Extended Curriculum Vitae

CONTACT INFORMATION

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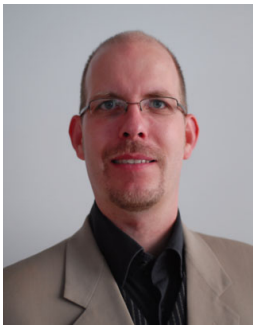

Contents

1 Tabular Curriculum Vitae

EDUCATION

2003–2007	Habilitation at ETH Zurich, Switzerland; Venia legendi in *Virtual Reality in Medicine*, April 2007; Habilitation thesis: *Surgical Scene Generation for Virtual Reality-Based Training in Medicine*
1999–2003	Doctoral studies at ETH Zurich, Switzerland; PhD thesis: *Haptically Assisted Interactive 3D Segmentation of the Intestinal System*, March, 2003
1998–1999	Exchange student, Computer Science, University of Houston, TX
1997–1998	Study of Computer Science at Technical University of Braunschweig, Germany; Diploma degree in March 1999
1994–1997	Study of Medical Informatics at University of Hildesheim, Germany; Predidiploma degree in August 1996

POSITIONS

2005–present	Senior researcher and Lecturer at Computer Vision Lab of ETH Zurich, Switzerland; Leader of the Virtual Reality in Medicine group
Oct 2007	Founder company VirtaMed, Management board member
Aug–Sep 2006	Visiting scientist at BioMedIALab, CSIRO, Sydney, Australia
2003–2005	Postdoc at Computer Vision Lab of ETH Zurich, Switzerland; Leader of the Virtual Reality in Medicine group
Feb 2005	Visiting scientist at Precision and Intelligence Lab, Tokyo Institute of Technology, Japan
Jun–Aug 2004	Visiting scientist at Virginia Modeling and Simulation Center, Norfolk, VA
1999–2003	Graduate researcher at Computer Vision Lab of ETH Zurich, Switzerland
1998–1999	Student researcher at Virtual Environment Technology Lab of University of Houston, TX
Aug 1998	Internship at Institute of Design Aerodynamics at German Aerospace Center DLR, Braunschweig, Germany
1997–1998	Research assistant at Institute of Scientific Computing of Technical University Braunschweig, Germany
1996–1997	Teaching assistant at Institute of Mathematics of University of Hildesheim, Germany

2 Honors, Awards, Activities

SERVICE TO COMMUNITY

Associate editor of ACM Transactions on Applied Perception (TAP) (since 2004)
Associate editor of IEEE Transactions on Haptics (ToH) (2008–2011)
Chair IEEE Robotics & Automation/Computer Society Technical Committee on Haptics (TCH) (2008–2010)
Founder of EuroHaptics Conference (2000)
Founding member of IEEE Transactions on Haptics (2008)
Founding member of EuroHaptics Society (2007)
Member of WorldHaptics Steering Committee (since 2007)
Steering Committee of International Symposium on Biomedical Simulation (since 2005)
Vice-Chair Conferences of IEEE TCH (since 2011)
Vice-President of EuroHaptics Society (2006–2008)
IEEE Transactions on Haptics EIC Search Committee (2007)
Guest editor of Presence (2011), IEEE ToH (2010), ACM TAP (2005)

CONFERENCE ORGANIZATION

Co-Chair of Symposium on Applied Perception in Graphics and Visualization (2012)
WorldHaptics Conference Editorial Board (2008–2011)
Area Chair/PC of MICCAI Conference (2008, 2012)
Program Chair of WorldHaptics (2007, 2009, 2011)
Co-Chair of 3^{rd} International Symposium on Biomedical Simulation (2006)
Program Chair of EuroHaptics (2004)
Associate editor of IEEE International Conference on Robotics and Automation (2007–2012)
Associate editor of IEEE/RSJ International Conference on Intelligent Robots and Systems (2008–2010)
Organizing committee of EuroHaptics (2001)
Chair of PHANToM Users Research Symposium (2000)

AWARDS

International Society for Computer Assisted Orthopedic Surgery (CAOS) Award (2006)
ETH-TIT Award for excellent young scientists (2003)
European Community/U.S. Department of Education (FIPSE) Scholarship (1998)
venture kick First price for VirtaMed business plan (2008)
IEEE RAS Most Active Technical Committee Award (2007)
Best Poster Award CTI MedTech (2010), Best Paper Award MICCAI (2007)
Best Paper Runner-Up EuroHaptics (2006), Haptic Symposium (2008, 2010)
Swiss MedTech Award Runner-Up (2011)

Founder company VirtaMed, management board member (2007–2008)
ETH D-ITET Departement Conference (DK) lecturer representative (since 2006)
Scientific assistants representative at Computer Vision Lab (2001–2003)
ETH D-ITET DK representative of scientific staff (2000)
ETH Promoting Future Mentoring program participant (2001)
Invited expert JSPS-SNSF Seminar on Computer-Aided Surgery (2007)
Member of IEEE, IEEE RAS/CS, IEEE TCH, MICCAI Society, EuroHaptics Society

