

# Curriculum Vitae



## Ulrich Bodenhofer

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## Key Facts

*Date of Birth:* April 24, 1972

*Place of Birth:* Braunau am Inn, Austria

*Parents:* Josef Karl Bodenhofer and Elisabeth Theresia Franziska Bodenhofer (maiden name Kiermann)

*Nationality:* Austrian

*Marital Status:* Married to Mag. Verena Christina Bodenhofer (maiden name Palmetzhofer) since March 7, 2002;

*Children:* Lorenz Paul Bodenhofer (born October 7, 2002)  
Ida Franziska Bodenhofer (born September 22, 2007)

*Academic Degrees:* Univ.-Doz. Dipl.-Ing. Dr. techn.

## Current Position

Associate Professor  
Institute of Bioinformatics  
Johannes Kepler University  
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## Education

2006: Courses in time management and sales management; organized by employer Software Competence Center Hagenberg GmbH

2003: Habilitation (Venia Docendi) at Johannes Kepler University Linz; subject "*Mathematics of Knowledge-Based Systems*"; thesis title "*Ordinal Structures in Vague Environments*";

2000 – 2002: Series of courses in project management (both classical approach and Microsoft Solutions Framework), communication, moderation, and leadership; organized by employer Software Competence Center Hagenberg GmbH

1996 – 1998: Doctoral study of technical sciences at Johannes Kepler University Linz; thesis title "*A Similarity-Based Generalization of Fuzzy Orderings*"; supervisor Prof. Erich Peter Klement, co-supervisor Prof. Siegfried Gottwald (University of Leipzig, Germany); graduation ("Dr. techn.") in December 1998 obtaining first-class honors

1990 – 1996: Study of applied mathematics ("*Technische Mathematik, Studienzweig Informations- und Datenverarbeitung*") at Johannes Kepler University Linz; thesis title "*Tuning of Fuzzy Systems Using Genetic Algorithms*"; supervisor Prof. Erich Peter Klement; graduation ("Dipl.-Ing.") in May 1996 obtaining first-class honors

1982 – 1990: Grammar school with emphasis on natural sciences (according to the official Austrian terminology at that time "*Naturwissenschaftliches Realgymnasium ohne Darstellende Geometrie*") in Braunau am Inn; final exam passed with distinction

1978 – 1982: Elementary school in Altheim

## Employment Record

*October 2003 – September 2008:* Lecturer for UDA — Austrian Partners of International Universities (formerly University of Derby in Austria); as such, Associate Lecturer at University of Central Lancashire, UK

*October 2003 – June 2006:* Associate Professor and Deputy Head of Department of Knowledge-Based Mathematical Systems<sup>1</sup>, Johannes Kepler University Linz; range of tasks comprised teaching and scientific directorship at SCCH (see below)

*April 2002 – June 2006:* Scientific Director of Software Competence Center Hagenberg GmbH (SCCH); range of tasks comprised the scientific leadership and positioning of SCCH, the supervision of research activities with special emphasis on interdisciplinary approaches (coordination of research areas), networking with other national and international research institutions, and the integration of SCCH into international programs and projects

*December 1999 – March 2002:* Manager of the Knowledge-Based Technology Area at SCCH; range of tasks comprises research and management of research projects (both fundamental and with industrial partners). These research works can mainly be assigned to the fields of fuzzy systems, neural networks, genetic algorithms, clustering, machine learning, data mining, and natural language processing. They particularly emphasize relevance for real-world applications in process automation, signal & image processing, quality control, and business intelligence

*November 1996 – November 1999:* Full-time research assistant at Fuzzy Logic Laboratorium Linz-Hagenberg (FLLL, at that time, part of the Department of Algebra, Stochastics, and Knowledge-Based Mathematical Systems at Johannes Kepler University Linz); work on several projects involving knowledge-based/fuzzy technologies in the area of signal and image processing within the framework of a long-term partnership between FLLL, Uni Software Plus GmbH, and SONY DADC Austria AG

*October 1996 – June 2003:* External lecturer at Johannes Kepler University Linz

*July/August 1996:* Study concerning the equivalence of two random number generators for Hubert Ebner Verkehrslehrmittel GesmbH (free-lance work)

*March 1994 – October 1996:* Free-lance research assistant at FLLL (at that time, part of the former Department of Mathematics at Johannes Kepler University Linz); development of an inspection system for quality control of silk-screen prints within a cooperation between FLLL, Uni Software Plus GmbH, and SONY DADC Austria AG

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<sup>1</sup>Until December 31, 2003, Dept. of Algebra, Stochastics, and Knowledge-Based Mathematical Systems

*July/August 1992 and July/August 1993: Student apprentice at former Wacker Chemitronic, Burghausen, Germany (now Wacker Siltronic)*

## **Research Areas**

Primary topics of active research:

- Machine learning in bioinformatics, in particular:
  - Classification of biological sequences using kernel methods
  - Prediction of operons and regulons from gene expression data

Secondary topics of active research:

- Theory and applications of fuzzy relations, in particular, fuzzy orderings
- Fuzzy rule-based machine learning and interpretability of fuzzy systems

Former research topics:

- Genetic fuzzy systems
- Clustering and self-organizing maps
- Knowledge-based methods in image processing
- Preference modeling and decision analysis
- Applications of fuzzy relations in flexible query answering systems

## **Involvement in Basic Research Projects**

*2009–2010: project “Cell line based compound prioritization and response prediction” (partners: Johnson & Johnson Pharmaceutical Research & Development, a division of Janssen Pharmaceutica N.V., and several other universities; funded by the Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT) / Belgium)*

*WTZ A–CZ Project 2/2007 (2007–2008): scientific cooperation project entitled “Formal foundations of fuzzy preference modelling” (partners: Institute of Computer Science, Academy of Sciences of the Czech Republic, Dept. of Knowledge-Based Mathematical Systems, Johannes Kepler University, Linz, Austria; sponsored by the program “Wissenschaftlich-Technische Zusammenarbeit”)*

*AdvLearn/AdvLearn2/AdvLearn3/AdvML/RegLearn/RegLearn2 (1999–2006):*

series of projects devoted to basic research in the area of rule-based machine learning and its applications (conducted at Software Competence Center Hagenberg GmbH; partners: Uni Software Plus GmbH, eudaptics software gmbh, and several international research institutions; funded by the *Kplus* Competence Center Program)

*Aktion A–CZ Project 41p19 (2005):* scientific cooperation project entitled “Advanced Fuzzy Modeling” (partner: Institute for Research and Applications of Fuzzy Modeling, University of Ostrava, Czech Republic; sponsored by AKTION Österreich – Tschechische Republik)

*COST Action 276 (2001–2005):* with the title “Information and Knowledge Management for Integrated Media Communication”, this COST action aims to develop advanced multimedia data and knowledge management technologies for personal multimedia communication systems and services, including specific signal processing and implementation techniques (sponsored by the European Union)

*COST Action 274 (2001–2005):* with the title “Theory and Applications of Relational Structures as Knowledge Instruments (TARSKI)”, this COST action is devoted to scientific exchange in theory and applications of relational structures (sponsored by the European Union)

*EvalVoiceXML (2001):* project study concerned with the evaluation of possibilities to embed intelligent language processing techniques in VoiceXML (conducted as cooperation between Software Competence Center Hagenberg GmbH and Forschungszentrum Telekommunikation Wien (FTW); funded by the *Kplus* Competence Center Program)

*SoftClass (1999 – 2001):* project devoted to multidisciplinary approaches in document classification and natural language query systems (conducted at Software Competence Center Hagenberg GmbH; funded by the *Kplus* Competence Center Program)

