

# Curriculum Vitae Stephan Dreiseitl

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born	August 17 <sup>th</sup> , 1968 in Innsbruck, Austria
citizenship	Austrian
languages	German, English, French
marital status	married, two children

## Education

1986–1988	Student of mathematics at the University of Innsbruck.
1988–1990	Student of mathematics and computer science at the University of Illinois at Urbana-Champaign.
1990–1993	Student of technical mathematics at the University of Linz, Austria. Concluded diploma studies with master's degree ( <i>Dipl.-Ing.</i> ).
1993–1997	PhD student at the Research Institute for Symbolic Computation (University of Linz). Concluded studies with doctoral degree ( <i>Dr. techn.</i> ).
1997	Participated in the NATO ASI “Generalization in Neural Networks and Machine Learning” in Cambridge, UK.
1998–1999	Research Fellow at the Decision Systems Group of Harvard Medical School/MIT in Boston, MA, USA.
2007	Habilitation for the field “knowledge-based systems” at the University of Linz

## Work Experience and Research

May–June 1990	Summer internship at Siemens, Vienna.
May 1991–June 1992	Research work in the scope of the project “Symbolic Computation for Artificial Neural Networks” with Siemens München.

October 1993–March 1996	Research work in the scope of the project “Hybrid Evolutionary Programming” with the Real World Computing Partnership, Japan.
June–August 1994	Visiting researcher at the Orthopedic Engineering Research Group of the Carolinas Medical Center in Charlotte, NC, USA.
October 1996–February 2000	Lecturer for mathematics at the Upper Austria University of Applied Sciences at Hagenberg, Austria.
November 1997–August 1998	Senior software developer for RISC Software GmbH.
September 1999–August 2000	Research assistant at the Research Institute for Symbolic Computation.
from October 2000	Professor of mathematics at the Upper Austria University of Applied Sciences at Hagenberg, Austria.
from March 2002	Lectures at the Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, USA.
from October 2002	Lecturer at the University of Health Sciences and Technology Tirol (UMIT), Austria.
from September 2005	Lecturer at the University of Applied Sciences of the Management Center Innsbruck, Austria.
April 2006–September 2008	Research fellow at the University of Health Sciences and Technology Tirol (UMIT), Austria.
November 2007–April 2010	Adjunct faculty at the Decision Systems Group of Harvard Medical School/MIT in Boston, MA, USA.
from March 2009	Adjunct Professor, Dept. of Biomedical Sciences and Engineering, University of Health Sciences and Technology Tirol (UMIT), Austria.

## Honors

1988–1989	Fulbright scholar at the University of Illinois.
1993	Diploma graduation with distinction, Johannes Kepler University, Austria.
1997	Award of the Austrian science minister for outstanding academic achievements.
1997	Doctoral graduation with highest honors ( <i>sub auspiciis praesidentis</i> ), Johannes Kepler University, Austria.
1998–1999	Erwin-Schrödinger scholarship of the Austrian Science Foundation for postdoc position at Harvard Medical School/MIT.
2004, 2005	Best teacher awards, degree programs <i>Software Engineering</i> and <i>Bioinformatics</i> , Upper Austria University of Applied Sciences at Hagenberg, Austria.

## Activities in the Scientific Community

Referee for the journals *Biomed Central*, *Journal of Biomedical Informatics*, *IEEE Transactions on Robotics and Automation*, *Medical Decision Making*, *Medical Physics*, *Artificial Intelligence in Medicine*, *Clinical Neurophysiology*, *Applied Intelligence*, *Computational Statistics & Data Analysis*, *International Journal of Biomedical Imaging*, *Computers in Biology and Medicine*, *Medical & Biological Engineering & Computing*, *Journal of Electronic Commerce Research*.

Program committee member of the workshops *ROC Analysis in Artificial Intelligence (2004)* and *ROC Analysis in Machine Learning (2005,2006)*.