3 Acquired Funding

PROJECT DETAILS

Duration	*Description*	*Contribution*	*ETH Funding*
2011–2013	Rapid PRO, CTI project, BBT	*main proposer, project leader*	378k CHF
2010–2011	Strategic Korean-Swiss Cooperative Program	*main proposer, project leader*	18k CHF
2010–2013	DDMOAR, SNSF project	*main proposer, project leader*	156k CHF
2010–2013	BEAMING, EU project, 7^{th} FP ICT (http://beaming-eu.org/)	*proposal preparation, project partner*	532k EUR
2009–2011	NCCR transfer project, Virtual patient models, SNF	*main proposer, project leader*	390k CHF
2009–2011	Arthros, CTI project, BBT	*main proposer, project leader*	411k CHF
2009–2010	Strategic Korean-Swiss Cooperative Program	*main proposer, project leader*	12k CHF
2008–2011	PASSPORT, EU Projekt, 7^{th} FP ICT (http://www.passport-liver.eu)	*proposal preparation, project partner*	432k EUR
2006–2009	Immersence, EU project, 6^{th} FP IST-027141 (http://www.immersence.info)	*proposal preparation, project partner*	890k EUR
2005–2009	SNF NCCR Co-Me 2, project 4 (http://www.hystsim.ethz.ch)	*main proposer, project leader*	1'892k CHF
2005–2008	CyberWalk, EU project, 6^{th} FP IST-511092 (http://www.cyberwalk-project.org)	*proposal preparation, project partner*	353k EUR
2005–2006	SYNOS foundation project	*work leader*	90k CHF
2004–2008	INTUITION, EU project, 6^{th} FP NoE IST/NMP-507248-2 (http://www.intuition-eunetwork.net)	*proposal preparation, project partner*	51k EUR
2002–2006	TOUCH-HapSys, EU project, 5^{th} FP IST-2001-38040 (http://www.touch-hapsys.org)	*proposal preparation, project partner*	460k EUR

Duration	*Description*	*Contribution*	*ETH Funding*
2001–2005	SNF NCCR Co-Me 1, project 8 (http://www.co-me.ch)	*proposal preparation, work leader*	3'817 CHF
			11'483k CHF

Through my contribution third party funding of 11'483k CHF could be acquired for our research at ETH Zurich since 2001. The total sum of funding for these projects amounts to 52'441k CHF.

4 Publications

BOOKS, CHAPTERS, PROCEEDINGS

[1] M. Harders and R. Riener, *Virtual Reality in Medicine*, Springer, 2011, (in print).

[2] M. Harders, R. Hoever, S. Pfeifer, and T. Weise, Data-Driven Haptic Rendering of Deformable Bodies, in *Immersive Multimodal Interactive Presence*, edited by C. Giachritsis and A. Peer, Springer, 2011, (in print).

[3] M. Harders and G. Szekely, Simulatoren für die Ausbildung, in *Computerassistierte Chirurgie*, edited by P. Schlag, S. Eulenstein, M. Kleemann, and T. Lange, Elsevier, 2010.

[4] M. Harders, P. Leskovsky, T. Cooke, M. Ernst, and G. Szekely, Design and Evaluation of Haptic Soft Tissue Interaction, in *Touch-HapSys Book*, edited by M. Ernst, M.Buss, M. Ueberle, and A. Bicchi, Springer Verlag, 2008.

[5] M. Harders, Haptics in Medical Applications, in *Haptic Rendering: Algorithms and Applications*, edited by M. Lin and M. Otaduy, AK Peters, 2008.

[6] M. Harders, *Surgical Scene Generation for Virtual Reality-Based Training in Medicine*, Springer Verlag, 2008.

[7] M. Harders and G. Szekely, editors, *Proceedings of the 3rd International Symposium on Biomedical Simulation*, volume LNCS 4072 of *Lecture Notes in Computer Science*, Springer Verlag, Zurich, Switzerland, 2006.

[8] M. Harders and M. Ernst, editors, *EuroHaptics Special Issue*, volume 2 of *Transactions on Applied Perception*, ACM, 2005.

[9] P. Cattin, M. Harders, R. Sierra, and G. Szekely, Computer Supported Segmentation of Radiological Data, in *Handbook of Medical Image Analysis: Advanced Segmentation and Registration Models*, edited by J. Suri, D. Wilson, and S. Laxminarayan, Kluwer Verlag, 2005.

[10] M. Harders and S. Huber, editors, *Proceedings of the 2nd PHANToM Users Research Symposium*, volume 8 of *Selected Readings in Vision and Graphics*, Hartung-Gorre Verlag, Zurich, Switzerland, 2000.

[11] M. Harders, *Haptically Assisted Interactive 3D Segmentation of the Intestinal System*, volume 21 of *Selected Readings in Vision and Graphics*, Hartung-Gorre Verlag, 2003, PhD Dissertation ETH Zurich No. 14948.

