Curriculum Vitae

Guido Gerig

Update: January 21, 2016

Address

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Education

1993	Venia Legendi (Habilitation, Title: Dr. habil.) Swiss Federal Institute of Technology, ETH Zurich, Switzerland.
1987	Ph.D. in Electrical Engineering Swiss Federal Institute of Technology, ETH Zurich, Switzerland.
1981	Master in Natural Sciences '(Diploma ETH, equivalent M.Sc.) Swiss Federal Institute of Technology, ETH Zurich, Switzerland.

Academic Appointments

7/2015–	**Institute Professor Computer Science and Engineering,** NYU Tandon School of Engineering
7/2007–2015	**Professor Computer Science.** School of Computing, University of Utah. Associate Director SCI Institute, University of Utah. Director Utah Center for Neuroimage Analysis (http://www.ucnia.org). Adjunct Prof. Utah Depts. of Bioengineering and Psychiatry. Adjunct Prof. UNC Chapel Hill Depts. of Comp. Science and Psychiatry.
1998–2007	**Taylor Grandy Professor of Computer Science and Psychiatry.** University of North Carolina.
1995–1998	**Interim director of the BIWI computer vision laboratory** EE Department, ETH Zurich, Switzerland.
1993–1998	**Assistant Professor.** EE Department, ETH Zurich, Switzerland.
1993–1998	**Senior Lecturer.** (Privatdozent) EE Dept., ETH Zurich, Switzerland.
10/89–12/89	and 08/91–11/91 **Visiting Assistant Professor.** Department of Radiology, Brigham and Women's Hospital, Harvard Medical School.

1987–1993 **Postdoctoral Research.** *Advisor:* Prof. Olaf Kübler.

Honors & Awards

2012 AJP Best Paper: Co-authored a paper that made the list of the American Journal of Psychiatry's "Best of 2012" for their paper "Differences in White Matter Fiber Tract Development Present from 6 to 24 Months in Infants with Autism"

2010 Fellow of the American Institute for Medical and Biological Engineering (AIMBE) (Oct. 22, 2010).

2010 Dean's letter University of Utah for Excellence in Teaching (May 2010).

2009 Fellow of the Medical Image Computing and Computer-Assisted Intervention (MICCAI) Society.

2009 ISMRM (Int Society for Magnetic Resonance in Medicine): Outstanding Teacher Award.

2001 Award from IEEE Transactions on Medical Imaging (IEEE-TMI) for most cited paper published in IEEE-TMI in 1992: Gerig G, Kikinis R, Kuebler O, Jolesz FA. Nonlinear Anisotropic Filtering of MRI Data, IEEE TMI, Vol. 11, No. 2, June 1992, pp. 221-232.

1988 DAGM-Prize, 10. DAGM-Symposium Zurich, Sept. 1988, Prize for the best student paper at the DAGM'88 conference titled "Recognition of Nonrigid Objects Using the Generalized Hough Transform", by D. Morgue and G. Gerig.

1987 Brown Boveri Company (BBC) Research Award 1987 for the Ph.D dissertation thesis "Segmentierung zur symbolischen Beschreibung von Grauwertbildern" (Segmentation for symbolic description of gray level images).

Teaching Experience

Utah, School of Computing

Semester	Course	Title	Enroll.	RR	I7	<I7>	C7	<C7>
S2015	CS6320	3D Computer Vision	24	18	5.50	5.26	5.53	5.17
F2014	CS7938	Imaging Seminar						
F2014	CS6640	Image Processing	67	48	5.4	5.24	5.24	5.18
S2013	CS6320	3D Computer Vision	14	14	5.49	5.3	5.26	5.18
S2013	CS7938	Medical Imaging Seminar						
F2012	CS6640	Image Processing	36	23	5.57	5.3	5.4	5.18
S2012	CS6320	3D Computer Vision	33	29	5.32	5.30	5.01	5.18
S2012	CS7938	Medical Imaging Seminar						
F2010	CS6640	Image Processing	26	26	5.43	5.3	5.3	5.18
F2010	CS7938	Medical Imaging Seminar						
S2010	CS7660	[1] *Adv. Image Processing	31	16	5.9	5.3	5.88	5.18
S2010	CS7938	Medical Imaging Seminar						
F2009	CS6968	3D Computer Vision	19	12	5.61	5.22	5.60	5.17
F2009	CS7938	Medical Imaging Seminar						
F2008	CS6320	*3D Computer Vision	26	19	5.46	5.22	5.26	5.18
F2008	CS7938	*Medical Imaging Seminar						