*CEEPUS Network SK-42 (1995–2005):* network devoted to supporting scientific exchange in the area of fuzzy set theory, fuzzy logic, and fuzzy systems (sponsored by Austrian Exchange Service (ÖAD))

*COST Action 15 (1995 – 2000):* with the title “Many-Valued Logics for Computer Science Applications”, this COST action was devoted to scientific exchange in the area of applied non-classical and fuzzy logics (sponsored by the European Union)

*FWF 10672-ÖTE (1995 – 1998):* with the title “Fuzzy Models of Numerical Input/Output Relationships”, this project was concerned with mathematical foundations of fuzzy modeling (conducted at Fuzzy Logic Laboratorium Linz-Hagenberg; sponsored by the Austrian Science Fund (FWF))

## Involvement in Industrial R& D Projects<sup>2</sup>

*MLF (2002–2006)*: development and continuous evolution of *Machine Learning Framework for Mathematica*, a software product for machine learning and data analysis based on the FeatLearn prototype, the product is now sold worldwide (conducted at Software Competence Center Hagenberg GmbH; partner: Uni Software Plus GmbH)

*Inspire/Inspire2/Inspire3 (2000–2006)*: development and continuous improvement of framework for print inspection (conducted at Software Competence Center Hagenberg GmbH; partners: Uni Software Plus GmbH, Fuzzy Logic Laboratorium Linz-Hagenberg; funded by the *Kplus* Competence Center Program)

*RELAY (2004)*: development of a concept for (semi-)automatic print layer separation from sequences of images, (conducted as a master thesis project at Software Competence Center Hagenberg GmbH; partner: ARC Seibersdorf research GmbH)

*Piranha (2004)*: development of a demonstrator system for print inspection (conducted at Software Competence Center Hagenberg GmbH; partner: ARC Seibersdorf research GmbH)

*ZEPHYR (2003)*: project study concerned with prediction of tolerance intervals for print inspection (conducted at Software Competence Center Hagenberg GmbH; partner: ARC Seibersdorf research GmbH)

*OMEFA/OMEFA2 (2002 – 2003)*: development of mathematical model for optimal allocation/distribution of medical facilities (conducted at Software Competence Center Hagenberg GmbH; partner: Oberösterreichische Gebietskrankenkasse; funded by the *Kplus* Competence Center Program)

*PaperMiner (2002 – 2003)*: development of process analysis tool for paper making based on rule-based machine learning (conducted at Software Competence Center Hagenberg GmbH; partners: Uni Software Plus GmbH, SCA Graphic Laakirchen AG, VOITH Paper AG)

*vStamp (2002 – 2003)*: development of concepts for a virtual stamp for media-safe integrity and authenticity of documents (conducted at Software Competence Center Hagenberg GmbH; partner: Trodat GmbH; funded by the *Kplus* Competence Center Program)

*WoundPic (2002 – 2003)*: development of image processing methods and software prototype for assessment of wounds in chronic wound healing therapeutics (conducted at Software Competence Center Hagenberg GmbH; partners: Uni Software Plus GmbH, Innovationsagentur, WHAT Wild & Hölzenbein KEG)

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<sup>2</sup>Confidential projects not listed

- ORNE (2001 – 2003)*: development of concepts and prototypes for assessing the applicability of operations research methods in new digital business models (conducted at Software Competence Center Hagenberg GmbH; partner: Siemens AG Corporate Technology SE6)
- EVITA.SecEval (2002)*: development of image processing methods for evaluation of security features in lottery industry (conducted at Software Competence Center Hagenberg GmbH; partner: KEBA AG; funded by the *Kplus* Competence Center Program)
- QModel (2001)*: project study concerned with application of machine learning to modeling quality influences for an injection molding process (conducted at Software Competence Center Hagenberg GmbH; partner: ENGEL Maschinenbau GmbH; funded by the *Kplus* Competence Center Program)
- GameStrateg (2000 – 2001)*: project study concerned with suitability of AI methods in game design (conducted at Software Competence Center Hagenberg GmbH; partner: funworld ag)
- LibFuzzy++ (2000)*: development of framework for fuzzy systems and inference (conducted at Software Competence Center Hagenberg GmbH; partners: Uni Software Plus GmbH, Fuzzy Logic Laboratorium Linz-Hagenberg; funded by the *Kplus* Competence Center Program)
- FeatLearn (1999 – 2002)*: development of framework prototype for multi-strategy machine learning and data analysis (conducted at Software Competence Center Hagenberg GmbH; partners: Uni Software Plus GmbH, eudaptics software gmbh; funded by the *Kplus* Competence Center Program)
- SCALES (1995 – 1996)*: development of decision support system for evaluating paper quality by means of test prints (conducted at Fuzzy Logic Laboratorium Linz-Hagenberg; partners: Uni Software Plus GmbH, SCA Graphic Laakirchen AG; sponsored by Austrian Industrial Research Promotion Fund (FFF))
- 1994 – 2002*: continuous involvement in a strategic research and development partnership between Fuzzy Logic Laboratorium Linz-Hagenberg, Uni Software Plus GmbH, and SONY DADC Austria AG; within this organizational framework, involvement in several different research and development projects related to image processing in quality control

## Teaching Experience

- Winter semester 2009/2010*: Lecture “Theoretical Concepts of Machine Learning” (2h/week; Johannes Kepler University Linz)

*Winter semester 2009/2010: Exercises "Theoretical Concepts of Machine Learning"* (1h/week; Johannes Kepler University Linz)

*Winter semester 2009/2010: PhD Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Winter semester 2009/2010: Master Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Summer semester 2009: PhD Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter)

*Summer semester 2009: Master Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Winter semester 2008/2009: Lecture "Theoretical Concepts of Machine Learning"* (2h/week; Johannes Kepler University Linz)

*Winter semester 2008/2009: Exercises "Theoretical Concepts of Machine Learning"* (1h/week; Johannes Kepler University Linz)

*Winter semester 2008/2009: Exercises "Bioinformatics I: Sequence Analysis and Phylogeny"* (2h/week each; Johannes Kepler University Linz: jointly with Mihaela Ionescu)

*Winter semester 2008/2009: PhD Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Winter semester 2008/2009: Master Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Summer semester 2008: Lecture "Many-Valued Logics"* (2h/week; Johannes Kepler University Linz)

*Summer semester 2008: PhD Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Summer semester 2007: Master Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Autumn semester 2007 / spring semester 2008: Lecture "Fuzzy Logic"* (1½h/week; within bachelor study "Computing" of Austrian Partner of International Universities, in cooperation with University of Central Lancashire)

*Winter semester 2007/2008: Lecture "Theoretical Concepts of Machine Learning"* (2h/week; Johannes Kepler University Linz)

*Winter semester 2007/2008: Exercises "Theoretical Concepts of Machine Learning"* (1h/week; Johannes Kepler University Linz)

*Winter semester 2007/2008: PhD Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Winter semester 2007/2008: Master Seminar* (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Summer semester 2007: Exercises "Bioinformatics II: Theoretical Bioinformatics and Machine Learning"* (2h/week each; Johannes Kepler University Linz; jointly with Mihaela Ionescu)

*Summer semester 2007:* PhD Seminar (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Summer semester 2007:* Master Seminar (3h/week; Johannes Kepler University Linz; jointly with Prof. Sepp Hochreiter and Prof. Werner Retschitzegger)

*Autumn semester 2006 / spring semester 2007:* Lecture "Fuzzy Logic" (1½h/week; within bachelor study "Computing" of Austrian Partner of International Universities, in cooperation with University of Central Lancashire)

*Winter semester 2006/2007:* Exercises "Bioinformatics I: Sequence Analysis and Phylogeny" (two groups, 2h/week each; Johannes Kepler University Linz)