JOURNAL PAPERS

[12] J. Spillmann and M. Harders, Robust Interactive Collision Handling between Tools and Thin Volumetric Objects, *IEEE Transactions on Visualization and Computer Graphics* (2011), (accepted).

[13] S. Jeon, S. Choi, and M. Harders, Rendering Virtual Tumors in Real Tissue Mock-Ups Using Haptic Augmented Reality, *IEEE Transactions on Haptics* (2011), (accepted).

[14] B. Fierz, J. Spillmann, I. Aguinaga, and M. Harders, Maintaining Large Time Steps in Explicit Finite Element Simulations using Shape Matching, *IEEE Transactions on Visualization and Computer Graphics* (2011), (in press).

[15] M. Seiler, J. Spillmann, and M. Harders, Robust Interactive Cutting Based on an Adaptive Octree Simulation Mesh, *The Visual Computer* **27**, 519 (2011).

[16] M. D. Luca, B. Knoerlein, M. Ernst, and M. Harders, Effects of Visual-Haptic Asynchronies and Loading-Unloading Movements on Compliance Perception, *Brain Research Bulletin* **85**, 245 (2011), ISI Impact Factor 2.184.

[17] P. Fuernstahl, G. Szekely, C. Gerber, J. Hodler, and M. Harders, Computer-Assisted Reconstruction of Complex Proximal Humerus Fractures for Preoperative Planning, *Medical Image Analysis* (2010), ISI Impact Factor 3.093.

[18] I. Aguinaga, B. Fierz, J. Spillmann, and M. Harders, Filtering of High Modal Frequencies for Stable Real-Time Explicit Integration of Deformable Objects using the Finite Element Method, *Biophysics and Molecular Biology* **103**, 225 (2010), ISI Impact Factor 3.992.

[19] R. Hoever, M. D. Luca, and M. Harders, User-Based Evaluation of Data-Driven Haptic Rendering, *ACM Transactions on Applied Perception* **8**, 1 (2010), ISI Impact Factor 1.447.

[20] M. Seiler, J. Spillmann, and M. Harders, A Threefold Representation for the Adaptive Simulation of Embedded Deformable Objects in Contact, *Journal of WSCG* **18**, 89 (2010).

[21] B. Fierz, J. Spillmann, and M. Harders, Stable Explicit Integration of Deformable Objects by Filtering High Modal Frequencies, *Journal of WSCG* **18**, 81 (2010).

[22] A. Schweizer, P. Fuernstahl, M. Harders, G. Szekely, and L. Nagy, Complex Radius Shaft Malunion: Osteotomy with Computer-Assisted Planning, *Hand* **5**, 171 (2010).

[23] J. Fornaro, M. Keel, M. Harders, B. Marincek, G. Szekely, and T. Frauenfelder, An Interactive Surgical Planning Tool for Acetabular Fractures: Initial Results, *Journal of Orthopaedic Surgery and Research* **5**, 1 (2010).

[24] J. Spillmann and M. Harders, Inextensible Elastic Rods with Torsional Friction based on Lagrange Multipliers, *Computer Animation and Virtual Worlds* **21**, 561 (2010), ISI Impact Factor 0.55.

[25] M. Bajka, S. Tuchschmid, D. Fink, G. Szekely, and M. Harders, Establishing Construct Validity of a Virtual Reality Training Simulator for Hysteroscopy via a Multi Metric Scoring System, *Surgical Endoscopy* **24**, 79 (2009), ISI Impact Factor 3.231.

[26] P. Niederer, S. Weiss, R. Caduff, M. Bajka, G. Szekely, and M. Harders, Uterus Models for Use in Virtual Reality Hysteroscopy Simulators, *European Journal of Obstetrics & Gynecology and Reproductive Biology* **144**, S90 (2009), ISI Impact Factor 1.432.

[27] R. Hoever, G. Kosa, G. Szekely, and M. Harders, Data-Driven Haptic Rendering – from Viscous Fluids to Visco-Elastic Solids, *IEEE Transactions on Haptics* **2**, 15 (2009).

[28] S. Suter, M. Harders, C. Papageorgopoulu, G. Szekely, and F. Ruehli, Standardized and Semiautomated Harris Lines Detection, *American Journal of Physical Anthropology* **137**, 362 (2008), ISI Impact Factor 2.136.

[29] S. Tuchschmid, M. Bajka, D. Szczerba, B. Lloyd, G. Szekely, and M. Harders, Modelling Intravasation of Liquid Distension Media in Surgical Simulators, *Medical Image Analysis* **12**, 567 (2008), ISI Impact Factor 3.505.

[30] M. Harders, G. Bianchi, B. Knoerlein, and G. Szekely, Calibration, Registration, and Synchronization for High Precision Augmented Reality Haptics, *Transactions on Visualization and Computer Graphics* **15**, 138 (2009), ISI Impact Factor 1.794.

