

CV — Samuel Gerber

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EDUCATION

- PhD Candidate**, GPA: 3.95 Expected Spring 2011
Scientific Computing and Imaging Institute, University of Utah
Advisor: Ross T. Whitaker
Committee Members: Tolga Tasdizen, Hal Daumé III, Sarang C. Joshi, Davar Khoshnevisan
- Engineer Computer Science**, GPA: 3.71 Fall 2004
University of Applied Sciences Northwestern Switzerland
Thesis Advisor: Manfred Vogel

PROFESSIONAL EXPERIENCE

- Research Assistant** 2006 - Ongoing
Scientific Computing and Imaging Institute, University of Utah, Salt Lake City
My thesis research concerns the analysis of scattered multi dimensional data in the supervised as well as unsupervised setting. In the unsupervised setting I developed a statistical manifold learning algorithm. I adapted this approach to a formulation for shape spaces on brain images to investigate the variability in brain anatomy. In the supervised setting I combined Morse theoretic tools and regression with applications in climate simulation analysis.
- Teaching Assistant** 2010
Park City Mathematics Institute, Institute for Advanced Study (IAS), Park City
Teaching Assistant for Prof. Whitaker at the IAS summer program on image processing.
- IPAM Fellow** 2007
Institute for Pure and Applied Math, University of California Los Angeles, Los Angeles
Core participant in IPAM program on "Mathematics of Knowledge and Search Engines". Investigated the properties and use of the graph Laplacian for data analysis tasks. Began collaboration on shape detection in microscopy images.
- Research Assistant** 2005 - 2006
Institute 4D Technologies and Data Spaces, University of Applied Sciences Northwestern Switzerland, Brugg
Research on efficient numerical calculations and result visualization for a civil engineering application on structural behavior of beams under torsion and lateral stress.
- Project Leader** 2004 - Ongoing
Jgeom library
Lead developer of an open source geometry library in java (<https://jgeom.dev.java.net>).
- Consultant** 2004
Consolidated Contractors Company (CCC), Athens, Greece
Integration of geometrical boolean operations on meshes into existing software package.

AWARDS

- Best paper**, Invited paper for the journal of Medical Image Analysis 2010
- Stipend**, IPAM 2007
- Scholarship for Masters in the US**, ABB Company 2005
- Scholarship for Masters in the US**, Swiss friends of the USA 2005
- Best diploma thesis**, University of Applied Sciences Northwestern Switzerland 2004

PUBLICATIONS

Samuel Gerber, Peer-Timo Bremer, Valerio Pascucci, Ross Whitaker. "**Visual Exploration of High Dimensional Scalar Functions**", IEEE Transactions on Visualization and Computer Graphics to appear, Proceedings of VIS 2010

Arvind Agarwal, Hal Daume III, Samuel Gerber. "**Learning Multiple Tasks using Manifold Regularization**", Advances in Neural Information Processing Systems 23 (NIPS 2010)

Samuel Gerber, Tolga Tasdizen, Tom Fletcher, Sarang Joshi, Ross Whitaker. "**Manifold Modeling for Brain Population Analysis**", Invited paper for the journal of Medical Image Analysis (MedIA), 2010

Samuel Gerber, Tolga Tasdizen, Sarang Joshi, Ross Whitaker. "**On the Manifold Structure of the Space of Brain Images**", International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2009

Samuel Gerber, Tolga Tasdizen, Ross Whitaker. "**Dimensionality Reduction and Principal Surfaces via Kernel Map Manifolds**", International Conference on Computer Vision (ICCV), 2009.

Ran Tao, Thomas Fletcher, Samuel Gerber, Ross Whitaker. "**A Variational Image-Based Approach to the Correction of Susceptibility Artifacts in the Alignment of Diffusion Weighted and Structural MRI**", Information Processing in Medical Imaging (IPMI), 2009.

Matthias Fuchs, Samuel Gerber. "**Variational Shape Detection in Microscope Images Based on Joint Shape and Image Feature Statistics**", In Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), 2008.

Samuel Gerber, Tolga Tasdizen, Ross Whitaker. "**Robust Non-linear Dimensionality Reduction using Successive 1-Dimensional Laplacian Eigenmaps**", International Conference on Machine Learning (ICML), 2007.

Samuel Gerber. "**3D Postprocessor**". Diploma thesis, University of Northwestern Switzerland, 2004

Samuel Gerber. "**Boolean Operations for NURBS**". Semester thesis, University of Northwestern Switzerland, 2004

Samuel Gerber, Urs Frick. "**Boolean Operations for Java3d**". Semester thesis, University of Northwestern Switzerland, 2003

COMPUTER SKILLS

Programming: C, C++, Java, R, Matlab, SQL, OpenGL, ITK

Systems: Linux, OS X, Windows

LANGUAGE SKILLS

English: fluid — **German:** fluent — **Swiss-German:** native — **French:** beginner