HaoLi

Industrial Light & Magic, Lucasfilm ltd.
One Letterman Drive
San Francisco, CA 94129, USA

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Email *hao@hao-li.com*
Home page *http://www.hao-li.com/*

PROFILE

Date of birth	17/01/1981
Place of birth	Saarbrücken, Germany
Citizenship	German
Languages	German, French, English, and Mandarin Chinese (all fluent and accentless)

COMMITMENT

My research focuses on developing algorithms and frameworks that effectively couple both worlds, data capture and the modeling of human performances. I strive to automate the process of creating highly realistic digital characters for computer animation. My long term goal consists of providing mechanisms to collect massive data sets of detailed dynamic geometries in everyday surroundings, and to learn how to use them to improve our lifestyles. My algorithms are widely deployed in the industry ranging from leading visual effects studios to manufacturers of state-of-the-art radiation therapy systems. I am also an avid artist and love to spend time with *traditional drawing* and *visual arts*.

EDUCATION

Ph. D., Computer Science (recommended for ETH Medal) **07/2006 - 11/2010**
ETH Zurich, Department of Computer Science

- Thesis: *Animation Reconstruction of Deformable Surfaces*
  Advisor: Prof. M. Pauly
  Co-examiners: Prof. S. Rusinkiewicz, Prof. M. Gross, Dr. K. Bhat

M. Sc., Computer Science (Magna Cum Laude) **10/2000 - 01/2006**
Universität Karlsruhe (TH), Department of Computer Sciences

- Thesis: *Reconstruction of Colored Objects from Structured Illuminated Views*
  Advisor: Prof. H. Prautzsch
- Major 1: Computer graphics and geometric modeling
- Major 2: Cryptography and security
- Minor: Differential and projective geometry

ERASMUS Student Exchange, Computer Science **10/2002 - 09/2003**
Institut National Polytechnique de Grenoble, ENSIMAG

French-German High School Diploma **09/1992 - 05/1999**
Lycée Franco-Allemand de Sarrebruck, Germany

- Major: Mathematics, physics, visual arts and latin

RESEARCH POSITIONS

Industrial Light & Magic, Lucasfilm Ltd. **04/2012 - ongoing**
Researcher, R&D Group

Columbia University **04/2011 - 03/2012**
Postdoctoral Fellow, Columbia Computer Graphics Group

Princeton University **04/2011 - 03/2012**
Visiting Postdoctoral Researcher, Princeton Computer Graphics Group

École Polytechnique Fédérale de Lausanne **02/2010 - 04/2011**
Visiting and Postdoctoral Researcher, Computer Graphics and Geometry Laboratory

Industrial Light & Magic, Lucasfilm Ltd. **07/2009 - 10/2009**
Research Intern, R&D Group

Stanford University **07/2008 - 09/2008**
Visiting Researcher, Geometric Computing Group

ETH Zurich **07/2006 - 11/2010**
Research Assistant, Applied Geometry Group

National University of Singapore **01/2006 - 07/2006**
Visiting Research Scholar, Centre for Information Mining and Extraction

Universität Karlsruhe (TH) **05/2004 - 12/2005**
Undergraduate Research Assistant, Applied Geometry & Computer Graphics

TEACHING

Teaching Assistant

Columbia University, Computer Science Department

- Computer Graphics (Lecture) 2011

École Polytechnique Fédérale de Lausanne, School of Computer and Communication Sciences

- Digital 3D Geometry Processing (Lecture) 2010
- Computer Graphics (Lecture) 2010

ETH Zurich, Department of Computer Science

- Surface Representation and Geometric Modeling (Lecture) 2007, 2008, and 2009
- Introduction to Computer Graphics (Lecture) 2006, 2007, 2008, and 2009
- Advanced Topics in Computer Graphics (Seminar) 2006 and 2007
- Geometric Computing (Seminar) 2008