[31] M. Bajka, S.Tuchschmid, M. Streich, D. Fink, G. Szekely, and M. Harders, Evaluation of a New Virtual Reality Training Simulator for Hysteroscopy, *Surgical Endoscopy* **23**, 2026 (2009), ISI Impact Factor 3.231.

[32] M. Harders, D. Bachofen, M. Bajka, M. Grassi, B. Heidelberger, R. Sierra, U. Spaelter, D. Steinemann, M. Teschner, S. Tuchschmid, J. Zatonyi, and G. Székely, Virtual Reality Based Simulation of Hysteroscopic Interventions, *Presence: Teleoperators and Virtual Environments* **17**, 441 (2008), ISI Impact Factor 1.0.

[33] C. Basdogan, M. Sedef, M. Harders, and S. Wesarg, VR-Based Simulators for Training in Minimally Invasive Surgery, *IEEE Computer Graphics and Applications* **27**, 54 (2007), ISI Impact Factor 1.429.

[34] B. Lloyd, G. Szekely, and M. Harders, Identification of Spring Parameters for Deformable Object Simulation, *IEEE Transactions on Visualization and Computer Graphics* **13**, 1081 (2007), ISI Impact Factor 1.794.

[35] M. Harders and G. Szekely, Enhancing Human Computer Interaction in Medical Segmentation, *Proceedings of the IEEE* **91**, 1430 (2003), ISI Impact Factor 3.686.

[36] M. Harders, S. Wildermuth, and G. Szekely, New Paradigms for Interactive 3D Volume Segmentation, *Journal of Visualization and Computer Animation* **13**, 85 (2002), ISI Impact Factor 0.644.

CONFERENCES (PEER-REVIEWED)

[37] S. Jeon and M. Harders, Extending Haptic Augmented Reality: Modulating Stiffness during Two-Point Squeezing, in *Proc. of Haptics Symposium*, 2012, (accepted).

[38] B. Fierz, J. Spillmann, and M. Harders, Element-Wise Mixed Implicit-Explicit Integration for Stable Dynamic Simulation of Deformable Objects, in *Proc. of ACM/Eurographics Symposium on Computer Animation*, pp. 257–265, 2011.

[39] S. Jeon, J. Metzger, S. Choi, and M. Harders, Extensions to Haptic Augmented Reality: Modulating Friction and Weight, in *Proc. of WorldHaptics*, pp. 227–232, 2011.

[40] B. Knoerlein and M. Harders, Comparison of Tracker-Based to Tracker-Less Haptic Device Calibration, in *Proc. of WorldHaptics*, pp. 119–124, 2011.

[41] L. Gutierrez, I. Aguinaga, B. Fierz, F. Ramos, and M. Harders, Pitting a New Hybrid Approach for Maintaining Simulation Stability after Mesh Cutting Against Standard Remeshing Strategies, in *Proc. of Computer Graphics International*, 2011.

[42] W. Abdelrahman, S. Nahavandi, D. Creighton, and M. Harders, Data-Driven Computation of Contact Dynamics During Two-Point Manipulation of Deformable Objects, in *Proc. of WINVR*, 2011.

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[44] R. Hoever and M. Harders, Measuring and Incorportating Slip into Data-Driven Haptic Rendering, in *Proc. of Haptics Symposium*, pp. 175–182, 2010.

[45] S. Tuchschmid, M. Bajka, and M. Harders, Comparing Simulator with Expert Assessment of Virtual Surgical Procedures, in *Proc. of ISBMS*, pp. 181–191, 2010.

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[47] O. Lazarevych, G. Szekely, and M. Harders, Decomposing the Linear Complementarity Problem into Separate Contact Regions, in *Proc. of WSCG*, pp. 185–192, 2010.

[48] J. Fornaro, G. Szekely, and M. Harders, Semi-Automatic Segmentation of Fractured Pelvic Bones for Surgical Planning, in *Proc. of ISBMS*, pp. 82–89, 2010.

[49] O. Lazarevych, J. Spillmann, C. Renner, G. Szekely, and M. Harders, Friction Handling for Penalty-Based Methods, in *Proc. of VRIPHYS*, pp. 135–144, 2009.

[50] B. Knoerlein, M. D. Luca, and M. Harders, Influence of Visual and Haptic Delays on Stiffness Perception in Augmented Reality, in *Proc. of ISMAR*, pp. 49–52, 2009.

[51] G. Kosa, R. Hoever, D. Szczerba, G. Szekely, and M. Harders, Fast Experimental Estimation of Drag Coefficients of Arbitrary Structures, in *Proc. of IROS*, pp. 249–254, 2009.

[52] P. Fuernstahl, A. Schweizer, L. Nagy, G. Szekely, and M. Harders, A Morphological Approach to the Simulation of Forearm Motion, in *Proc. of EMBC*, pp. 7168–7171, 2009.

[53] R. Hoever, M. D. Luca, G. Szekely, and M. Harders, Computationally Efficient Techniques for Data-Driven Haptic Rendering, in *Proc. of WorldHaptics*, pp. 39–44, 2009.