UNC Chapel Hill, Department of Computer Science

2006	Comp254	[2]Image Proc. and Analysis
2005	Comp256	[3]Computer Vision
2004	Comp254	[4]Image Proc. and Analysis
2003	Comp255	*Recent Adv. in Image Analysis
2002	Comp254	Image Proc. and Analysis
2001	MedImProc	*Medical Image Processing II
2001	Comp254	Computer Vision
2000	MedImProc	*Medical Image Processing I
2000	Comp254	*Computer Vision
1999	Comp254	[5]Image Proc. and Analysis

ETH Zurich, Switzerland

S1997		Comp Vis and Im Proc I
F1996		Comp Vis and Im Proc II
S1996		Comp Vis and Im Proc I
F1995		Comp Vis and Im Proc II
S1995		Comp Vis and Im Proc I
F1994		Comp Vis and Im Proc II
S1994		Comp Vis and Im Proc I
F1993		Comp Vis and Im Proc II
S1993		Comp Vis and Im Proc I
F1990		Comp Vis and Im Proc II

Legend: Enrollment, RR: Returned responses, I7: Overall effective instructor, C7: Overall effective course, <I7> and <C7> averages over all School of Computing courses. Scores from 1 (poor) to 6 (best).

* New courses and seminars introduced and developed
[1] Dean's Letter of Excellence in Teaching, Utah College of Engineering
[2] Student Teaching Award, UNC Computer Science
[3] Nomination UNC Chapel Hill Teaching Award
[4] Student Teaching Award, UNC Computer Science

[5] Student Teaching Award, UNC Computer Science

Student Advising

Mentoring Postdoctoral Research

Shireen Elhabian (Jan. 2013 - today)
Stanley Durrleman (2010-2012)
Isabelle Corouge (2004-2006)

Mentoring Medical School M.D./Ph.D. Researcher Fellows

Brandon Zielinsky (2013 - today, Utah)
Lucia Cevidanes, DDS, PhD. (2003-2007, UNC)
Rebecca Knickmeyer, Ph.D., (2001-2004, UNC)
Robert McClure, M.D.,Ph.D., (1999-2004, UNC)

Mentoring PhD Thesis Research

Name	Start Date	Date completed
Current		
Yang Gao	August 2012	expected 2016
Anuja Sharma	August 2009	expected Spring 2015
Past		
Avantika Vardhan		PhD Utah, July 2015
Bo Wang		PhD Utah, April 2015
James Fishbaugh		PhD Utah, Dec. 2015
Neda Sadeghi		PhD Utah Aug. 2013
Casey Goodlett		PhD Utah May 2009
Marcel Prastawa		PhD UNC Nov. 2007
Timothy Terriberry		PhD UNC Nov. 2007
Sean Ho		PhD UNC Oct. 2004
Martin Styner		PhD UNC July 2001
Daniel Welti		PhD ETHZ March 2001
Martin Berger		PhD ETHZ 1999
Andras Kelemen		PhD ETHZ 1998
Dimitris Ekatodramis		PhD ETHZ 1998
Christian Brechbuehler		PhD ETHZ 1996
Tuomo Vehkomaki		PhD ETHZ 1995
Thomas M. Koller		PhD ETHZ 1995
Xin Cheng		PhD ETHZ 1993 (co-advisor)