## Journal and Conference Papers

- [1] S. Dreiseitl and M. Osl. Effect of reject option on classifier performance. In *Proceedings of the 23rd European Modeling and Simulation Symposium (EMSS2011)*, pages 176–180, Rome, Italy, 2011.
- [2] S. Dreiseitl and M. Osl. Effects of data grouping on calibration measures of classifiers. In *Computer Aided Systems Theory—EUROCAST 2011 (LNCS 6927)*, pages 359–366, Las Palmas, Spain, 2011.
- [3] M. Osl and S. Dreiseitl. Early diagnosis of acute myocardial infarction using kernel methods. In *Proceedings of the 8th IASTED International Conference on Biomedical Engineering*, pages 175–180, Innsbruck, Austria, 2011.
- [4] G. Binenbaum, G. Ying, G.E. Quinn, S. Dreiseitl, K. Karp, R.S. Roberts, H. Kirpalani, and the PINT study group. A clinical prediction model to stratify ROP risk using postnatal weight gain. *Pediatrics*, 127(3):e607–e614, 2011.
- [5] S. Dreiseitl, M. Osl, C. Baumgartner, and S. Vinterbo. An evaluation of heuristics for rule ranking. *Artificial Intelligence in Medicine*, 50(3):175–180, 2010.
- [6] M. Osl, S. Dreiseitl, J. Kim, K. Patel, C. Baumgartner, and L. Ohno-Machado. Effect of data combination on predictive modeling: A study using gene expression data. In *Proceedings of the AMIA Annual Fall Symposium 2010*, pages 567–571, Washington DC, USA, 2010.
- [7] S. Dreiseitl, M. Osl, C. Scheibböck, and M. Binder. Outlier detection with one-class SVMs: An application to melanoma prognosis. In *Proceedings of the AMIA Annual Fall Symposium 2010*, pages 172–176, Washington DC, USA, 2010.
- [8] C. Scheibböck, T. Mehl, D. Rafolt, S. Dreiseitl, K. Schlager, J. Weingast, and M. Binder. Prediction of metastatic disease by computer aided interpretation of tumour markers in patients with malignant melanoma: a feasibility study. In *Proceedings of ehealth2010: Health Informatics meets ehealth*, pages 161–166, Vienna, Austria, 2010.

- [9] S. Dreiseitl, K. Auracher, S. Puig, and J. Malveyh. Modeling of standardized data entry in dermoscopy. In *Proceedings of the 21st European Modeling and Simulation Symposium (EMSS2009)*, pages 184–188, Tenerife, Spain, 2009.
- [10] S. Dreiseitl. Data processing beyond visual interpretation. In *Proceedings of the 10th International Congress of Dermatology*, pages 81–86, Prague, Czech Republic, 2009.
- [11] S. Dreiseitl and M. Osl. Feature selection based on pairwise classification performance. In *Computer Aided Systems Theory—EUROCAST 2009 (LNCS 5717)*, pages 769–776, Las Palmas, Spain, 2009.
- [12] S. Dreiseitl and L. Ohno-Machado. Support vector machines. In M.W. Kattan, editor, *Encyclopedia of Medical Decision Making*, pages 1101–1105. SAGE Publications, 2009.
- [13] M. Osl, S. Dreiseitl, F. Cerqueira, M. Netzer, B. Pfeifer, and C. Baumgartner. Demoting redundant features to improve the discriminatory ability in cancer data. *Journal of Biomedical Informatics*, 42:721–725, 2009.
- [14] M. Osl, C. Baumgartner, B. Tilg, and S. Dreiseitl. On the combination of logistic regression and local probability estimates. *African Journal of Information and Communication Technology*, 5:84–90, 2009. Extended version of the paper [17].
- [15] S. Dreiseitl, M. Binder, K. Hable, and H. Kittler. Computer versus human diagnosis of melanoma: Evaluation of the feasibility of an automated diagnostic system in a prospective clinical trial. *Melanoma Research*, 19:180–184, 2009.
- [16] C. Scheibböck, S. Dreiseitl, and M. Binder. Applicability of mobile phones for tele-dermatology: a pilot study. In *Proceedings of the International Conference on Health Informatics—HEALTHINF 2009*, pages 474–477, Porto, Portugal, 2009.
- [17] M. Osl, C. Baumgartner, B. Tilg, and S. Dreiseitl. On the combination of logistic regression and local probability estimates. In *Proceedings of the 3rd International Conference on Broadband Communications, Information Technology and Biomedical Applications*, pages 124–128, Pretoria, South Africa, 2008.
- [18] M. Osl, L. Ohno-Machado, and S. Dreiseitl. Improving calibration of logistic regression models by local estimates. In *Proceedings of the AMIA Annual Fall Symposium 2008*, pages 535–539, Washington DC, USA, 2008.
- [19] M. Osl, S. Dreiseitl, B. Pfeifer, K. Weinberger, H. Klocker, G. Bartsch, G. Schäfer, B. Tilg, A. Graber, and C. Baumgartner. A new rule-based algorithm for identifying metabolic markers in prostate cancer using tandem mass spectrometry. *Bioinformatics*, 24:2908–2914, 2008.
- [20] S. Dreiseitl, M. Binder, S. Vinterbo, and H. Kittler. Applying a decision support system in clinical practice: Results from melanoma diagnosis. In *Proceedings of the AMIA Annual Fall Symposium 2007*, pages 191–195, Chicago, USA, 2007.
- [21] S. Dreiseitl. Training multiclass classifiers by maximizing the volume under the ROC surface. In *Computer Aided Systems Theory—EUROCAST 2007 (LNCS 4739)*, pages 878–885, Las Palmas, Spain, 2007.