Supervised Students

- Nathaniel Clinger, *Performance-based Human Body Modeling* **01/2012 - 05/2012**
- Papok Thamjaroenporn, *On-the-fly Facial Rigging* **01/2012 - 05/2012**
- Pei-Lun Hsieh, *Automatic Retopology of Human Scans* **01/2012 - 05/2012**
- Xiaochen Hu, *Real-time Hand Tracking Using Kinect* **01/2012 - 05/2012**
- Alexandru Ichim, *Webcam-based Facial Animation* **06/2010 - 09/2010**
- Huw Bowles, *Parallel kd-tree Construction for Dynamic Geometry* **11/2008 - 05/2009**
- Jens Puwein, *Multi-View Registration of Deformable Shapes* **02/2008 - 08/2008**
- Jeroen Dries, *Mesh Approximation Using Implicit Surfaces* **09/2006 - 03/2007**

CONSULTING

VisionHacker Studio	**02/2012 - ongoing**
Artec Group, Inc.	**08/2011 - ongoing**
3Gear Systems	**05/2011 - ongoing**
XYZ RGB, Inc.	**07/2011 - 01/2012**
Max Planck Institute for Intelligent Systems	**05/2011 - 11/2011**
C-RAD AB	**08/2010 - 08/2011**
Industrial Light & Magic, Lucasfilm Ltd.	**08/2010 - 11/2010**
Mova LLC	**08/2010 - 10/2010**
Filmakademie Baden-Württemberg GmbH, Institute of Animation	**04/2010 - 07/2010**
Aguru Images, Inc.	**08/2008 - 07/2009**

AWARDS & HONORS

SNF fellowship for prospective researchers	**03/2011**
ACM Symposium on Computer Animation Best Paper Award '09	**08/2009**
National Science Foundation 3DPVT '06 Student Travel Stipend	**05/2006**
German Academic Exchange Service (DAAD) fellowship	**01/2006**
Karl-Steinbuch scholarship of the MFG Baden-Württemberg	**10/2005**
Thomas Gessmann-Stiftung fellowship, German Science Foundation	**09/2004**
Baden-Württemberg scholarship of the Markel Foundation	**10/2004**
Scholarship of the Richard Winter foundation	**09/2004**
ERASMUS scholarship	**10/2002**
E-fellows scholarship	**11/2001**

JOURNAL & CONFERENCE PAPERS

TRACKING SURFACES WITH EVOLVING TOPOLOGY
Morten Bojsen-Hansen, Hao Li, Chris Wojtan
ACM Transactions on Graphics, Proceedings of the 39th ACM SIGGRAPH Conference and Exhibition (SIGGRAPH 2012), 08/2012

TEMPORALLY COHERENT COMPLETION OF DYNAMIC SHAPES
Hao Li, Linjie Luo, Daniel Vlasic, Pieter Peers, Jovan Popović, Mark Pauly, Szymon Rusinkiewicz
ACM Transactions on Graphics 31(1), Presented at the 39th ACM SIGGRAPH Conference and Exhibition (SIGGRAPH 2012), 08/2012

MULTI-VIEW HAIR CAPTURE USING ORIENTATION FIELDS
Linjie Luo, Hao Li, Sylvain Paris, Thibaut Weise, Mark Pauly, Szymon Rusinkiewicz
Proceedings of the 25th IEEE International Conference on Computer Vision and Pattern Recognition (CVPR 2012), 06/2012

FACTORED FACADE ACQUISITION USING SYMMETRIC LINE ARRANGEMENTS
Duygu Ceylan, Niloy J. Mitra, Hao Li, Thibaut Weise, Mark Pauly
Computer Graphics Forum 31(2), Proceedings of the 33rd Annual Conference of the European Association for Computer Graphics (Eurographics 2012), 05/2012

REALTIME PERFORMANCE-BASED FACIAL ANIMATION
Thibaut Weise, Sofien Bouaziz, Hao Li, Mark Pauly
ACM Transactions on Graphics, Proceedings of the 38th ACM SIGGRAPH Conference and Exhibition (SIGGRAPH 2011), 08/2011

EXAMPLE-BASED FACIAL RIGGING
Hao Li, Thibaut Weise, Mark Pauly
ACM Transactions on Graphics, Proceedings of the 37th ACM SIGGRAPH Conference and Exhibition (SIGGRAPH 2010), 07/2010

ROBUST SINGLE VIEW GEOMETRY AND MOTION RECONSTRUCTION
Hao Li, Bart Adams, Leonidas J. Guibas, Mark Pauly
ACM Transactions on Graphics, Proceedings of the 2nd ACM SIGGRAPH Conference and Exhibition in Asia (SIGGRAPH Asia 2009), 12/2009