[54] S. Misra, P. Fuernstahl, K. Ramesh, A. Okamura, and M. Harders, Quantifying Perception of Nonlinear Elastic Tissue Models using Multidimensional Scaling, in *Proc. of WorldHaptics*, pp. 570–575, 2009.

[55] P. Fuernstahl, T. Fuchs, A. Schweizer, L. Nagy, G. Szekely, and M. Harders, Automatic and Robust Forearm Bone Segmentation Based on Graph Cuts, in *IEEE International Symposium on Biomedical Imaging*, pp. 77–80, 2008.

[56] B. Lloyd, S. Kirac, G. Szekely, and M. Harders, Identification of Dynamic Mass Spring Parameters for Deformable Body Simulation, in *Proc. of Eurographics*, pp. 131–134, 2008.

[57] R. Hoever, M. Harders, and G. Szekely, Data-Driven Haptic Rendering of Visco-Elastic Effects, in *Symposium on Haptic Interfaces for Virtual Environments and Teleoperator Systems*, pp. 201–208, 2008.

[58] J. Fornaro, M. Harders, M. Keel, B. Marincek, O. Trentz, G. Szekely, and T. Frauenfelder, Interactive Visuo-Haptic Surgical Planning Tool for Pelvic and Acetabular Fractures, in *Proc. of Medicine Meets Virtual Reality*, pp. 123–125, 2008.

[59] M. Harders, A. Barlit, C. Gerber, J. Hodler, and G. Szekely, An Optimized Surgical Planning Environment for Complex Proximal Humerus Fractures, in *MICCAI Workshop on Interaction in Medical Image Analysis and Visualization*, 2007.

[60] M. Harders and G. Szekely, Using Statistical Shape Analysis for the Determination of Uterine Deformation States during Hydrometra, in *Proc. of MICCAI*, pp. 858–865, 2007.

[61] S. Tuchschmid, M. Bajka, D. Szczerba, B. Lloyd, G. Szekely, and M. Harders, Modelling Intravasation of Liquid Distension Media in Surgical Simulators, in *Proc. of MICCAI*, pp. 717–724, 2007.

[62] M. Harders, G. Bianchi, and B. Knoerlein, Multimodal Augmented Reality in Medicine, in *Proc. Intl. Conference on Human-Computer Interaction*, volume 6, 2007.

[63] B. Knoerlein, G. Szekely, and M. Harders, Visuo-Haptic Collaborative Augmented Reality Ping-Pong, in *ACM Conference on Advances in Computer Entertainment Technology*, pp. 91–94, 2007.

[64] J. Fornaro, M. Keel, M. Harders, B. Marincek, O. Trentz, G. Szekely, and T. Frauenfelder, Virtual Reposition and Fixation of Complex Pelvic and Acetabular Fractures: An Interactive Visuo-Haptic Surgical Planning Tool, in *Proc. Computer Assisted Radiology and Surgery (CARS)*, 2007.

[65] A. Barlit and M. Harders, GPU-Based Distance Map Calculation for Vector Field Haptic Rendering, in *Proc. of WorldHaptics*, pp. 589–590, 2007.

[66] S. Tuchschmid, M. Bajka, D. Bachofen, G.Szekely, and M. Harders, Objective Assessment of Surgical Performance in Hysteroscopy Simulation, in *Proc. of Medicine Meets Virtual Reality*, pp. 473–478, 2007.

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[71] P. Leskovsky, T. Cooke, M. Ernst, and M. Harders, Using Multidimensional Scaling to Quantify the Fidelity of Haptic Rendering of Deformable Objects, in *Proc. of EuroHaptics*, pp. 289–296, 2006.

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[73] D. Steinemann, M. Harders, G. Szekely, and M. Gross, Hybrid Cutting of Deformable Solids, in *Proc. of IEEE Computer Society Conference on Virtual Reality*, pp. 35–42, 2006.

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[77] D. Bachofen, J. Zatonyi, M. Harders, P. Frueh, and M. Thaler, Enhancing the Visual Realism of Hysteroscopy Simulation, in *Proc. of Medicine Meets Virtual Reality*, pp. 31–37, 2006.

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[98] M. Harders, Virtual and Augmented Reality for Surgical Simulation, in *Seminar Computer-Aided Surgery: Present State and Future Technical and Clinical Challenges*, 2007.

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[100] G. Bianchi, C. Jung, B. Knoerlein, M. Harders, and G. Szekely, Misalignment Errors between the Real and Virtual World in Augmented Reality, in *Mixed Reality and Computing in the Physical World*, 2005.

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[102] J. Spillmann and M. Harders, Incompressible Thin Shells, in *(tbd)*, 2011, in review.

MISC

[103] M. Harders and M. Ernst, EuroHaptics Special Issue Editorial, ACM TAP, 2005.