*Winter semester 2006/2007:* Lecture "Knowledge-Based Methods in Image Processing and Pattern Recognition" (2h/week; Johannes Kepler University Linz)

*Winter semester 2006/2007:* PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Werner Retschitzegger)

*Winter semester 2006/2007:* Master Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Werner Retschitzegger)

*Summer semester 2006:* Lecture "Many-Valued Logics" (2h/week; Johannes Kepler University Linz)

*Summer semester 2006:* Project seminar "Applications of Fuzzy Logic" (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Summer semester 2006:* Master and PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Winter semester 2005/2006:* Lecture "Genetic Machine Learning" (2h/week; Johannes Kepler University Linz)

*Winter semester 2005/2006:* Seminar "Fuzzy Logic" (2h/week; Johannes Kepler University Linz)

*Winter semester 2005/2006:* Master and PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Autumn semester 2005:* Lecture "Fuzzy Logic" (3h/week; University of Derby in Austria; within bachelor study "Computing" at HTBLA Leonding)

*Summer semester 2005:* Lecture "Knowledge-Based Methods in Image Processing and Pattern Recognition II" (2h/week; Johannes Kepler University Linz)

*Summer semester 2005:* Project seminar "Applications of Fuzzy Logic" (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Summer semester 2005:* Master and PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Winter semester 2004/2005:* Lecture "Knowledge-Based Methods in Image Processing and Pattern Recognition" (2h/week; Johannes Kepler University Linz)

*Winter semester 2004/2005:* Seminar "Fuzzy Logic" (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Winter semester 2004/2005:* Master and PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Autumn semester 2004:* Lecture “Fuzzy Logic” (3h/week; University of Derby in Austria; within bachelor study “Computing” at HTBLA Leonding)

*Summer semester 2004:* Lecture “Many-Valued Logics” (2h/week; Johannes Kepler University Linz)

*Summer semester 2004:* Project seminar “Applications of Fuzzy Logic” (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Summer semester 2004:* Master and PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Winter semester 2003/2004:* Lecture “Genetic Algorithms: Theory and Applications” (2h/week; Johannes Kepler University Linz)

*Winter semester 2003/2004:* Seminar “Fuzzy Logic” (2h/week; Johannes Kepler University Linz)

*Winter semester 2003/2004:* Master and PhD Seminar (2h/week; Johannes Kepler University Linz; jointly with Prof. Erich Peter Klement)

*Autumn semester 2003:* Lecture “Fuzzy Logic” (3h/week; University of Derby in Austria; within bachelor study “Computing” at HTBLA Leonding)

*Winter semester 2002/2003:* Lecture “Knowledge-Based Methods in Image Processing and Pattern Recognition” (2h/week; Johannes Kepler University Linz)

*Summer semester 2002:* Lecture “Neural Networks” (2h/week; Johannes Kepler University Linz)

*Winter semester 2001/2002:* Lecture “Genetic Algorithms: Theory and Applications” (2h/week; Johannes Kepler University Linz)

*Summer semester 2001:* Lecture “Many-Valued Logics” (2h/week; Johannes Kepler University Linz)

*Winter semester 2000/2001:* Lecture “Knowledge-Based Methods in Image Processing and Pattern Recognition” (2h/week; Johannes Kepler University Linz)

*Summer semester 2000:* Lecture “Neural Networks” (2h/week; Johannes Kepler University Linz)

*Winter semester 1999/2000:* Lecture “Genetic Algorithms: Theory and Applications” (2h/week; Johannes Kepler University Linz)

*August 1997:* Ten-hour lecture series about genetic fuzzy systems at the “International Summer School on Advanced Control — Fuzzy, Neural, Genetic” held at Slovak University of Technology, Bratislava, Slovak Republic

*October 1996 – September 1999:* Instructor for “Mathematics for Social and Economical Sciences” (Johannes Kepler University Linz)

## Theses (Co-)Supervised

- *Kernel-based Clustering of Biological Sequences (working title)*, Andreas Kothmeier, M.Sc. thesis, Johannes Kepler University Linz (in progress; main supervisor)
- *Data-driven Sequence Classification with Decision Trees (working title)*, Susanne Brandstetter, M.Sc. thesis, Johannes Kepler University Linz (in progress; main supervisor)
- *Elicitation of Control Strategies from Data-Based Fuzzy Models (working title)*, Rainer Geschray, Ph.D. thesis, Johannes Kepler University Linz (in progress; main supervisor)
- *Revisiting Support Vector Machines and Kernel Methods under the Aspect of Fuzzy Indistinguishability Relations (working title)*, Peter Haslinger, Ph.D. thesis, Johannes Kepler University Linz (in progress; main supervisor)
- *Monte Carlo Semantics: Robust Inference and Logical Pattern Processing Based on Integrated Deep and Shallow Semantic Representations (working title)*, Richard Bergmair, Ph.D. thesis, Faculty of Computer Science and Technology, University of Cambridge, UK (in progress; third supervisor; first supervisor: Dr. Ann Copestake, second supervisor: Prof. Edward J. Briscoe)
- *Cooperative AI within an Unbalanced Distributed Environment (working title)*, Hans-Jörg Prüller, Ph.D. thesis, De Montfort University, Leicester, UK (in progress; third supervisor; first supervisor: Prof. Eric Goodyer, second supervisor: Prof. Robert John)
- *Machine Learning Methods and Their Application to Real-Time Engine Simulation*, Roman A. Heinzle, Ph.D. thesis, Johannes Kepler University Linz (finished 2009; member of reading committee and examination committee; main supervision by Prof. Heinz W. Engl)
- *Properties of Fuzzy Logical Operations*, Milan Petřík, Ph.D. thesis, Czech Technical University, Praha, Czech Republic (finished 2009; member of reading committee and examination committee; main supervision by Prof. Mirko Navara)
- *Inferring Relationships Between Gene Activation and Yeast Metabolic Cycles by SVM-based Sequence Classification*, Thomas Otzasek, M.Sc. thesis, Johannes Kepler University Linz (finished 2009; main supervisor)
- *Characterizing Long Nucleosome-free Regions in the Human Genome Using Support Vector Machines with Sequence Kernels*, Karin Schwarzbauer, M.Sc. thesis, Johannes Kepler University Linz (finished 2009; main supervisor)
- *Evaluation of Algorithms for Computer-Supported Wound Detection and Wound Measurement*, Christoph Bimminger, B.Sc. thesis, University of Central Lancashire, UK (finished 2008; main supervisor)
- *Fuzzy Transform and Its Applications to Problems in Engineering Practice*, Martin Štěpnička, Ph.D. thesis, University of Ostrava, Czech Republic (finished 2008; member of reading committee and examination committee; main supervision by Prof. Irina Perfilieva)

- *An Evaluation of the Use of a Full-Text Information Retrieval System for Searching in Short Domain Specific Texts*, Bernhard Wipplinger, B.Sc. thesis, University of Central Lancashire, UK (finished 2007; main supervisor)
- *Monotonicity Aspects of Linguistic Fuzzy Models*, Ester Van Broekhoven, Ph.D. thesis, Ghent University, Belgium (finished 2007; member of reading committee and examination committee; main supervision by Prof. Bernard De Baets)
- *Fuzzy Tolerance Relations and Closure-like Structures*, Tat'ána Funioková, Ph.D. thesis, Palacký University Olomouc, Czech Republic (finished 2006; external reviewer of thesis; main supervision by Prof. Radim Bělohlávek)
- *Evolutionary Optimization of Game Strategies: a Case Study based on Tetris*, Silvia Schuckert, B.Sc. thesis, University of Derby, UK (finished 2006; main supervisor)
- *Separation of Banknote Print Layers Using a Sequence of Sample Images*, Daniel Soukup, M.Sc. thesis, Johannes Kepler University Linz (finished 2004; main supervisor)
- *Copyright Protection and Watermarking*, Peter Bogdanowicz, B.Sc. thesis, University of Derby, UK (finished 2004; co-supervisor; main supervision by Prof. Josef Scharinger)
- *Self Organizing Maps with Classical and Pulsed Neuronal Networks — A Comparison*, Rainer Worbis, B.Sc. thesis, University of Derby, UK (finished 2004; co-supervisor; main supervision by Dr. Gerhard Höfer)
- *Fuzzy Classifier Systems — A Critical Review and a New Approach*, Peter Haslinger, M.Sc. thesis, Johannes Kepler University Linz (finished 2002; co-supervisor at Software Competence Center Hagenberg; main supervision by Prof. Erich Peter Klement)
- *Fuzzy Genetic Programming — Offline Acquisition of Fuzzy Rules Using Variable-Length GAs*, Gerrit Steinöcker, M.Sc. thesis, Johannes Kepler University Linz (finished 2002; co-supervisor at Software Competence Center Hagenberg; main supervision by Prof. Erich Peter Klement)