- [22] M. Binder, H. Kittler, H. Pehamberger, and S. Dreiseitl. Differentiation between benign and malignant skin tumors by image analysis, neural networks, and other methods of machine learning. In K.-P. Wilhelm et al., editors, *Bioengineering of the Skin: Skin Imaging and Analysis*, pages 297–304. Informa Healthcare, 2nd edition, 2006.
- [23] S. Vinterbo and S. Dreiseitl. A note on solution sizes in the haplotype tagging SNPs problem. In *Proceedings of the 2nd European Modeling and Simulation Symposium (EMSS2006)*, pages 659–663, 2006.
- [24] S.A. Vinterbo, S. Dreiseitl, and L. Ohno-Machado. Approximation properties of haplotype tagging. *BMC Bioinformatics*, 7(8), 2006.
- [25] S. Dreiseitl, A. Harbauer, M. Binder, and H. Kittler. Nomographic representation of logistic regression models: A case study using patient self-assessment data. *Journal of Biomedical Informatics*, 38:389–394, 2005.
- [26] S. Dreiseitl and M. Binder. Do physicians value decision support? A look at the effect of decision support systems on physician opinion. *Artificial Intelligence in Medicine*, 33:25–30, 2005.
- [27] S. Vinterbo, S. Dreiseitl, and L. Ohno-Machado. A testing procedure for htSNP approximation algorithms. In *Proceedings of the Workshop on Intelligent Data Analysis in Medicine and Pharmacology (IDAMAP 2004)*, pages 101–105, 2004.
- [28] S. Dreiseitl, S. Vinterbo, and L. Ohno-Machado. Disambiguation data: Extracting information from anonymized sources. *Journal of the American Medical Informatics Association*, 9:S110–S114, 2002.
- [29] S. Dreiseitl and L. Ohno-Machado. Logistic regression and artificial neural network classification models: a methodology review. *Journal of Biomedical Informatics*, 35:352–359, 2002.
- [30] L. Ohno-Machado, S. Vinterbo, S. Dreiseitl, T.K. Jenssen, and W. Kuo. Comparing imperfect measurements with the Bland-Altman technique: application in gene expression analysis. In *Proceedings of the AMIA Annual Fall Symposium 2002*, pages 572–576, San Antonio, USA, 2002.
- [31] L. Ohno-Machado, S. Vinterbo, and S. Dreiseitl. Effects of data anonymization by cell suppression on descriptive statistics and predictive modeling performance. *Journal of the American Medical Informatics Association*, 9:S115–S119, 2002.
- [32] S. Dreiseitl, L. Ohno-Machado, S. Vinterbo, H. Billhardt, and M. Binder. A comparison of machine learning methods for the diagnosis of pigmented skin lesions. *Journal of Biomedical Informatics*, 34:28–36, 2001.
- [33] W. Jacak, K. Pröll, and S. Dreiseitl. Conflict management in an intelligent multi-agent robotics system: Finite state machine approach. In *Computer Aided Systems Theory—EUROCAST’01 (LNCS 2178)*, pages 52–66, 2001.