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5 Program Committees, Reviewing

JOURNALS

IEEE Transactions on Visualization and Computer Graphics (2004–2012)
IEEE Transactions on Robotics (2006–2010)
IEEE Computer Graphics and Applications (2009–2010)
IEEE Transactions on Instrumentation & Measurement (2010)
IEEE Transactions on Haptics (2010–2011)
IEEE Transactions on Medical Imaging (2004–2011)
ASME Transactions Computing and Information Science in Engineering (2010)
ACM Transactions on Applied Perception (2004–2009)
Advances in Human-Computer Interaction (2011)
Computer Methods in Biomechanics and Biomedical Engineering (2010)
Progress in Biophysics and Molecular Biology (2010)
Medical Physics (2010)
International Journal of Robotics Research (2006–2008)
Presence: Teleoperators and Virtual Environments (2004–2011)
Medical Image Analysis (2008)
Medical Science Monitor (2007)
Technology and Health Care Journal (2006–2007)
Computer Methods and Programs in Biomedicine (2009)
Virtual Reality Journal (2005)

CONFERENCES

IEEE Virtual Reality Conference (2006–2012)
IEEE Symposium on 3D User Interfaces (2006–2012)
IEEE Haptics Symposium (2008–2012)
IEEE International Symposium on Haptic Audio-Visual Environments (2005–2011)
IEEE International Symposium on Mixed and Augmented Reality (2011)
IEEE International Bioinformatics & Bioengineering (2007)
IEEE Engineering in Medicine and Biology (2007)
IEEE Conference on Information Visualization (2007)
IEEE International Symposium on Biomedical Imaging (2010–2011)
IEEE Visualization (2006–2007)
IEEE Symposium on Visual Analytics, Science and Technology (2007)
IEEE International Workshop on Haptic and Audio Interaction Design (2006–2007)
ACM Symposium on Virtual Reality Software & Technology (2007)
ACM SIGGRAPH Asia (2008,2011)
ACM Symposium on Applied Perception in Graphics and Visualization (2006–2010)
Medical Image Computing and Computer-Assisted Intervention (2005–2010)
Robotics Science and Systems Conference (2007, 2010)
International Symposium on Visual Computing (2007)
ASME World Conference on Innovative Virtual Reality (2011)

Joint IPT and Eurographics Virtual Environments Symposium (2007)
Joint Virtual Reality Conference (2010)
Haptex Workshop (2007)
Symposium on Virtual Reality for Medicine & Surgery (2010)
Haptic Audio Visual Environments and their Applications (2005–2007)
International Symposium on Biomedical Simulation (2006)
Eurographics (2005)
EuroHaptics (2001–2010)

OTHER

Swiss National Science Foundation (2011)
National Research Council of Canada Genomics and Health (2010)
Dutch Technology Foundation (STW) (2010)
Research Grants Council (RGC) of Hongkong (2010)
Hongkong Innovation and Technology Support Program (ITSP) (2009)
Visualization program, Knowledge Foundation Schweden (2007)
Cambridge University Press books (2007)
CAOS International fellowship committee (2007–2008)
Reviewer Canadian Natural Sciences and Engineering Research Council (NSERC) (2006)
EU IST-FET reviewer 5th, 6th, and 7th FP (2002–2010)
WorldHaptics awards committee (2005)

6 Teaching

LECTURES, SEMINARS

2003–present	*Virtual Reality in Medicine*, graduate lecture at Department of Information Technology and Electrical Engineering, ETH Zurich
2003–2007	*Surgical Simulation*, undergraduate PPS seminar at Department of Information Technology and Electrical Engineering, ETH Zurich
2009	*Computational Methods in Haptics*, symposium at USNCCM 2009, organizer, San Francisco, CA, USA
2008	*Integration of Haptics in Virtual Environments: from Perception to Rendering*, tutorial at IEEE VR 2008, organizer, Reno, NV, USA
2007	*Integration of Haptics in Virtual Environments: A Perception-Based Approach*, tutorial at IEEE VR 2007, organizer, Charlotte, NC, USA.
2006	*Perception-Based Haptic Rendering*, tutorial at EuroHaptics 2006, organizer, Paris, France
2004	Mechatronics seminar series on *Computer Haptics* at ETH Zurich, organizer
2003	Lecture on *Visualization in Medicine*, part of Nachdiplomstudium Medizinphysik at ETH Zurich
1999–2000	*Computer Vision* I/II - D-ITET, ETH Zurich, teaching assistent
1996–1997	*Diskrete Strukturen* I/II - Institute of Mathematics, University Hildesheim, teaching assistent

PHD STUDENTS (ETH ZURICH)

Advisor, thesis committee:

Anatolii Sianov	*(Bimanual Data-Driven Haptic Rendering)*	Since Feb 2011
Martin Seiler	*(Robust Real-Time Simulation of Deformable Objects)*	Since May 2009
Basil Fierz	*(Stabilizing Dynamic Simulations in Virtual Surgery)*	Since Nov 2008
Olexiy Lazarevych	*(Contact Handling in Medical Simulations)*	Since Dec 2007
Benjamin Knoerlein	*Exploring Visuo-Haptic Augmented Reality for Training*	PhD, Jun 2011
Philipp Fuernstahl	*Computer Assisted Planning for Orthopedic Surgery*	PhD, Aug 2010
Bryn Lloyd	*Computational Modeling of Tumor Growth*	PhD, Apr 2010
Stefan Tuchschmid	*High Fidelity Surgical Simulator for Hysteroscopy*	PhD, Apr 2010
Raphael Hoever	*Recording and Data-Driven Rendering of Haptic Feedback*	PhD, Jan 2010
Peter Leskovsky	*Haptic Rendering of Frictional Tool-Tissue Contact*	PhD, Dec 2007
Christoph Spuhler	*Interactive Centerline Finding in Complex Tubular Structures*	PhD, Jun 2006
Gerald Bianchi	*Exploration of Augmented Reality Technology for Surgical Training Simulators*	PhD, Oct 2006

PHD STUDENTS (EXTERNAL)

University of Lille, France – Thesis committee:		
Yiyi Wei	*Toward Real-Time Simulation of AneurysmCoil Embolization Using the Discrete Exterior CalculusMethod*	Expected in 2012
National Technical University of Athens, Greece – Advisor, thesis committee:		
Panagiotis Psonis	*(Human Knee Medical Data Processing)*	Since Oct 2009
Ecole Polytechnique Federale de Lausanne, Switzerland – Thesis committee:		
Evren Samur	*Systematic Evaluation Methodology and Performance Metrics for Haptic Interfaces*	PhD, Mar 2010
University of New South Wales, Australia – Thesis committee:		
Bhautik Joshi	*Model Generation and Interaction in Surgical Simulation*	PhD, Jul 2007

ACADEMIC GUESTS

Robert Wilson	PhD student, Stanford University, USA	Jul–Nov 2011
Shunsuke Yoshimoto	PhD student, Osaka University, Japan	Jul–Sep 2011
Wael Abdelrahman	PhD student, Deakin University, Australia	Aug–Dec 2010
Luis Gutierrez	PhD student, Cinvestav Unidad Guadalajara, Mexico	Jun 2010–Jun 2011
Seokhee Jeon	PhD student, Pohang University of Science and Technology, Korea	Jan–Feb 2010
Iker Aguinaga	PostDoc, Centro de Estudios e Investigaciones Tecnicas de Gipuzkoa, Spain	Sep 2009–Dec 2010
Jordi Barrio	PhD student, Universidad Politecnica de Madrid, Spain	Jun–Jul 2009
Serge Prod'homme	Visiting scientist, University of Strasbourg, France	Apr–Sep 2009
Yeongmi Kim	PhD student, Gwangju Institue of Science and Technology, Korea	Dec 2008–Jun 2009
Sarthak Misra	PhD student, Johns Hopkins University, USA	Apr–May 2008
Katsuhito Akahane	PhD student, Tokyo Institute of Technology, Japan	Aug–Oct 2005

STUDENTS – DIPLOMA/MASTER

Thomas Pluess	Master thesis	ETH Zurich, D-INFK	2011
Jürgen Fornaro	Master thesis	ETH Zurich, D-INFK	2009
Stephan Lütolf	Semester thesis	ETH Zurich, D-ITET	2009
Shaoting Zhang	Master thesis	Shanghai Jiao Tong University	2007
Jügen Fornaro	Bachelor thesis	ETH Zurich, D-INFK	2006
David Serby	Diploma thesis	ETH Zurich, D-ITET	2001
Andrea Rutz	Semester thesis	ETH Zurich, D-ITET	2001
Mauro Foresti	Semester thesis	ETH Zurich, D-ITET	2001
Aleksandar Mrkaic	Semester thesis	ETH Zurich, D-ITET	2000
Christoph Ramseyer	Diploma thesis	ETH Zurich, D-ITET	2000