Mentoring MS Thesis

Name	Date completed
Current	
Past	
Nishith Tirpankar	M.Sc. Utah April 2013
XiaoYue Huang	MS S2012, Utah
Christine Xu	M.Sc. F2011, UNC
Ran Tao	MS degree Fall 2009, Utah
Samuel Preston	MS May 2009, Utah, co-advising)
Neda Sadeghi	M.Sc. Utah April 2008
Kevin Gorczowski	MS Spring 2007, Utah
Bradley Moore	Fall 2007, UNC
Sampath Vetsa	MS Spring 2003, UNC
Megan Dunigan	MS Spring 2003, UNC
Nathan Moon	MS Spring 2002, UNC

International Student Internship Program

Local orrganization of a Graduate Student Internship Program with CPE Lyon, France: 1999 - today: Supervision and advising of up to 2 MSc candidate students per year (students spend a full year at the Gerig reserach lab and get mentoring and advising on research).

Clement Chagnaud (internship CPE Lyon, 2014/2015)
Nicolas Fanjat (internship CPE Lyon, 2014/2015)
Thibault Dupont (internship CPE Lyon, 2013/2014
Yohann Bearzi (internship CPE Lyon, 2013/2014)
Florian Rousset (internship CPE Lyon, 2012/2013)
Arthur Coste (internship CPE Lyon, 2011/2013)
Bastien Bessiere (internship CPE Lyon, 2011/2012)
Corentine Bouchard (internship CPE Lyon, 2010/2011)
Laura Dumont (internship CPE Lyon, 2010/2011)
Aurelia Augier (internship CPE Lyon, 2009/2010)
Emmanuel Bitaud (internship CPE Lyon, 2009/2010)
Delphine Mur (internship CPE Lyon 2008/2009)
Guillaume Rongier (internship CPE Lyon 2008/2009)
Alice Dufour (internship CPE Lyon 2007/2008)
Benoit Caldairou (internship CPE Lyon 2006/2007)
Delphine Ribes (internship CPE Lyon 2006/2007)
Clément Varchet (internship CPE Lyon 2005/2006)
Luc Fauvet (internship CPE Lyon 2005/2006)
Nathalie Strehel (internship CPE Lyon 2005/2006)
Aurelie Allain (internship CPE Lyon 2004/2005)
Sylvain Gouttard (internship CPE Lyon 2004/2005)
Benoit Pacquier (internship CPE Lyon 2003/2004)
Pierre Fillard (internship CPE Lyon 2003/2004)
Matthieu Ruffin (internship CPE Lyon 2002/2003)