## Presentations at Conferences and Other Scientific Talks

November 2009: *A Survey of Applications of Fuzzy Orderings: From Databases to Statistics and Machine Learning*, 14th French Days on Fuzzy Logic and Applications, Annecy (invited plenary talk)

September 2009: *Analyzing Biological Sequences Using Support Vector Machines*, 7th GEN-AU Summer School, Litschau (invited plenary talk)

July 2009: *Modeling Position Specificity in Sequence Kernels by Fuzzy Equivalence Relations*, Joint 13th IFSA World Congress and 6th EUSFLAT Conference, Lisbon

June 2009: *Prediction of Prokaryotic Transcription Units from Microarray Data Revisited*, 17th Annual International Conference on Intelligent Systems for Molecular Biology & 8th European Conference on Computational Biology, Stockholm (poster)

- February 2009: *Similarity Beyond Distances*, Dagstuhl Seminar 09081 “Similarity-Based Learning on Structures”, Dagstuhl
- September 2008: *Robust Rank Correlation Measures for Numerical Observations on the Basis of Fuzzy Orderings*, invited guest lecture at the Institute of Computer Science, Czech Academy of Sciences, Praha
- June 2008: *Fuzzy Logic: Fading Hype or Technology of the Future?* invited guest lecture within the NLIP Seminar Series at the Computer Lab of the University of Cambridge, UK
- September 2007: *Towards Robust Rank Correlation Measures for Numerical Observations on the Basis of Fuzzy Orderings*, 5th Conference of the European Society for Fuzzy Logic and Technology, Ostrava (multimedia presentation in absence)
- July 2006: *Lexicographic Composition of Fuzzy Orderings*, 11th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Paris
- July 2006: *Incremental Learning of Fuzzy Basis Function Networks With a Modified Version of Vector Quantization*, 11th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Paris
- January 2006: *Similarity-Based Fuzzy Orderings: Recent Advances*. 8th International Conference on Fuzzy Set Theory and Applications, Liptovský Ján
- September 2005: *Strict Fuzzy Orderings in a Similarity-Based Setting*. Joint 4th Int. Conf. in Fuzzy Logic and Technology and 11th French Days on Fuzzy Logic and Applications, Barcelona
- February 2005: *Distance-Based Fuzzy Relations in Flexible Query Answering Systems: Overview and Experiences*. 8th International Conference on Relational Methods in Computer Science, St. Catharines
- February 2005: *Relations in Higher-Order Fuzzy Logic III*. 26th Linz Seminar on Fuzzy Set Theory, Linz
- November 2004: *A Three-Stage Approach to Descriptive Data Analysis — Identifying Clusters and Corresponding Interpretable Descriptions from Large Data Sets*. 7th COST Action 276 Workshop, Ankara
- February 2004: *A Review of Construction and Representation Results for Fuzzy Weak Orders*. 25th Linz Seminar on Fuzzy Set Theory, Linz
- January 2004: *Fuzzy Logic-Based Machine Learning in Process Modeling. Methodological Background and Industrial Experiences*. 7th International Conference on Fuzzy Sets Theory and its Applications, Liptovský Ján (invited plenary talk)
- December 2003: *Application Perspectives of Fuzzy Orderings*. COST Action 274 WG2/WG3 Workshop, Gent
- December 2003: *Linearity Axioms for Fuzzy Orderings: A Formal Review*. Int. Workshop on Principles of Fuzzy Preference Modelling and Decision Making, Gent (invited)
- September 2003: *On the Preservation of Monotonicity by Extended Mappings*. 3rd International Conference in Fuzzy Logic and Technology, Zittau (invited)

- July 2003: *Fuzzy Orderings of Fuzzy Sets*. 10th IFSA World Congress, Istanbul (invited)
- May 2003: *Fuzzy Logic-basiertes Machine Learning in der Prozessmodellierung*. 2. Industrielles Symposium Mechatronik, Linz (invited)
- February 2003: *Applications of Fuzzy Orderings: An Overview*. 24th Linz Seminar on Fuzzy Set Theory, Linz
- January 2003: *Fuzzy Logic-Based Machine Learning in Process Modeling. From Data Insights to Optimized Processes*. Symposium "Fuzzy Logic — Eine Technologie setzt sich durch", Hagenberg (invited)
- July 2002: *Binary Ordering-Based Modifiers*. 9th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Anenecy
- June 2002: *Machine Learning: From Data Insights to Business Value*. 2nd Linz Workshop on Key Technologies of Mechatronics "Lernende Verfahren für Modellbildung und Regelung von Antriebssystemen", Linz (invited)
- February 2002: *Monotonicity in Vague Environments*. 23rd Linz Seminar on Fuzzy Set Theory, Linz
- January 2002: *Transitivity-Preserving Aggregation of Fuzzy Relations*. 6th International Conference on Fuzzy Sets Theory and its Applications, Liptovský Ján
- September 2001: *Enriching Vague Queries by Fuzzy Orderings*. 2nd International Conference in Fuzzy Logic and Technology, Leicester (invited)
- July 2001: *Data Mining Using Synergies Between Self-Organizing Maps and Inductive Learning of Fuzzy Rules*. Joint 9th IFSA World Congress and 20th NAFIPS International Conference, Vancouver (invited)
- July 2001: *Data-Driven Construction of Sugeno Controllers: Analytical Aspects and New Numerical Methods*. Joint 9th IFSA World Congress and 20th NAFIPS International Conference, Vancouver
- June 2001: *Generalized Opening and Closure Operators of Fuzzy Relations*. 2nd International ICSC Congress on Computational Intelligence: Methods and Applications, Bangor
- June 2001: *Compactness of Fuzzy Logics*. 2nd International ICSC Congress on Computational Intelligence: Methods and Applications, Bangor
- April 2001: *Similarity-Based Fuzzy Orderings: A Comprehensive Overview*. EUROFUSE Workshop on Preference Modeling and Applications, Granada (invited plenary talk)
- February 2001: *Linearity Axioms for Fuzzy Orderings: Concepts, Properties, and Difficulties*. 22nd Linz Seminar on Fuzzy Set Theory, Linz
- October 2000: *Modelling Linguistic Expressions Using Fuzzy Relations*. 6th International Conference on Soft Computing, Iizuka
- October 2000: *Towards an Axiomatic Treatment of "Interpretability"*. 6th International Conference on Soft Computing, Iizuka (best paper award)