FACE/OFF: LIVE FACIAL PUPPETRY (BEST PAPER AWARD)
Thibaut Weise, Hao Li, Luc Van Gool, Mark Pauly
Proceedings of the 8th ACM SIGGRAPH / Eurographics Symposium on Computer Animation (SCA 2009), 08/2009

GLOBAL CORRESPONDENCE OPTIMIZATION FOR NON-RIGID REGISTRATION OF DEPTH SCANS
Hao Li, Robert W. Sumner, Mark Pauly
Computer Graphics Forum 27(5), Proceedings of the 6th Eurographics Symposium on Geometry Processing (SGP 2008), 07/2008

STRUCTURED LIGHT BASED RECONSTRUCTION UNDER LOCAL SPATIAL COHERENCE ASSUMPTION
Hao Li, Raphael Straub, Hartmut Prautzsch
Proceedings of the 3rd IEEE International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT 2006), 06/2006

FAST SUBPIXEL ACCURATE RECONSTRUCTION USING COLOR STRUCTURED LIGHT
Hao Li, Raphael Straub, Hartmut Prautzsch
Proceedings of the Fourth IASTED International Conference on Visualization, Imaging and Image Processing (VIIP 2004), 09/2004

COURSE NOTES & EXHIBITIONS

DYNAMIC GEOMETRY PROCESSING
Will Chang, Hao Li, Niloy J. Mitra, Mark Pauly, Michael Wand
Eurographics 2012 Tutorial Notes, 05/2012

KINECT-BASED FACIAL ANIMATION
Thibaut Weise, Sofien Bouaziz, Hao Li, Mark Pauly
ACM SIGGRAPH Asia 2011 Emerging Technologies, 12/2011

COMPUTING CORRESPONDENCES IN GEOMETRIC DATA SETS
Will Chang, Hao Li, Niloy J. Mitra, Mark Pauly, Szymon Rusinkiewicz, Michael Wand
Eurographics 2011 Tutorial Notes, 04/2011

GEOMETRIC REGISTRATION FOR DEFORMABLE SHAPES
Will Chang, Hao Li, Niloy J. Mitra, Mark Pauly, Michael Wand
Eurographics 2010 Tutorial Notes, 05/2010

TECHNICAL REPORTS & PATENTS

A METHOD FOR FACIAL ANIMATION
Thibaut Weise, Sofien Bouaziz, Hao Li, Mark Pauly
US Patent (US13/323231), filed 12/2011

DYNAMIC HAIR CAPTURE
Linjie Luo, Hao Li, Thibaut Weise, Sylvain Paris, Mark Pauly, Szymon Rusinkiewicz
Technical Report, Princeton University, 08/2011

FIRST STEPS TOWARD THE AUTOMATIC REGISTRATION OF DEFORMABLE SCANS
Hao Li, Mark Pauly
Technical Report, ETH Zurich, 06/2007

THESES

ANIMATION RECONSTRUCTION OF DEFORMABLE SURFACES
Hao Li
PhD dissertation, ETH Zurich, 11/2010

REKONSTRUKTION FARBIGER OBJEKTE AUS STRUKTURIERT BELEUCHTETEN ANSICHTEN
Hao Li
Diplomarbeit, Universität Karlsruhe (TH), 06/2005

RECONSTRUCTION USING STRUCTURED LIGHT
Hao Li
Studienarbeit, Universität Karlsruhe (TH), 02/2004

INVITED TALKS

DYNAMIC SHAPE RECONSTRUCTION AND TRACKING
R&D Forum, Industrial Light & Magic, Letterman Digital Arts Center, San Francisco, 04/2012

GEOMETRIC CAPTURE OF HUMAN PERFORMANCES
Faculty Candidate Seminars, Department of Computer Science, Columbia University, New York, 03/2012
Guest Presentation, Rhythm & Hues Studios, Los Angeles, 03/2012
Chalk Talk, Digital Domain, Venice, 03/2012
CS Colloquium Series, Computer Science Department, University of Southern California, Los Angeles, 03/2012

MAYA FOR GRAPHICS SCIENTISTS
Invited Talk, Princeton Computer Graphics Group, Princeton University, New Jersey, 02/2012