Student Committees

Committee Member PhD/MS Thesis

Name	Degree	Completed
Current		
BLAUER,JOSHUA JACOB	Ph.D.	
Joshi, Anshul	Ph.D.	
Deepak, Antony	Ph.D.	
Preston, Sam	Ph.D.	
HOGREBE,LUKE A	Ph.D.	
MURALIDHARAN,PRASANNA	Ph.D.	
SEYEDHOSSEINI T.,SEYED MOJTABA	Ph.D.	
Veni,Gopalkrishna Balkrishna	Ph.D.	
DSOUZA,JOANITA EMILIA	M.S.	
Kemker, David	M.S.	
Alpert, Ben	M.S.	
Past		
Ledig, Christian	Ph.D. Imperial	Dec. 2015
Dinse, Juliana	Ph.D. Magdeburg	July 2015
Ferguson, Michael	Ph.D.	July 2015
Zhang, Miaomiao	Ph.D.	Oct. 2015
Michael Ferguson	Ph.D.	July 2015
Hao, Xiang	Ph.D.	Feb. 2014
SINGH,NIKHIL PRATAP	Ph.D.	Oct. 2013
DATAR,MANASI PRAKASH	Ph.D.	Oct. 2013
Liu, Wei	Ph.D.	Oct. 2013
Ezequiel Geremia	Ph.D.	Feb. 2013, INRIA Sophia Antipolis, Fl
Erik Anderson	Ph.D.	2010, Utah
Stanley Durrleman	Ph.D.	2010, INRIA Sophia Antipolis,FR
Hui Sun	Ph.D.	March 2010, U-Penn
Joshua Cates	Ph.D.	Fall 2009, Utah
Ender Konukoglu	Ph.D.	Feb. 2009, INRIA Sophia Antipolis, Fl
Sudipta Sinha	Ph.D.	August 2008, UNC Chapel Hill
David Borland	Ph.D.	August 2007, UNC Chapel Hill
Hui Zhang	Ph.D.	July 2007, U-Penn
Eric Bennett	Ph.D.	March 2007, UNC Chapel Hill
Pierre Fillard	Ph.D.	Jan. 2007, INRIA Sophia Antipolis, Fl
Oliver Commonwick	Ph.D.	2006, INRIA Sophia Antipolis, FR
Peter Lorenzen	Ph.D.	May 2006, UNC Chapel Hill
Michael Rosenthal	Ph.D.	March 2005, UNC Chapel Hill
Tom Fletcher	Ph.D.	2004, UNC Chapel Hill
Yonatan Fridman	Ph.D.	2004, UNC Chapel Hill
Paul Yushkevich	Ph.D.	2003, UNC Chapel Hill
Ruigang Yang	Ph.D.	2003, UNC Chapel Hill
Lucia Cevidanes	Ph.D.	2003, UNC Chapel Hill
JessicaCrouch	Ph.D.	2003, UNC Chapel Hill
Robert Katz	Ph.D.	2001, UNC Chapel Hill
Jonathan Oakley	Ph.D.	2000, PSI and ETH Zurich
G. Crelier	Ph.D.	1996, ETH Zurich
L. Felber	Ph.D.	1996, ETH Zurich
S. Fischer	Ph.D.	1994, ETH Zurich
B. Bomans	Ph.D.	1994, University Hamburg, Germany

Internal Service

- 2015–: NYU Global Network, Faculty Committee
- 2015–: NYU CSE: Chair Faculty Search, NYU Tandon Member Chair Search
- 2010–2013: Chair Retention/Promotion/Tenure (RPT) Committee School of Computing, Utah.
- 2008–2014: Associate Director SCI Institute, University of Utah.
- 2014–2015: Director Utah Biomedical Image and Data Analysis and Visualization Center (Utah BIDAC, `bidac.sci.utah.edu`).
- 2007–2015: Director Utah Center for Neuroimage Analysis ().
- 1997–2007: Director Neuroimaging Analysis Laboratory, UNC Department of Psychiatry (starting 1997 with one student, 2007 25 students, staff, postdoctoral researchers).

External Service

Editorials, Memberships

- Member AIMBE (American Institute for Medical and biological Enigneering (2011 - today)
- Editorial Board (Executive Committee) MEDICAL IMAGE ANALYSIS Journal, published by Elsevier B.V., 2000 - today
- Fellow of the Medical Image Computing and Computer-Assisted Intervention (MICCAI) Society, 2009 - today
- Board Member Medical Image Computing and Computer Assisted Intervention MICCAI (2006- Jan 2010)
- Board Member SPIE Conference IMAGING (2008-today)

Organization

- Co-Organized MICCAI 2014 Workshop on "DTI Tractography Challenge".
- Organized MICCAI 2014 Workshop on "Spatio-Temporal Image Analysis for Longitudinal and Time-Series Image Data" (with Durrleman, Niethammer, Fletcher, Pennec).
- Co-Organized MICCAI 2013 Workshop on "DTI Tractography Challenge".
- Organized MICCAI 2012 Workshop on "Spatio-Temporal Image Analysis for Longitudinal and Time-Series Image Data" (with Durrleman, Niethammer, Fletcher).
- Co-Organized MICCAI 2012 Workshop on "DTI Tractography Challenge".