- [34] W. Jacak, S. Dreiseitl, K. Pröll, and J. Rozenblit. Conflict management in multiagent robotic system: FSM and fuzzy logic approach. In *Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics (SMC'2001)*, pages 1593–1598, 2001.
- [35] S. Vinterbo, L. Ohno-Machado, and S. Dreiseitl. Hiding information by cell suppression. In *Proceedings of the AMIA Annual Fall Symposium 2001*, pages 726–730, Washington, USA, 2001.
- [36] S. Dreiseitl, L. Ohno-Machado, and M. Binder. Comparing three-class diagnostic tests by three-way ROC analysis. *Medical Decision Making*, 20:323–331, 2000.
- [37] S. Dreiseitl, H. Kittler, H. Ganster, and M. Binder. Classifying pigmented skin lesions with machine learning methods. In *Artificial Neural Networks in Medicine and Biology: Proceedings of the ANNIMAB-1 Conference*, pages 174–179. Springer London, 2000.
- [38] F. Atienza, N. Martinez-Alzamora, J.A. De Velasco, S. Dreiseitl, and L. Ohno-Machado. Risk stratification in heart failure using artificial neural networks. In *Proceedings of the AMIA Annual Fall Symposium 2000*, pages 32–36, 2000.
- [39] M. Binder, H. Kittler, S. Dreiseitl, H. Ganster, K. Wolff, and H. Pehamberger. Computer-aided epiluminescence microscopy of pigmented skin lesions: The value of clinical data for the classification process. *Melanoma Research*, 10:556–561, 2000.
- [40] M. Binder and S. Dreiseitl. Critical appraisal: The interpretation of test results. *Journal of Cutaneous Medicine and Surgery*, 4:19–25, 2000.
- [41] L.K. Goodwin, S.G. Maher, L. Ohno-Machado, S. Dreiseitl, S. Vinterbo, M.A. Iannacchione, W.E. Hammond, and P. Crockett. Building knowledge in a complex preterm birth problem domain. In *Proceedings of the AMIA Annual Fall Symposium 2000*, pages 305–309, 2000.
- [42] K. Pröll, W. Jacak, and S. Dreiseitl. Software agent-based intelligent control of robot manipulator. In *Proceedings of the International Conference on Intelligent Autonomous Systems (IAS'2000)*, Venice, Italy, 2000.
- [43] S. Dreiseitl, L. Ohno-Machado, and S. Vinterbo. Evaluating variable selection methods for diagnosis of myocardial infarction. In *Proceedings of the AMIA Annual Fall Symposium 1999*, pages 246–250, 1999.
- [44] W. Jacak and S. Dreiseitl. Intelligent robotic agent combining reactive and cognitive capabilities. In S. Tzafestas, editor, *Advances in Intelligent Autonomous Systems*, pages 93–113. Kluwer Acad. Pub., 1999.
- [45] W. Jacak, B. Buchberger, and S. Dreiseitl. Lifelong learning based intelligent robotic agent: Novel neural network approach. In *Proceedings of the 1997 Real World Computing Symposium (RWC'97)*, Tokyo, Japan, 1997.
- [46] W. Jacak and S. Dreiseitl. Lifelong learning approach to intelligent agents modeling. In *Computer Aided Systems Theory—EUROCAST'97 (LNCS 1333)*, pages 367–379, Gran Canaria, Spain, 1997.

- [47] W. Jacak and S. Dreiseitl. Multisensor reactive robot arm. In *Proceedings of the 1st Workshop on Teleoperations and Robotics Applications in Science and Arts*, pages 41–54, Linz, Austria, 1997.
- [48] W. Jacak and S. Dreiseitl. Intelligent robotic agent combining reactive and cognitive capabilities. In *Proceedings of IEEE International Conference on Systems, Man and Cybernetics (SMC'97)*, Orlando, USA, 1997.
- [49] S. Dreiseitl. Modeling of discrete dynamical systems by neural networks and genetic algorithms. In *Proceedings of the 13th European Meeting on Cybernetics and Systems Research (EMCSR'96)*, pages 89–94, Vienna, Austria, 1996.
- [50] S. Dreiseitl. Discrete dynamical system modeling by evolved neural networks. In *Proceedings of the 11th International Conference on Systems Engineering (ICSE'96)*, pages 19–24, Las Vegas, USA, 1996.
- [51] W. Jacak, B. Buchberger, S. Dreiseitl, and T. Kubik. Intelligent robotic arm based on reactive control. In *Proceedings of the 5th International Workshop on Robotics in the Alpe-Adria-Danube Region (RAAD'96)*, pages 297–302, Budapest, Hungary, 1996.
- [52] W. Jacak and S. Dreiseitl. Robotic agent control combining reactive and learning capabilities. In *Proceedings of the IEEE International Conference on Neural Networks (ICNN'96)*, pages 1682–1686, Washington, USA, 1996.
- [53] W. Jacak, S. Dreiseitl, and R. Muszyński. Neural network-based modeling of robot action effects in conceptual state space of real world. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'96)*, pages 1149–1156, Osaka, Japan, 1996.
- [54] W. Jacak and S. Dreiseitl. Neural network-based modeling of intelligent robotic agent behavior. In *Proceedings of the International Conference on Information Systems Analysis and Synthesis (ISAS'96)*, pages 82–89, Orlando, USA, 1996.
- [55] S. Dreiseitl, W. Jacak, T. Kubik, and R. Muszyński. Neural processing-based robot kinematics modeling and calibration for pose control. In *Proceedings of the 12th International Conference on Systems Science*, pages 288–295, Wroclaw, Poland, 1995.
- [56] S. Dreiseitl and W. Jacak. Genetic algorithm-based neural networks for dynamical system modeling. In *Proceedings of the IEEE International Conference on Evolutionary Computing (ICEC'95)*, pages 602–607, Perth, Australia, 1995.
- [57] B. Buchberger, S. Dreiseitl, I. Duleba, W. Jacak, T. Kubik, R. Muszynski, and D. Schlosser. Hybrid programming approach to the design of an intelligent robotic agent acting in the real world. In *Proceedings of the 1995 Real World Computing Symposium (RWC'95)*, pages 15–16, Tokyo, Japan, 1995.
- [58] W. Jacak and S. Dreiseitl. Hybrid evolutionary programming—the tools for CAST. In *Computer Aided Systems Theory—EUROCAST'95 (LNCS 1030)*, pages 289–304, Innsbruck, Austria, 1995.