TRACKING DEFORMABLE SURFACES
Computer Graphics Reading Group, University of Pennsylvania, Philadelphia, 01/2012

CAPTURING 3D ANIMATION FOR ENTERTAINMENT AND SCIENCES
CVGC Seminar, Columbia Computer Graphics Group, Columbia University, New York, 12/2011

DYNAMIC SHAPE CAPTURE WITH APPLICATIONS IN ART AND SCIENCES
Invited Talk, Microsoft, Redmond, 11/2011

NON-RIGID REGISTRATION IN ENTERTAINMENT AND SCIENCE
Invited Talk, Department for Perceiving Systems, Max-Planck-Institut für Intelligente Systeme, Tübingen, 09/2011

HUMAN BODIES, FACES, AND HAIR
Guest Lecture, Courant Institute of Mathematical Sciences, New York University, New York, 09/2011

ROBUST NON-RIGID 3D ALIGNMENT AND APPLICATIONS
R&D Seminar, Vision Technologies, SRI International/Sarnoff Corporation, New Jersey, 07/2011

CAPTURE, RECONSTRUCT, TRACK, RIG, RETARGET!
Invited Talk, Princeton Computer Graphics Group, Princeton University, New Jersey, 08/2010

INVERSE ENGINEERING DYNAMIC SHAPES FOR COMPUTER ANIMATION
Invited Talk, Courant Institute of Mathematical Sciences, New York University, New York, 08/2010

ANIMATION RECONSTRUCTION
Invited Talk, Columbia Computer Graphics Group, Columbia University, New York, 08/2010

GENERATING BLENDSHAPES FROM EXAMPLES AND CAPTURING WATERTIGHT HUMAN PERFORMANCES
R&D Seminar, Industrial Light & Magic, Letterman Digital Arts Center, San Francisco, 08/2010

A PRACTICAL FACIAL ANIMATION SYSTEM: FROM CAPTURE TO RETARGETING
Research Seminar, Pixar Animation Studios, Emeryville, 08/2010

ART-DIRECTABLE AND DATA-DRIVEN FACIAL ANIMATION
Invited Talk, Institute of Animation, Visual Effects and Digital Postproduction, Filmakademie Baden-Württemberg, Ludwigsburg, 05/2010

ROBUST RECONSTRUCTION OF DYNAMIC SHAPES AND REAL-TIME FACIAL ANIMATION
Invited Talk, Institute for Creative Technologies, University of Southern California, Marina del Rey, 11/2009

DEFORMING GEOMETRY RECONSTRUCTION AND LIVE FACIAL PUPPETRY
R&D Seminar, Industrial Light & Magic, Letterman Digital Arts Center, San Francisco, 10/2009

ANIMATION RECONSTRUCTION FROM A SINGLE-VIEW
Invited Talk, Computer Graphics Department, Max-Planck-Institut für Informatik, Saarbrücken, 05/2009

ACTIVE SHAPE ACQUISITION: FROM IMAGES TO 3-D SURFACES
Invited Talk, Graduate School of Global Information and Telecommunication Studies, Waseda University, Tokyo, 06/2006

3D SCANNING FOR EVERYONE
Ninth SIAM Conference on Geometric Design and Computing (SIAM-GD'05), Phoenix, Arizona, 10/2005

SURFACE RECONSTRUCTION USING COLORED STRIPE PROJECTIONS
Graphics Lunch Seminar, Computer Graphics Laboratory, ETH Zurich, 09/2005

REKONSTRUKTION MIT STRUKTURIERTEM LICHT
First Status Report Meeting of the Institute for Scientific Computing and Mathematical Modeling, Universität Karlsruhe (TH), 04/2005

SOFTWARE

BeNTO 3D
http://www.bento3d.com
An easy to use geometry editing and processing application created exclusively for Mac. The Cocoa based tool distinguishes from other competitors in that development of additional plugins and GUI extensions are considerably simplified.

face*shift*
http://www.faceshift.com
A software for real-time and markerless facial performance capture using Microsoft's Kinect sensor. The Qt-based application runs on Mac OS X and Windows 7 and is co-developed with T. Weise and S. Bouaziz.