7 Presentations, Media

INVITED TALKS

December 2011	*Virtual Reality in Medicine – Recent Research and Future Directions*, University of Sheffield, United Kingdom
December 2010	*Virtual Reality in Medicine – Recent Research and Future Directions*, INRIA Lille, France
September 2010	*Recent Advances in Surgical Simulation: Ensuring Stability during Cutting Procedures*, Pohang University of Science and Technology (POSTECH), Korea
September 2010	*Effects of Asynchronies on Compliance Perception in Visuo-Haptic Augmented Reality*, Trinity College Dublin, Ireland
September 2010	*Perceptual Effects in Visuo-Haptic Augmented Reality*, University of British Columbia, Canada
December 2009	*Recent Advances in Surgical Simulation*, International Conference on Mechatronics and Information Technology, Gwangju, Korea
October 2009	*Visuo-Haptic Record/Replay of Person-to-Object Interaction*, IROS Workshop on Haptic Human Robot Interaction, Saint Louis, USA
October 2009	*Data-Driven Visuo-Haptic Object Acquisition and Rendering*, Pohang University of Science and Technology (POSTECH), Korea
October 2009	*Data-Driven Visuo-Haptic Object Acquisition and Rendering*, Gwangju Institute of Science and Technology (GIST), Korea
September 2008	*Keynote: Multisensory Interfaces and Cognitive Dynamics*, Tokyo, Japan
January 2008	*Statistische Modelle in der Chirurgiesimulation*, University Linz, Austria
January 2008	*HystSim – A Simulator for Hysteroscopic Interventions*, International Meeting for Simulation in Healthcare, San Diego, CA, USA
January 2008	*Deformation Computation via Statistical Models*, Symposium on Scientific Computing Applications in Surgical Simulation of Soft Tissues, UCLA, Los Angeles, CA, USA
December 2007	*Trainingsszenarios für die Chirurgiesimulation – Variabilität der Anatomie*, University Lübeck, Germany
October 2007	*Virtuelle Realität in der Medizin*, University Paderborn, Germany
September 2007	*Virtual and Augmented Reality for Surgical Simulation*, Joint JSPS-SNSF Seminar on Computer-Aided Surgery: Present State and Future Technical and Clinical Challenges, Osaka, Japan
July 2007	*Multi-Modal Augmented Reality in Medicine*, Merging Medicine and VR – HCI 2007 Session, Beijing, P.R. China
February 2007	*Design and Evaluation of a Surgical Simulator for Hysteroscopy*, Swiss Physical Society Annual Meeting, Zurich, Switzerland
January 2007	*Simulationen als Lernhilfe für angehende Ärzte*, Collegium Generale, University Bern, Switzerland
November 2006	*Immersive, VR based Hysteroscopy Training*, 3rd INTUITION International workshop, Stuttgart, Germany

August 2006	*Computer-Based Surgical Simulators for Training of Prospective Surgeons*, CSIRO ICT Centre, Mathematical and Information Sciences, North Ryde, Australia
April 2006	*Simulation Chirurgischer Eingriffe in der Hysteroskopie*, Automatisierungstechnische Verfahren für die Medizin Workshop, Rostock, Germany
June 2005	*Prototype Hysteroscopy Simulator for Procedural Training*, Computational Biology SIG, Heidelberg, Germany
February 2005	*Virtual Reality Based Surgical Training*, Precision and Intelligence Lab, Tokyo Institute of Technology, Tokyo, Japan
September 2004	*Towards a New Generation of Surgical Simulators*, INTUITION Workshop, Athens, Greece
July 2004	*Individual Scene Generation for Surgical Simulation*, ERC CISST Seminar, Johns Hopkins University, Baltimore, MD, USA
July 2004	*New Generation Surgical Simulators*, Virginia Modeling, Analysis and Animation Center, Norfolk, VA, USA
August 2003	*Towards New Generation Surgical Simulators*, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany
May 2002	*Surgical Simulation*, University of Applied Sciences Seminar Series, Winterthur, Switzerland
May 2001	*Computer Haptics*, Zurich University of Applied Sciences Seminar Series, Winterthur, Switzerland

NEWS COVERAGE

Anfassen, was nicht da ist	Themenheft: Sinn, twen	Jun 10, 2011
Virtual reality becomes more literal	World Radio Switzerland	Aug 24, 2010
Virtual reality you can touch	ETH Life	Aug 16, 2010
Spitzenforschung Schweiz: Hightech im Operationssaal	Swiss Radio DRS	Aug 15, 2009
Start-ups nutzen Synergien für Take-off	Schweizer Arbeitgeber	Nov 6, 2008
Simulatoren für Chirurgen	Cash, Special: Innovation	Aug 14, 2008
Grâce à un logiciel novateur, VirtaMed veut réduire les erreurs chirurgicales	Le Temps	Apr 29, 2008
Doktertje Spelen op de Computer	Product Magazine	Jan 2006
Operations-Simulator	Swiss TV SFDRS, *Puls*	Oct 24, 2005
Chirurgen lernen am Simulator Gebärmutter-Operationen	German TV 3sat, *nano*	Oct 20, 2005
Wanderer zwischen künstlichen Welten	Handelsblatt	Aug 22, 2005
Virtueller Tastsinn geht der Medizin zur Hand	Tages-Anzeiger	Nov 28, 2004
Der Computer als Gehilfe des Chirurgen	Neue Zürcher Zeitung	Aug 2002
Gegen das Zittern	Technik, COOP Personalmagazin	Aug 2001
Operation Cyberspace	Handelszeitung	Nov 1, 2000
Haptik ergänzt Grafik und Sound	ETH Bulletin	Sep 23, 2000
Armdrücken mit der Cyberwelt	Computerworld	Aug 4, 2000

8 Personal Information

PERSONAL DATA

Age: 38	Date of Birth: January 7, 1974
Citizenship: German	Place of Birth: Leer, Germany
Marital status: Unmarried	Languages: German, English, (Basic: Japanese, Korean, French)
Other activities:	Private Pilot (FAA, JAR-FCL), Aerobatics Sports (Football, Aikido, Snowboard, Diving) Art (Theater, Short movies, Guitar)