- Co-Organized MICCAI 2012 Workshop on "Neonatal Brain Segmentation".
- Co-organized SPIE 2012 DTI Course, San Diego, CA (hands-on training on 3D Slicer Software).
- Co-Organized MICCAI 2011 Workshop on "DTI Tractography Challenge".
- Co-organized SPIE 2012 DTI Course, San Diego, CA (hands-on training on 3D Slicer Software).
- Organized MICCAI 2010 Workshop on "Spatio-Temporal Image Analysis. for Longitudinal and Time-Series Image Data" (with Fletcher, Pennec).
- Co-Organized MICCAI 2010 Workshop on "DTI Tractography Challenge".
- Organizer MICCAI 2008 Workshop: Imaging the Early Developing Brain: Challenges and Potential Impact.
- Organized MICCAI 2005 Conference, Palm Springs, as Program Chair (organizers: Jim Duncan, Yale and Guido Gerig, UNC, >600 attendees, 256 accepted papers).

Program Committees

- Standing Member Program Committee MICCAI, SPIE, IEEE ISBI
- Program Committee MICCAI 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005
- Program Committee MICCAI 2009 (area chair, paper selection comm., paper award coordination)
- Program Committee IPMI 2009 (paper selection)
- Program Committee 2009: SPIE, ISBI
- Program Committee MICCAI 2008 (area chair and paper selection committee)
- Program Committee 2008: CVPR, MIAR, MMBIA, SPIE
- Program Committee 2007: IPMI, MICCAI, SPIE

Reviewer for Conferences

- Regular reviewer IEEE ISBI, CVPR, ICCV, ECCV, MICCAI, MMBIA, IPMI, SPIE

Journal Reviews

- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Medical Imaging
- Medical Image Analysis
- NeuroImage
- Human Brain Mapping
- Academic Radiology
- IJCV
- JMIV

Research Experience

Research Direction

- Director of the Utah Center for Neuroimage Analysis UCNIA (`http://www.ucnia.org`), 2007 – today.
  UCNIA conducts imaging and image-based research and development by providing computational tools for quantitative image analysis. UCNIA supports end users with conducting research for advanced imaging technologies and clinical imaging research. The center offers consulting services and technical and methodological support for a broad range of medical and biological image analysis, including:
  - Computational infrastructure for image analysis (tools, image data bases).
  - A repository for novel image analysis tools (`http://www.ia.unc.edu/dev`).
  - Expertise in clinical imaging studies.
  - Training with image analysis methodology and tools.
  - Support in pilot studies and validation.
  - Advice on optimal imaging technologies given specific measurement tasks.
  - Organization of single and multi-site imaging research studies.
  - Development of novel image analysis methodology driven by novel applications.
- Former director and founder of the UNC Neuro Image Research and Analysis Laboratories NIRAL (`http://www.med.unc.edu/psych/research/niral`), 1998–1997.
- Interim director of the computer vision laboratory BIWI, EE Department, ETH Zurich, Switzerland, `http://www.vision.ee.ethz.ch/`, 1995–1998.

Research Topics

It is the primary goal of my research to translate state-of-the-art image analysis methodologies to (pre-)clinical use. I conduct development of novel methods and tools driven by challenging clinical driving applications, testing and validation of these methodologies in clinical studies via multi-disciplinary collaborative research, and making these tools available to the international research community. New analysis methods and tools will potentially enable new insights and discoveries in medicine and thus advance science, but facing most challenging new problems will also help to push the frontiers in medical image analysis technology.

- **Current methodological research topics:**
  - Quantitative assessment of normal and pathological anatomy from data across the whole age range:
    * 3D segmentation/modeling of volumetric mult-channel medical imaging data.
    * Segmentation of MRI/DWI of the early developing infant brain (neonates to 5 years).
    * Statistical analysis of geometry and appearance of sets of 3D structures (example of brain fiber tracts).