- July 2000: *A General Framework for Ordering Fuzzy Alternatives with Respect to Fuzzy Orderings*. 8th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Madrid (invited)
- June 2000: *Opening and Closure Operators of Fuzzy Relations*. 21st Linz Seminar on Fuzzy Set Theory, Linz
- September 1999: *Representations and Constructions of Strongly Linear Fuzzy Orderings*. EUSFLAT-ESTYLF Joint Conference, Palma de Mallorca
- May 1999: *Adding Similarity to Fuzzy Orderings*. 4th Meeting of the EURO Working Group on Fuzzy Sets and 2nd International Conference on Soft and Intelligent Computing, Budapest
- April 1999: *Interpretability of Fuzzy Rule Bases*. Conference in Applied Mathematics for Undergraduate and Graduate Students, Bratislava
- April 1999: *Interpretability of Fuzzy Rule Bases*. COST Action 15 WG1/WG3 Workshop, Heraklion
- March 1999: *The Construction of Ordering-Based Modifiers*. Neuro-Fuzzy Systems '99, Leipzig
- July 1998: *Overcoming the "crispness" of fuzzy orderings*. COST Action 15 WG2/WG3 Workshop, Mariehamn
- July 1998: *A Generalized Approach to Fuzzy Orderings and Its Applicability in Fuzzy Control*. Invited guest lecture at Technical University of Budapest
- February 1998: *A New Approach to Fuzzy Orderings*. 4th International Conference on Fuzzy Sets Theory and its Applications, Liptovský Ján
- February 1998: *Industrial Applications of Fuzzy Logic*. 4th International Conference on Fuzzy Sets Theory and its Applications, Liptovský Ján (invited plenary talk)
- June 1997: *A New Approach to Fuzzy Orderings*. COST Action 15 WG1/WG3 Workshop, Patras
- October 1996: *Intelligent Signal Interpretation Using Fuzzy Logic And Genetic Algorithms*. International Panel Conference on Soft and Intelligent Computing, Budapest (invited)
- September 1996: *A Fuzzy Algorithm for Pixel Classification based on the Discrepancy Norm*. 5th IEEE International Conference on Fuzzy Systems, New Orleans (poster)
- July 1996: *A Fuzzy Method for Pixel Classification and its Application to Print Inspection*. 6th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Granada (invited)
- June 1996: *Tuning Of Fuzzy Systems Using Genetic Algorithms — Evolutionary Methods Applied To The Design Of Knowledge-Based Systems*. COST Action 15 Conference, Barcelona
- April 1996: *A Fuzzy System for Image Pixel Classification and its Genetic Optimization*. 13th European Meeting on Cybernetics and Systems Research, Vienna (best paper award)

September 1995: *Quality Control of Silk-Screen Prints — An Industrial Application*. Commett AT&Q Courses on Fuzzy Logic, University of Trieste (invited)

June 1995: *Quality Control of Silk-Screen Prints — An Industrial Application*. Commett AT&Q Courses on Fuzzy Logic, University of Trento (invited)

## Special Sessions

July 2004: IEEE International Conference on Fuzzy Systems, Budapest. Special track on “*Fuzzy Methods and Models in Learning From Data*” (24 papers) jointly organized with Prof. Eyke Hüllermeier (Phillips-University, Marburg, Germany) and Prof. Rudolf Kruse (Otto-von-Guericke University, Magdeburg, Germany)

July 2009: Joint 6th EUSFLAT Conference and 13th IFSA World Congress, Lisbon. Special session on “*Fuzzy Sets in Computational Biology*” (3 papers) jointly organized with Prof. Eyke Hüllermeier (Phillips-University, Marburg, Germany) and Prof. Frank Klawonn (University of Applied Sciences Braunschweig-Wolfenbüttel, Germany)

## Passive Participation at International Scientific Events

February 2009: 30th Linz Seminar on Fuzzy Set Theory, Linz

February 2008: 29th Linz Seminar on Fuzzy Set Theory, Linz

July 2007: 15th Annual International Conference on Intelligent Systems for Molecular Biology & 6th European Conference on Computational Biology, Vienna

February 2007: 28th Linz Seminar on Fuzzy Set Theory, Linz

February 2006: 27th Linz Seminar on Fuzzy Set Theory, Linz

May 2005: 8th COST Action 276 Workshop, Trondheim

March/April 2005: COST Action 274 WG1/WG3 Workshop, Málaga

June 2004: COST Action 274 WG1/WG3 Workshop, Tampere

March 2004: COST Action 274 WG1–4 Workshop, Toulouse

June 2000: 3rd International Workshop on Preferences and Decisions, Trento

February 1999: 20th Linz Seminar on Fuzzy Set Theory, Linz

November 1998: COST Action 15 WG1/WG2 Meeting, Vienna

April 1998: COST Action 15 WG1/WG3 Meeting, Liège

February 1998: 19th Linz Seminar on Fuzzy Set Theory, Linz

February 1997: 18th Linz Seminar on Fuzzy Set Theory, Linz

February 1996: 17th Linz Seminar on Fuzzy Set Theory, Linz

September 1993: 13. Österreichischer Mathematikerkongress, Linz

July 1993: 8th Austrian Artificial Intelligence Conference, Linz

## Research Visits

- September 2008:* Academy of Sciences of the Czech Republic, Prague, Czech Republic (1 week; funded by WTZ A–CZ Project 2/2007)
- July/August 2007:* Academy of Sciences of the Czech Republic, Prague, Czech Republic (1 week; funded by WTZ A–CZ Project 2/2007)
- January/February 2004:* Slovak University of Technology, Bratislava, Slovak Republic (1 month; funded by CEEPUS Network SK-42)
- January/February 2002:* Slovak University of Technology, Bratislava, Slovak Republic (1 month; funded by CEEPUS Network SK-42)
- May/June 1999:* Technical University of Budapest, Hungary (1 month; funded by CEEPUS Network SK-42)
- April 1999:* Slovak University of Technology, Bratislava, Slovak Republic (1 month; funded by CEEPUS Network SK-42)
- August 1998:* Ghent University, Belgium (2 weeks; funded by COST Action 15)
- July 1998:* Technical University of Budapest, Hungary (1 month; funded by CEEPUS Network SK-42)
- February 1998:* Slovak University of Technology, Bratislava, Slovak Republic (1 month; funded by CEEPUS Network SK-42)
- August 1997:* Slovak University of Technology, Bratislava, Slovak Republic (1 month; funded by CEEPUS Network SK-42)
- July 1996:* Slovak University of Technology, Bratislava, Slovak Republic (1 month; funded by CEEPUS Network SK-42)

In March 2002, the Austrian Science Fund (FWF) accepted the application for a Erwin Schrödinger Scholarship for a one-year research visit to the Institut d'Investigació en Intel·ligència Artificial (IIIA) in Barcelona. For private reasons, the visit could not be conducted.

