommenda, Bogdan Burlacu, and Stefan Wagner: **Similarity-based Analysis of Population Dynamics in Genetic Programming Performing Symbolic Regression**. In *Genetic Programming Theory and Practice XIV*, Springer, 2017.
- Michael Kommenda, Gabriel Kronberger, Michael Affenzeller, Stephan M. Winkler, and Bogdan Burlacu: **Evolving Simple Symbolic Regression Models by Multi-Objective Genetic Programming**. In *Genetic Programming Theory and Practice XIII*, pp.1-19, Springer, 2016.
- Stephan M. Winkler, Michael Affenzeller, Gabriel Kronberger, Michael Kommenda, Bogdan Burlacu, and Stefan Wagner: **Sliding Window Symbolic Regression for Detecting Changes of System Dynamics**. In *Genetic Programming Theory and Practice XII*, pp. 91-107, Springer, 2015.
- Bogdan Burlacu, Michael Affenzeller, Stephan M. Winkler, Michael Kommenda, and Gabriel Kronberger: **Methods for Genealogy and Building Block Analysis in Genetic Programming**. In *Studies in Computational Intelligence*, Vol. 595, pp. Chapter 5, 61-74, Springer, 2015.
- Michael Kommenda, Michael Affenzeller, Gabriel Kronberger, Bogdan Burlacu and Stephan M. Winkler: **Multi-Population Genetic Programming with Data Migration for Symbolic Regression**. In *Studies in Computational Intelligence*, Vol. 595, Chapter 6, pp. 75-87, Springer, 2015.
- Stephan M. Winkler, Susanne Schaller, Daniela Borgmann, Lisa Obritzberger, Viktoria Dorfer, Christian Haider, Sandra Mayr, Peter Lanzerstorfer, Claudia Loimayr, Simone Hennerbichler-Lugscheider, Andrea Lindenmair, Heinz Redl, Michael Affenzeller, Julian Weghuber, and Jaroslav Jacak: **Identification and Classification of Objects and Motions in Microscopy Images of Biological Samples Using Heuristic Algorithms**. In *Studies in Computational Intelligence*, Vol. 595, Chapter 8, pp. 103-117, Springer, 2015.
- Michael Affenzeller, Andreas Beham, Stefan Vonolfen, Erik Pitzer, Stephan M. Winkler, Stephan Hutterer, Michael Kommenda, Monika Kofler, Gabriel Kronberger, and Stefan Wagner: **Simulation-Based Optimization with HeuristicLab: Practical Guidelines and Real-World Applications**. In *Applied Simulation and Optimization*, pp. 3-38, Springer, 2015.
- Michael Affenzeller, Stephan M. Winkler, Gabriel Kronberger, Michael Kommenda, Bogdan Burlacu, and Stefan Wagner: **Gaining Deeper Insights in Symbolic Regression**. *Genetic Programming Theory and Practice XI*, Springer, 2014.
- Stephan M. Winkler, Michael Affenzeller, Gabriel K. Kronberger, Michael Kommenda, Stefan Wagner, Witold Jacak, and Herbert Stekel: **On the Identification of Virtual Tumor Markers and Tumor Diagnosis Predictors Using Evolutionary Algorithms**. *Advanced Methods and Applications in Computational Intelligence*, Topics in Intelligent Engineering and Informatics, Vol. 6, pp. 95-122. Springer, 2014.
- Stefan Wagner, Gabriel Kronberger, Andreas Beham, Michael Kommenda, Andreas Scheibenpflug, Erik Pitzer, Stefan Vonolfen, Monika Kofler, Stephan M. Winkler, Viktoria Dorfer, and Michael Affenzeller: **Architecture and Design of the HeuristicLab Optimization Environment**. *Advanced Methods and Applications in Computational Intelligence*, Topics in Intelligent Engineering and Informatics, Vol. 6, pp. 197-261. Springer, 2014.
- Witold Jacak and Karin Pröll and Stephan M. Winkler: **Neural Networks Based Feature Selection in Biological Data Analysis**. *Advanced Methods and Applications in Computational Intelligence*, Topics in Intelligent Engineering and Informatics, Vol. 6, pp. 79-94. Springer, 2014.
- Peter Lanzerstorfer, Andrea Steininger, Otmar Höglinger, Julian Weghuber, Daniela Borgmann, Susanne Schaller, Stephan M. Winkler, Mario Brameshuber, Stefan Sunzenauer, and Gerhard Schütz: **Analysis of Protein-Protein Interactions in Live Cells - The  $\mu$ -Patterning Approach**. In *Basic Methods in Protein Purification and Analysis*, iConcept Press, 2012.
- Michael Affenzeller, Andreas Beham, Monika Kofler, Gabriel Kronberger, Stefan Wagner, and Stephan M. Winkler: **Metaheuristic Optimization**. In Buchberger et al. (eds.): *Hagenberg Research*. Springer, Berlin; ISBN: 978-3642021268. 2009.