    - Automatic segmentation of healthy and pathological structures (tumor, edema, bleedings, deformations).
  - Longitudinal (4D) image analysis: Development, degeneration, monitoring of disease progress and of therapeutic intervention:
    - Spatiotemporal segmentation, modeling and analysis of longitudinal image data (time-discrete 3D data).
    - Correspondence-free mapping/registration of 3D images and derived structures for longitudinal data of individuals (intra-subject) and across individuals (inter-subject).
    - 4D modeling of time-discrete 3D data presenting topology changes and large deformations (pathology, appearing, disappearing structures).
    - 4D continuous shape modeling from time-discrete 3D shapes and multi-shape complexes.
    - 4D Computational Anatomy: Building normative statistical atlases from longitudinal 3D images and sets of anatomical structures.
    - Joint spatiotemporal modeling of longitudinal 3D images and embedded shapes and structures.
    - Modeling and analysis of brain connectivity changes over time via interpolation of distributions.
  - Novel tools and methods made available as open source packages (Insight Toolkit ITK, NITRC downloads, SNAP-ITK) and made available to public (`http://www.ia.unc.edu/dev`).

- **Current driving clinical problems:**
  - Longitudinal neuroimaging studies in children at risk for autism, offsprings of drug-addicted mothers, and infants at risk for mental illness.
  - Neuroimaging studies of normal infant development from birth to 5 years.
  - Spatiotemporal analysis of longitudinal neuroimaging data to asses degeneration of brain structures in Huntington's Disease (HD).
  - Modeling of brain tissue and brain lesions for profiling and prediction of outcome in traumatic brain injury (TBI).
  - Down syndrome (DS): Bridging Genes, Brain and Cognition via combining genetic, behavior, cognitive and image-derived brain anatomy measures.
  - Assessment of kidney function in patients with cirrhosis by measuring glomerular filtration rate via MR renography.

Research Grants

Summary Federal Grants per Year

Budget Year	Institution	Direct Costs	Total Awarded
2014/2015	Utah	[1]$550,000	[1]$819,500
2013/2014	Utah	[1]$589,481	[1]$881,274
2013/2012	Utah	[1]$590,273	[1]$876,518
2012/2013	Utah	[1]$520,000	[1]$780,000
2011/2012	Utah	[1]$516,834	[1]$775,251
2010/2011	Utah	[1]$446,469	[1]$669,704
2009/2010	Utah	[1]$391,743	[1]$587,615
2008/2009	Utah	[1]$375,147	[1]$562,720
2007/2008	Utah	[1]$184,349	[1]$276,523
2006/2007	UNC	[2]$826,838	[2]$1,248,525
2005/2006	UNC	[2]$826,837	[2]$1,248,523
2004/2005	UNC	[2]$716,336	[2]$1,081,667
2003/2004	UNC	[2]$587,335	[2]$886,875
2002/2003	UNC	[2]$587,334	[2]$886,874
2001/2002	UNC	[2]$527,001	[2]$795,772
2000/2001	UNC	[2]$382,000	[2]$576,820
1999/2000	UNC	[2]$321,999	[2]$486,218
1998/1999	UNC	[2]$251,998	[2]$380,517
1997/1998	ETHZ		$356,667
1996/1997	ETHZ		$356,667
1995/1996	ETHZ		$268,333
1994/1995	ETHZ		$263,333
1993/1994	ETHZ		$175,000
1992/1993	ETHZ		$175,000
1991/1992	ETHZ		$175,000

[1]estimates from Gerig annual returned overhead

[2]estimates from Gerig funding and Gerig UNC NIRAL lab support

Current Funding

A Longitudinal MRI Study of Infants at Risk for Autism: Autism Centers of Excellence (ACE) Network
NIH (NICHD) 2 R01 HD055741-06
P.I. Joseph Piven, UNC Chapel Hill, Role: P.I. Imaging Core
$675,000 over 5 years (Gerig part), 09/04/12-05/31/17, subcontract to Utah.