## Awards

- November 2003:* Support prize for young scientific talents by the State of Upper Austria (“Talentförderungsprämie des Landes Oberösterreich in der Sparte Wissenschaft”)
- October 2000:* Best paper award at the *6th International Conference on Soft Computing*, Iizuka, Japan
- September 1997:* Erwin-Wenzl-Preis for master thesis “*Tuning of Fuzzy Systems Using Genetic Algorithms*”
- April 1996:* Best paper award of the symposium “*Fuzzy Systems, Approximate Reasoning, and Knowledge-Based Systems*” at the *Thirteenth European Meeting on Cybernetics and Systems Research*, Vienna, Austria

## Memberships

- EUROFUSE — EURO Working Group on Fuzzy Sets (1998–present)
- EUSFLAT — European Society for Fuzzy Logic and Technology (1999–present)
- ICIS — International Computational Intelligence Society (2003–2007)
- IEEE — Institute of Electrical and Electronics Engineers (2000–present)
- IEEE Communications Society (2000–2003)
- IEEE Computational Intelligence Society (2004–present)
- IEEE Information Theory Society (2000–2002)
- IEEE Neural Networks Society<sup>3</sup> (2001–2004)
- IEEE Systems, Man, and Cybernetics Society (2000–2006)
- ISCB — International Society for Computational Biology (2007–present)
- KDNNet — Knowledge Discovery Network of Excellence (2004–present)
- NAFIPS — North American Fuzzy Information Processing Society (2001–2005)
- ÖGAI — Österreichische Gesellschaft für Artificial Intelligence (2004–present)
- SCIP — Soft Computing in Image Processing Working Group (2004 – present)

## Program Committee Memberships

- International Conference on Modeling Decision for Artificial Intelligence, Perpignan, October 27–29, 2010.
- 13th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Dortmund, June 28 – July 2, 2010.
- 4th International Workshop on Genetic and Evolutionary Fuzzy Systems, Mieres, March 17–19, 2010
- 10th International Conference on Fuzzy Set Theory and Applications, Liptovský Ján, February 1–5, 2010.
- International Conference on Fuzzy Computation, Madeira, October 5–7, 2009.
- 1st International Conference on Adaptive and Intelligent Systems, Klagenfurt, September 24–26, 2009.
- 2nd International Symposium on Logistics and Industrial Informatics, Linz, September 10–12, 2009.
- IASTED International Conference on Artificial Intelligence and Soft Computing, Palma de Mallorca, September 7–9, 2009.
- IASTED International Conference on Computational Intelligence, Honolulu, HI, August 17–19, 2009.

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<sup>3</sup>renamed to IEEE Computational Intelligence Society in June 2004

- Joint 6th EUSFLAT Conference and 13th IFSA World Congress, Lisbon, July 20–24, 2009.
- ISCB Student Council Symposium, Stockholm, June 27, 2009
- 2009 Global Congress on Intelligent Systems, Xiamen, May 19–21, 2009.
- 10th International Student Conference on Applied Mathematics and Informatics, Malenovice, May 13–15, 2009.
- IEEE Symposium on Computational Intelligence in Multi-Criteria Decision-Making, Nashville, March 30 – April 2, 2009.
- 30th Linz Seminar on Fuzzy Set Theory, Linz, February 3–7, 2009. (program co-chair).
- International Conference on Modeling Decision for Artificial Intelligence, Sabadell, October 30–31, 2008.
- International Middle Eastern Multiconference on Simulation and Modelling, Amman August 26–28, 2008.
- 1st North American Simulation Technology Conference, Montreal, August 13–15, 2008.
- 3rd International Workshop on Genetic and Evolving Fuzzy Systems, Witten-Bommerholz, March 4–8, 2008.
- 29th Linz Seminar on Fuzzy Set Theory, Linz, February 12–16, 2008.
- 9th International Conference on Fuzzy Set Theory and Applications, Liptovský Ján, February 4–8, 2008.
- 5th International Conference in Fuzzy Logic and Technology, Ostrava, September 11–14, 2007. (general chair).
- 5th International Workshop on Biological Data Management, Regensburg, September 3–7, 2007.
- 6th International Workshop on Web Semantics, Regensburg, September 3–7, 2007.
- International Conference on Modeling Decision for Artificial Intelligence, Kitakyushu, August 16–18, 2007.
- IASTED International Conference on Computational Intelligence, Banff, July 2–4, 2007.
- 2007 Annual Meeting of the North American Fuzzy Information Processing Society, San Diego, June 24–27, 2007.
- 12th IFSA World Congress, Cancun, June 18–21, 2007.
- EUROFUSE Workshop “New Trends in Fuzzy Preference Modelling”, Jaén, April 11–13, 2007.
- 1st IEEE Symposium on Computational Intelligence in Multi-Criteria Decision-Making, Honolulu, April 1–5, 2007.
- 28th Linz Seminar on Fuzzy Set Theory, Linz, February 6–10, 2007.
- IADIS International Conference on e-Commerce, Barcelona, December 9–11, 2006.

- 11th Online World Conference on Soft Computing in Industrial Applications, September 18 – October 6, 2006.
- 9th Fuzzy Days, Dortmund, September 18–20, 2006.
- 2nd International Symposium on Evolving Fuzzy Systems, Lake District, September 7–9, 2006.
- 5th International Workshop on Web Semantics, Krakow, September 4–8, 2006.
- International Middle Eastern Multiconference on Simulation and Modelling, Alexandria, August 28–30, 2006.
- 15th IEEE International Conference on Fuzzy Systems, Vancouver, BC, July 16–21, 2006.
- International Conference on Modeling Decision for Artificial Intelligence, Tarragona, April 3–5, 2006.
- 27th Linz Seminar on Fuzzy Set Theory, Linz, February 7–11, 2006.
- 8th International Conference on Fuzzy Set Theory and Applications, Liptovský Ján, January 30 – February 3, 2006.
- IADIS International Conference on e-Commerce, Porto, December 15–17, 2005.
- International Conference on Machine Learning, Tozeur, November 5–7, 2005.
- 10th Online World Conference on Soft Computing in Industrial Applications, September 19 – October 7, 2005.
- 4th International Conference in Fuzzy Logic and Technology and 11th French Days on Fuzzy Logic and Applications, Barcelona, September 7–9, 2005.
- 4th International Workshop on Web Semantics, Copenhagen, August 22–26, 2005.
- EUROFUSE Anniversary Workshop, Belgrade, June 15–18, 2005.
- 14th IEEE International Conference on Fuzzy Systems, Reno, NV, May 22–25, 2004.
- 26th Linz Seminar on Fuzzy Set Theory, Linz, February 1–5, 2005.
- International Conference on Computational Intelligence, Istanbul, December 15–17, 2004.
- International Conference on Signal Processing, Istanbul, December 15–17, 2004.
- 8th Fuzzy Days, Dortmund, September 29 – October 1, 2004.
- 13th IEEE International Conference on Fuzzy Systems, Budapest, July 25–29, 2004.
- International Conference on Computational Intelligence, Canakkale, February 11–13, 2004.
- 25th Linz Seminar on Fuzzy Set Theory, Linz, February 3–7, 2004.
- 7th International Conference on Fuzzy Sets Theory and Its Applications, Liptovský Ján, January 26–30, 2004.
- 8th Online World Conference on Soft Computing in Industrial Applications, September 29 – October 17, 2003.
- 3rd International Conference in Fuzzy Logic and Technology, Zittau, September 9–12, 2003.

- 5th International Conference on Data Warehousing and Knowledge Discovery, Prague, September 3–5, 2003.
- EUROFUSE Workshop on Information Systems, Varenna, September 23–25, 2002.
- 4th International Conference on Data Warehousing and Knowledge Discovery, Aix en Provence, September 2–6, 2002.
- 8th IEEE International Conference on Fuzzy Systems, Honolulu, May 12–16, 2002.
- 3rd International Conference on Data Warehousing and Knowledge Discovery, Munich, September 5–7, 2001.
- 2nd ICSC International Congress on Computational Intelligence: Methods and Applications, Bangor, June 19–22, 2001.
- EUROFUSE Workshop on Preference Modelling and Decision Analysis, Granada, April 25–28, 2001.