- Michael Affenzeller, Stephan M. Winkler, Stefan Wagner, and Andreas Beham: **Genetic Algorithms and Genetic Programming - Modern Concepts and Practical Applications**. *Chapman & Hall / CRC Press*. ISBN 978-1584886297. 2009.
- Stephan M. Winkler, Michael Affenzeller, and Stefan Wagner: **On the Reliability of Nonlinear Modeling Using Enhanced Genetic Programming Techniques**. In C. Skiadas, I. Dimotikalis, and C. Skiadas (eds.): *Topics on Chaotic Systems*, pp. 398 - 405. World Scientific Publishing, 2009.
- Michael Affenzeller, Stephan M. Winkler, and Stefan Wagner: **Evolutionary Systems Identification: New Algorithmic Concepts and Applications**. In *Advances in Evolutionary Algorithms*, pp. 29-48. IN-TECH Education and Publishing, 2008, ISBN 978-953-7619-11-4.

## Theses:

- Stephan M. Winkler: *Evolutionary System Identification - Modern Concepts and Practical Applications*. PhD Thesis. Institute for Formal Models and Verification, Johannes Kepler University Linz, Austria. 2008.
- Stephan M. Winkler: *Identifying Nonlinear Model Structures By Genetic Programming*. Diploma Thesis. Institute of Systems Theory and Simulation, Johannes Kepler University Linz, Austria, 2004.

## Peer-Reviewed Conference Papers:

- Stephan M. Winkler and J. Rafael Sendra: **Fitness Landscape Analysis in the Optimization of Coefficients of Curve Parametrizations**. In *Computer Aided Systems Theory - EUROCAST 2017*, Springer Lecture Notes in Computer Science, Vol. 10671, pp. 464-472, 2018.
- Gabriel Kronberger, Bogdan Burlacu, Michael Kommenda, Stephan M. Winkler, and Michael Affenzeller: **Measures for the Evaluation and Comparison of Graphical Model Structures**. In *Computer Aided Systems Theory - EUROCAST 2017*, Springer Lecture Notes in Computer Science, Vol. 10671, pp. 283-290, 2018.
- Bogdan Burlacu, Michael Affenzeller, Michael Kommenda, Gabriel Kronberger, and Stephan M. Winkler: **Analysis of Schema Frequencies in Genetic Programming**. In *Computer Aided Systems Theory - EUROCAST 2017*, Springer Lecture Notes in Computer Science, Vol. 10671, pp. 432-438, 2018.
- Michael Affenzeller, Bogdan Burlacu, Stephan M. Winkler, Michael Kommenda, Gabriel Kronberger, Stefan Wagner, and Stephan M. Winkler: **Offspring Selection Genetic Algorithm Revisited: Improvements in Efficiency by Early Stopping Criteria in the Evaluation of Unsuccessful Individuals**. In *Computer Aided Systems Theory - EUROCAST 2017*, Springer Lecture Notes in Computer Science, Vol. 10671, pp. 424-431, 2018.
- J. Manuel Colmenar, Stephan M. Winkler, Gabriel Kronberger, Esther Maqueda, Marta Botella, Almudena Sánchez, Sergio Contador, Jose Manuel Velasco, Oscar Garnica, Juan Lanchares, and Ignacio Hidalgo: **Predicción del nivel de glucosa en sangre para pacientes con diabetes utilizando técnicas evolutivas**. *Proceedings of the XI Congreso Español de Metaheurísticas, Algoritmos Evolutivos y Bioinspirados (MAEB 2016)*, Salamanca, September 2016.
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- Georg J. Pirklbauer, Stephan M. Winkler, Karl Mechtler, and Viktoria Dorfer: **Extensions to Peptide Spectrum Match Validation by Semi-Supervised Machine Learning Methods.** *German Conference on Bioinformatics*, Vienna, 2018.
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- Daniela M. Borgmann, Serge Weis, Peter Strasser, and Stephan M. Winkler: **Dementia Classification and Recognition Based on Neuropathological, Haematological, and Genetic Data.** *ECCB 2016 – 15th European Conference on Computational Biology*, Den Haag, September 2016.
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## Patents

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