Web-based infrastructure for comparison and validation of image computing methods
NIH (NIBIB) 9R42MH106302-02
P.I. S. Aylward, Kitware, Role: Co-Investigator
$292,548 over 2 years (Gerig part), 08/26/14 - 07/31/16, subcontract to Utah.

Down syndrome: Bridging Genes, Brain and Cognition
NIH NINDS R01 HD067731-01A1
P.I. Julie Korenberg, Utah, Role: co-P.I.
$475,000 over 5 years (Gerig part), 09/01/11 - 08/30/16

4D Shape Analysis for Modeling Spatiotemporal Change Trajectories in Huntington's
NIH (NINDS) 1 U01 NS082086-01
Role: Principal Investigator
$1,265,971 over 3 years, 07/01/12- 06/30/15.

Continued Development and Maintenance of ITK-SNAP 3D Image Segmentation
NIH NIBIB 1R01EB014346-01
P.I. Paul Yushkevich, U-Penn, Role: co-investigator
$518,000 over 4 years (Gerig part), 09/19/11 - 08/31/15, subcontract to Utah.

Neurobiological and Behavioral Consequences of Cocaine Use in Mother-Infant Dyads.
NIH P01 DA022446-011
P.I. Joey Johns, UNC Chapel Hill, Role: P.I. Human Imaging Core
$599,313 5 years (Gerig part), 08/15/08-05/31/13 (no-cost extension '15), subcontract to Utah.

Past Funding

NA-MIC: National Alliance for Medical Image Computing
NIH 2U54EB005149-06
P.I. Ron Kikinis, Harvard, Role: co-investigator
$793,000 4 years (Gerig part), 09/01/10-08/31/14,subcontract to Utah.

Imaging Segmentation and Analysis for Polymer Fiber Reinforced Concrete.
Univ. of Utah Seed Grant
P.I. Amanda Bordelon, co-PI Guido Gerig
$27,981, 1 year 08/01/13 - 07/31/13

Medical Image Processing applied to pediatric autism research R. Harold Burton Foundation, Salt Lake City
P.I. Guido Gerig
$12,000, 1 year 08/01/13 - 07/31/13

NIH R01 MH070890 (Gilmore), 05/01/10 - 01/31/13
NIH, $388,984 (Utah subcontract)
Prospective studies of Early Brain Development in Twins

NIH 1 R01 NS055754-01 (Lin) 07/01/10-04/30/13
NIH NIBIB BRP, $440,642 (Utah subcontract)
Characterization of Normal Brain Development Using Parallel MRI.

1 R01 HD055741-01 (Piven), 07/01/07-08/30/12
NIH (NICHD), $726,747 (Utah subcontract), Role: PI Imaging Core

Autism Centers of Excellence: Infant Brain Imaging Study ACE-IBIS

2 P50 MH064065-06 (Gilmore), 08/01/07-07/31/12
NIMH, $436,576 (Utah subcontract), Role: PI Neuroimaging Core
Silvio Conte Center

K000432S01 COVALIC, NIH - STTR (Jomier), 08/01/10 - 07/30/12
$84,040 (Utah subcontract), Role: PI Utah subcontract.

HHSN276201000584P (Prastawa), 06/01/2010 - 05/31/2012
NIH/NLM $150,000, Role: Co-investigator
Score: Systematic Comparison through Objective Rating and Evaluation

R01 EB00219-09 (Bullitt, PI), 02/15/97-06/30/09
NIH NIBIB, Role: Co-Investigator
3D cerebral vessel location for surgical planning

P01 EB002779-14 Gerig (PI), 07/3/02- 06/30/07
NIH NIBIB, Role: PI Project 3
Medical image Presentation MIP: Structural Image Analysis and Medical Uses

P50 MH064065-01A1 Lieberman (PI), 08/01/02-07/31/07
NIH NIBIB, Role: PI Imaging Core
Prospective Studies of the Pathogenesis of Schizophrenia, UNC Silvio Conte Res. Centr.