## Editorial Board Memberships

- Advances in Fuzzy Systems, ISSN 1687-7101 (2007–present; associate editor)
- Fuzzy Sets and Systems, ISSN 0165-0114 (2004–present; area editor for Fuzzy Relations and Preference Modeling since 2007)
- International Journal of Computational Intelligence, ISSN 1304-2386 (2004–2007)
- International Journal of Information Technology, ISSN 1305-2403 (2004–2007)
- International Journal of Signal Processing, ISSN 1304-4478 (2004–2007)
- International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, ISSN 0218-4885 (2007–present; area editor)

## Refereeing Activities

Regular refereeing activities for the following international journals:

- Advances in Fuzzy Systems
- Fuzzy Sets and Systems
- IEEE Transactions on Fuzzy Systems
- IEEE Transactions on Systems, Man, and Cybernetics (Parts A, B, and C)
- Information Sciences
- International Journal of Approximate Reasoning
- International Journal of Mathematics and Mathematical Sciences
- International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems
- Kybernetika

- Mathware & Soft Computing

Occasional refereeing activities for the following international journals:

- Artificial Intelligence
- Automatica
- International Journal of Signal Processing
- Journal of Intelligent & Fuzzy Systems
- Journal of Universal Computer Science
- Knowledge and Information Systems
- Kuwait Journal of Science and Engineering
- Scientia Iranica

Moreover, refereeing activities for edited books and numerous international conferences and workshops.

## Other Scientific Activities

- Board member of the European Society for Fuzzy Logic and Technology (September 2001–present)
- President of the European Society for Fuzzy Logic and Technology (September 2005–July 2009)
- Co-organizer of the annual *Linz Seminars on Fuzzy Set Theory* (2001–present)
- Austrian delegate to the management committee of COST Action 274 “Theory and Applications of Relational Structures as Knowledge Instruments (TARSKI)” (2001–2005)

## Computer Skills

*Programming languages:* C, C++, FORTRAN, Perl (proficient and experienced); Java, Pascal, Modula-2, REXX, Prolog, LISP (good knowledge)

*Scientific computing:* excellent skills in Mathematica and R, good skills in Matlab and Octave

*Operating systems:* MS Windows, Linux, Unix, Mac OS

*Typesetting and publishing:*  $\text{\TeX}$ / $\text{\LaTeX}$  professional; excellent knowledge of HTML; experienced user of MS Office and OpenOffice products

## **Language Skills**

- German (mother tongue)
- English (fluent)
- Very basic knowledge in Spanish and Japanese

## **Private Interests, Hobbies**

- Music (electric guitar and piano, both as autodidact)
- HiFi
- Amateur photography
- Railways
- Wine & dine

## List of Publications

The publications in this list are grouped according to categories. Within these categories, the papers are in chronological order. Accepted papers are ordered by their date of submission.

### Books

1. U. Bodenhofer. *A Similarity-Based Generalization of Fuzzy Orderings*, volume C 26 of *Schriftenreihe der Johannes-Kepler-Universität Linz*. Universitätsverlag Rudolf Trauner, 1999. ISBN 3-85487-011-6. 148 pages. (corrected version of PhD thesis published as book).

### Theses

1. U. Bodenhofer. *Tuning of Fuzzy Systems Using Genetic Algorithms*. Master's Thesis, Johannes Kepler Universität Linz, March 1996. 139 pages.
2. U. Bodenhofer. *A Similarity-Based Generalization of Fuzzy Orderings*. PhD Thesis, Johannes Kepler Universität Linz, October 1998. 142 pages.
3. U. Bodenhofer. *Ordinal Structures in Vague Environments*. Habilitation Thesis, Johannes Kepler Universität Linz, February 2003. 230 pages. (collection of individual publications).

### Editorial Work

1. U. Bodenhofer, E. Hüllermeier, F. Klawonn, and R. Kruse, editors. Special Issue on Soft Computing for Information Mining. *Soft Computing*, 11(5):397–494, 2007.
2. M. Štěpnička, V. Novák, and U. Bodenhofer, editors. *New Dimensions in Fuzzy Logic and Related Technologies. Proceedings of the 5th EUSFLAT Conference. Volume I*. University of Ostrava, 2007. 480 pages. ISBN 978-80-7368-386-3.
3. M. Štěpnička, V. Novák, and U. Bodenhofer, editors. *New Dimensions in Fuzzy Logic and Related Technologies. Proceedings of the 5th EUSFLAT Conference. Volume II*. University of Ostrava, 2007. 488 pages. ISBN 978-80-7368-387-0.
4. U. Bodenhofer, B. De Baets, E. P. Klement, and S. Saminger-Platz, editors. *The Legacy of 30 Seminars — Where Do We Stand and Where Do We Go? Abstracts of the 30th Linz Seminar on Fuzzy Set Theory*. Johannes Kepler University Linz 2009. 128 pages.

## Book Chapters

1. U. Bodenhofer and F. Herrera. Ten lectures on genetic fuzzy systems. In R. Mesiar, editor, *Preprints of the International Summer School: Advanced Control — Fuzzy, Neural, Genetic*, pages 1–69. Slovak Technical University, Bratislava, 1997. ISBN 80-227-0978-6.
2. U. Bodenhofer and E. P. Klement. Genetic optimization of fuzzy classification systems — a case study. In B. Reusch and K.-H. Temme, editors, *Computational Intelligence in Theory and Practice*, Advances in Soft Computing, pages 183–200. Physica-Verlag, Heidelberg, 2001. ISBN 3-7908-1357-5.
3. U. Bodenhofer. A general framework for ordering fuzzy sets. In B. Bouchon-Meunier, J. Guitiérrez-Río, L. Magdalena, and R. R. Yager, editors, *Technologies for Constructing Intelligent Systems 1: Tasks*, volume 89 of *Studies in Fuzziness and Soft Computing*, pages 213–224. Physica-Verlag, Heidelberg, 2002. ISBN 3-7908-1454-7.
4. M. Burger, J. Haslinger, and U. Bodenhofer. Tuning of fuzzy systems as an ill-posed problem. In M. Anile, V. Capasso, and A. Greco, editors, *Progress in Industrial Mathematics at ECMI 2000*, volume 1 of *Mathematics in Industry*, pages 493–498. Springer, 2002. ISBN 3-540-42582-9.
5. T. Weiler and U. Bodenhofer. Approximation of belief functions by minimizing Euclidean distances. In P. Grzegorzewski, O. Hryniewicz, and M. A. Gil, editors, *Methods in Probability, Statistics and Data Analysis*, Advances in Soft Computing, pages 170–177. Physica-Verlag, Heidelberg, 2002. ISBN 3-7908-1526-8.
6. U. Bodenhofer and P. Bauer. A formal model of interpretability of linguistic variables. In J. Casillas, O. Cordón, F. Herrera, and L. Magdalena, editors, *Interpretability Issues in Fuzzy Modeling*, volume 128 of *Studies in Fuzziness and Soft Computing*, pages 524–545. Springer, Berlin, 2003. ISBN 3-540-02932-X.
7. U. Bodenhofer. Fuzzy “between” operators in the framework of fuzzy orderings. In B. Bouchon-Meunier, L. Foulloy, and R. R. Yager, editors, *Intelligent Systems for Information Processing: From Representation to Applications*, pages 59–70. Elsevier, Amsterdam, 2003. ISBN 0-444-51379-5.
8. U. Bodenhofer and F. Klawonn. Linearity axioms for fuzzy orderings: a formal review. In B. De Baets and J. Fodor, editors, *Principles of Fuzzy Preference Modelling and Decision Making*, pages 1–14. Academia Press, Gent, 2003. ISBN 90-382-0567-8.
9. U. Bodenhofer. Applications of fuzzy orderings: an overview. In K. T. Atanassov, O. Hryniewicz, and J. Kacprzyk, editors, *Soft Computing. Foundations and Theoretical Aspects*, pages 81–95. EXIT, Warsaw, 2004. ISBN 83-87674-69-9.
10. S. Saminger, U. Bodenhofer, E. P. Klement, and R. Mesiar. Aggregation of fuzzy relations and preservation of transitivity. In H. C. M. de Swart, E. Orłowska,

M. Roubens, and G. Schmidt, editors, *Theory and Applications of Relational Structures as Knowledge Instruments II*, volume 4342 of *Lecture Notes in Computer Science*, pages 185–206. Springer, 2006. ISBN 3-540-69223-1.