- [59] W. Jacak, S. Dreiseitl, T. Kubik, and D. Schlosser. Distributed planning and control of intelligent robot's arm motion based on symbolic and neural processing. In *Proceedings of the IEEE International Conference on Systems, Man and Cybernetics (SMC'95)*, volume 3, pages 2898–2903, Vancouver, Canada, 1995.
- [60] S. Dreiseitl and T. Kubik. Neural-processed inverse kinematics of robot manipulators. In *Proceedings of the Third International Conference on Automation, Robotics, and Computer Vision*, volume 3, pages 1748–1751, Singapore, 1994.
- [61] S. Dreiseitl and D. Wang. Automatic generation of C++ code for neural network simulation. In *New trends in neural computing (LNCS 686)*, pages 358–363, Sitges, Spain, 1993.

## Talks and Posters at Conferences

- [1] S. Dreiseitl. Client-server system for standardized dermoscopy report (talk). *3rd World Congress of Teledermatology*, Amsterdam, Netherlands, 2010.
- [2] S. Dreiseitl. Computer support for teledermatology (invited talk). *7th World Congress on Melanoma*, Vienna, Austria, 2009.
- [3] S. Dreiseitl, K. Auracher, S. Puig, and J. Malveyh. Computer support for standardized dermoscopy report (poster). *First World Meeting of Interdisciplinary Melanoma/Skin Cancer Centers*, Barcelona, Spain, 2007.
- [4] S. Dreiseitl, M. Binder, and H. Kittler. Investigating the benefits of decision support systems: Lessons from melanoma diagnosis (poster). *28th Annual Meeting of the Society for Medical Decision Making*, Boston, USA, 2006.
- [5] S. Dreiseitl and C. Grana. Calibration/standardization: An important issue for image acquisition (invited talk). *First Congress of the International Dermoscopy Society*, Naples, Italy, 2006.
- [6] S. Dreiseitl. Classifiers (invited talk). *10th World Congress on Cancers of the Skin*, Vienna, Austria, 2005.
- [7] H. Kittler, S. Dreiseitl, and M. Binder. How easily can dermatologists be influenced by a decision-support system? (poster). *24th Annual Meeting of the Society for Medical Decision Making*, Baltimore, USA, 2002.
- [8] A. Harbauer, H. Kittler, S. Dreiseitl, and M. Binder. Evaluating a patient's ability to self-assess melanoma risk (poster). In *24th Annual Meeting of the Society for Medical Decision Making*, Baltimore, USA, 2002.
- [9] S. Dreiseitl and L. Ohno-Machado. Self-organizing maps for visualization of medical data sets (poster). *AMIA Annual Fall Symposium*, Washington, USA, 1999.
- [10] L. Ohno-Machado, S. Vinterbo, A. Ohrn, and S. Dreiseitl. Clinical data processing tools: A machine learning resource (poster). *AMIA Annual Fall Symposium*, Washington, USA, 1999.