PROFESSIONAL ACTIVITIES

Program Committee

Symposium on Geometry Processing 2012
Pacific Graphics 2012
International Symposium on 3D Data Processing, Visualization and Transmission 2010
Workshop on Non-rigid Shape Analysis and Deformable Image Alignment 2010 and 2011

Reviewer

ACM SIGGRAPH 2008, 2009, 2011, and 2012
ACM SIGGRAPH Asia 2010 and 2011
ACM Transaction on Graphics 2010 and 2011
Symposium on Geometry Processing 2007 and 2008
Eurographics 2009, 2010, 2011, and 2012
Computer Graphics Forum 2010 and 2011
3D Data Processing, Visualization and Transmission 2010
Non-rigid Shape Analysis and Deformable Image Alignment 2010 and 2011
Transactions on Visualization and Computer Graphics 2009
Transactions on Pattern Analysis and Machine Intelligence 2007
EURASIP Journal on Advances in Signal Processing 2011
Asian Conference on Computer Vision 2010
Pacific Graphics 2009 and 2011
Vision, Modeling, and Visualization Workshop 2006
Geometric Modeling and Processing 2006

Membership

ACM SIGGRAPH **06/2006 - ongoing**
Eurographics Association **08/2011 - ongoing**

EXTRACURRICULAR ACTIVITIES

Lucasfilm Training LDAC, Practical & CG Cinematography, San Francisco **08/2009**
Credit Suisse Group, Equity Derivatives Workshop, Zurich **03/2008**
McKinsey&Company, Business Technology Office's European Seminar, Portugal **05/2007**

TECHNICAL SKILLS

Operating Systems
Mac OS X, Linux/Unix, and Windows

Programming Languages
C/C++, Objective C, Python, and Java

Professional Tools

Zeno, Autodesk Maya, Autodesk 3ds MAX, Apple Final Cut Pro, Adobe AfterEffects, Adobe Premiere, Adobe Photoshop, and Adobe Illustrator

MILITARY SERVICE

German Federal Armed Forces **11/1999 - 08/2000**
Division for Special Operations (DSO) - Airborne Brigade 26
2nd Company of the Antitank Parachute Battalion 262, Merzig, Germany

- German parachutist badge in bronze

REFERENCES

Prof. Dr. Eitan Grinspun
Associate Professor
Columbia University, Computer Science Department
Columbia Computer Graphics Group
Shapiro Center, 530 W 120th St., New York, NY 10027, USA
Tel +1 (646) 4025282
Email eitan@cs.columbia.edu
Home page http://www.cs.columbia.edu/cg/

Prof. Dr. Szymon Rusinkiewicz
Associate Professor
Princeton University, Computer Science Department
Princeton Computer Graphics Group
CS Building, room 406, 35 Olden St., Princeton, NJ 08540-5233, USA
Tel +1 (609) 2587479
Email smr@princeton.edu
Home page http://www.cs.princeton.edu/gfx/

Prof. Dr. Leonidas J. Guibas
Paul Pigott Professor of CS and EE
Stanford University, Computer Science Department
Geometric Computing Group
Gates Building, Clark Center for Bioengineering S293, Stanford, CA 95305, USA
Tel +1 (650) 7230304
Email guibas@cs.stanford.edu
Home page http://geometry.stanford.edu/

Prof. Dr. Mark Pauly
Associate Professor
École Polytechnique Fédérale de Lausanne, School of Computer and Communication Sciences
Computer Graphics and Geometry Laboratory
BC 350 Station 14, CH-1015 Lausanne, Switzerland
Tel +41 (21) 6935234
Email mark.pauly@epfl.ch
Home page http://lgg.epfl.ch/

Prof. Dr. Paul Debevec
Associate Director
University of Southern California / Institute for Creative Technologies
Graphics Lab
12015 Waterfront Drive, Playa Vista, CA 90094-2536, USA
Tel +49 (7071) 6011801
Email debevec@ict.usc.edu
Home page http://ict.debevec.org/

Prof. Dr. Michael J. Black
Director
Max Planck Institute for Intelligent Systems
Perceiving Systems Department
Paul-Ehrlich-Str. 15, 72072 Tübingen, Germany
Tel +49 (7071) 6011801
Email black@tuebingen.mpg.de
Home page http://is.mpg.de/

Dr. Steve Sullivan
Senior Technology Officer
Lucasfilm Ltd.
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Email available upon request
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