11. U. Bodenhofer, J. Küng, and S. Saminger. Flexible query answering using distance-based fuzzy relations. In H. C. M. de Swart, E. Orłowska, M. Roubens, and G. Schmidt, editors, *Theory and Applications of Relational Structures as Knowledge Instruments II*, volume 4342 of *Lecture Notes in Computer Science*, pages 207–228. Springer, 2006. ISBN 3-540-69223-1.
12. U. Bodenhofer, B. De Baets, and J. Fodor. General representation theorems for fuzzy weak orders. In H. C. M. de Swart, E. Orłowska, M. Roubens, and G. Schmidt, editors, *Theory and Applications of Relational Structures as Knowledge Instruments II*, volume 4342 of *Lecture Notes in Computer Science*, pages 229–244. Springer, 2006. ISBN 3-540-69223-1.
13. U. Bodenhofer. Lexicographic composition of similarity-based fuzzy orderings. In B. Bouchon-Meunier, C. Marsala, M. Rifqi, and R. R. Yager, editors, *Uncertainty and Intelligent Information Systems*, chapter 33, pages 457–469. World-Scientific, 2008. ISBN 978-981-279-234-1.

## Articles in Refereed International Journals

1. U. Bodenhofer. A new approach to fuzzy orderings. *Tatra Mt. Math. Publ.*, 16:21–29, 1999.
2. U. Bodenhofer. A similarity-based generalization of fuzzy orderings preserving the classical axioms. *Internat. J. Uncertain. Fuzziness Knowledge-Based Systems*, 8(5):593–610, 2000.
3. M. Drobits, U. Bodenhofer, and W. Winiwarter. Mining clusters and corresponding interpretable descriptions — a three-stage approach. *Expert Systems*, 19(4):224–234, 2002.
4. M. Burger, J. Haslinger, U. Bodenhofer, and H. W. Engl. Regularized data-driven construction of fuzzy controllers. *J. Inverse Ill-Posed Probl.*, 10(4):319–344, 2002.
5. S. Saminger, R. Mesiar, and U. Bodenhofer. Domination of aggregation operators and preservation of transitivity. *Internat. J. Uncertain. Fuzziness Knowledge-Based Systems*, 10(Suppl.):11–35, 2002.
6. U. Bodenhofer. A note on approximate equality versus the Poincaré paradox. *Fuzzy Sets and Systems*, 133(2):155–160, 2003.
7. M. Drobits, U. Bodenhofer, and E. P. Klement. FS-FOIL: An inductive learning method for extracting interpretable fuzzy descriptions. *Internat. J. Approx. Reason.*, 32(2–3):131–152, 2003.

8. U. Bodenhofer. A unified framework of opening and closure operators with respect to arbitrary fuzzy relations. *Soft Computing*, 7:220–227, 2003.
9. U. Bodenhofer. Representations and constructions of similarity-based fuzzy orderings. *Fuzzy Sets and Systems*, 137(1):113–136, 2003.
10. U. Bodenhofer, M. De Cock, and E. E. Kerre. Openings and closures of fuzzy preorderings: Theoretical basics and applications to fuzzy rule-based systems. *Int. J. General Systems*, 32(4):343–360, 2003.
11. U. Bodenhofer and F. Klawonn. A formal study of linearity axioms for fuzzy orderings. *Fuzzy Sets and Systems*, 145(3):323–354, 2004.
12. U. Bodenhofer and J. Küng. Fuzzy orderings in flexible query answering systems. *Soft Computing*, 8(7):512–522, 2004.
13. U. Bodenhofer and P. Bauer. Interpretability of linguistic variables: a formal account. *Kybernetika*, 41(2):227–248, 2005.
14. U. Bodenhofer, B. De Baets, and J. Fodor. A compendium of fuzzy weak orders: representations and constructions. *Fuzzy Sets and Systems*. 158(8):811–829, 2007.
15. U. Bodenhofer and M. Demirci. Strict fuzzy orderings with a given context of similarity. *Internat. J. Uncertain. Fuzziness Knowledge-Based Systems*. 16(2):147–178, 2008.
16. L. Běhounek, U. Bodenhofer, and P. Cintula. Relations in fuzzy class theory: initial steps. *Fuzzy Sets and Systems*. 159(14):1729–1772, 2008.
17. U. Bodenhofer and F. Klawonn. Robust rank correlation coefficients on the basis of fuzzy orderings: initial steps. *Mathware Soft Comput.* 15(1):5–20, 2008.
18. U. Bodenhofer. Orderings of fuzzy sets based on fuzzy orderings Part I: the basic approach. *Mathware Soft Comput.* 15(2):201–218, 2008.
19. U. Bodenhofer. Orderings of fuzzy sets based on fuzzy orderings Part II: generalizations. *Mathware Soft Comput.* 15(3):219–249, 2008.
20. D. Soukup, U. Bodenhofer, M. Mittendorfer-Holzer, and K. Mayer. Semi-automatic identification of print layers from a sequence of sample images: a case study from banknote print inspection. *Image Vision Comput.* 27(8):989–998, 2009.

## Articles in National Journals

1. M. Pichler, U. Bodenhofer, and W. Schwinger. Context-awareness and artificial intelligence. *ÖGAI Journal*, 23(1):4–11, 2004.

## Papers in Proceedings of Conferences with Peer Review

1. P. Bauer, U. Bodenhofer, and E. P. Klement. A fuzzy system for image pixel classification and its genetic optimization. In R. Trappl, editor, *Cybernetics and Systems '96*, volume 1, pages 285–290, Austrian Society for Cybernetic Studies, Vienna, 1996. ISBN 3-85206-133-4.
2. P. Bauer, U. Bodenhofer, and E. P. Klement. A fuzzy method for pixel classification and its application to print inspection. In *Proc. 6th Int. Conf. on Information Processing and Management of Uncertainty in Knowledge-Based Systems*, volume 3, pages 1301–1305, Granada, July 1996. ISBN 84-8254-076-9.
3. P. Bauer, U. Bodenhofer, and E. P. Klement. A fuzzy algorithm for pixel classification based on the discrepancy norm. In *Proc. 5th IEEE Int. Conf. on Fuzzy Systems*, volume III, pages 2007–2012, New Orleans, LA, September 1996. ISBN 0-7803-3645-3.
4. U. Bodenhofer and E. P. Klement. Pixel classification: A fuzzy-genetic approach. In *Proc. 7th IFSA World Congress*, volume 4, pages 38–43, Prague, June 1997. ISBN 80-200-0633-8.
5. U. Bodenhofer. The construction of ordering-based modifiers. In G. Brewka, R. Der, S. Gottwald, and A. Schierwagen, editors, *Fuzzy-Neuro Systems '99*, pages 55–62. Leipziger Universitätsverlag, 1999. ISBN 3-933240-75-1.
6. U. Bodenhofer. Adding similarity to fuzzy orderings. In *Proc. 4th Meeting of the EURO Working Group on Fuzzy Sets and 2nd Int. Conf. on Soft and Intelligent Computing*, pages 194–199, Budapest, May 1999. ISBN 963-7149-21X.
7. U. Bodenhofer. Representations and constructions of strongly linear fuzzy orderings. In *Proc. EUSFLAT-ESTYLF Joint Conference*, pages 215–218, Palma de Mallorca, September 1999.
8. U. Bodenhofer. A general framework for ordering fuzzy alternatives with respect to fuzzy orderings. In *Proc. 8th Int. Conf. on Information Processing and Management of Uncertainty in Knowledge-Based Systems*, volume II, pages 1071–1077, Madrid, July 2000. ISBN 84-95479-02-8.
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