5 P30 HD03110 Piven (PI), 07/01/03-06/30/08
NIH NIMH, Role: Director Imaging Core
Child Development and Mental Retardation, NDRC Core - Morphology

R01 MH64708-01 Piven (PI), 09/26/02-06/30/07
NIH NIMH, Role: Co-Investigator
Longitudinal MRI Study of Brain Development in Fragile X

Lilly Eli Corp., Gerig (PI), 2005–2007

Nat. Alliance for Autism Res. NAAR, Gerig (PI), 2005–2007

Stanley Foundation, Gerig (PI), 2001–2004

Foundation of Hope, Gerig (PI), 2001–2002

BIOMORPH, Gerig/Kübler (PIs), 1996–1999, European Union

Accurate Quantfication of PET-Activity, Gerig/Kübler (PIs), 1997–1999,
Swiss National Science Foundation

Patient Positioning Control, Gerig/Kübler (PIs), 1995–1998,
Swiss National Science Foundation

Geometry-Driven Diffusion in Vision, Kübler/Gerig (PIs), 1992–1995, European Union

Computer Vision in Radiology COVIRA, Kübler/Gerig (PIs), 1992–1995, European Union

Open Source Software Developments

The Utah Center for Neuroimage Analysis (www.ucnia.org) and the former laboratory at UNC (Neuroimaging Laboratory) are closely linked to the Insight Toolkit (ITK) Open Source development and distribution of software for medical image analysis.

Web download of most Neurolab Software and Tutorials available at (NIRAL-SW) and at the NIH NITRC source for neuroimaging tools and resources (http://www.nitrc.org/). Our group is also closely involved in the 3D Slicer development via the large NIH funded grant NAMIC (http://www.slicer.org/).

Major packages available to the international community:

[1] *Insight SNAP: User-guided 3D segmentation and 3D implicit snake segmentation (http://www.itksnap.org/pmwiki/pmwiki.php?n=Main.Downloads).*
ExoscelAccel: 4D shape modeling
DTIStats: Statistics of fiber tracts, made available on NITRC
ABC: Atlas-Based Classification, made available on NITRC and NA-MIC Slicer 3
Fiber Tracking: Tensor calculation and tractography applied to DTI data
FiberViewer: Quantitative analysis of white matter bundles
DTIChecker: Quality checking of MR-DTI image data
EMS: Automatic MRI brain tissue segmentation
Head Circumference: Head circumference measurement from 3D brain MRI
Imagine: Dataflow pipeline software for ITK modules
Intensity Rescaler: Adjustement of intensity histograms between pairs of volumetric images
Imconvert: Conversion of various volumetric image formats
VALMET: Tool for validation of intra- and inter-rater segmentation reliability
MeshValmet: Tool for object surface distance validation

[1] *The concept of the SNAP tool has been originally developed by Guido Gerig's group at UNC Chapel Hill, starting 1998. Paul Yushkevich at U-Penn significantly extended it into ITK-SNAP using the Insight Toolkit software libraries. Currently, both groups have a joint grant to further develop the tool. ITK-SNAP shows an average of over 1000 downloads per month. ITK-SNAP appears third among over 300 tools on the list of most downloaded neuroimaging tools on nitrc.org, the website of the NIH-sponsored Neuroimaging Informatics Tools and Resources Clearinghouse. It also appears first among the 40 tools listed in the "segmentation" category. According to Google Analytics, the website had over 18,000 "absolute unique visitors" and over 130,000 page views in 2010.*

Patents

"METHODS AND SYSTEMS TO PRODUCE CONTINUOUS TRAJECTORIES FROM DISCRETE ANATOMICAL SHAPES" for which we filed United States Patent Application No. 13/613,850 on September 13, 2012 (Atty. File No. 026389-9045-US02).

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- *DBLP Computer Science Bibliography and Downloads: DBLP.*
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John H. Gilmore, Isabelle Corouge, Weili Lin, Guido Gerig Early Development of White Matter Tracts in the Normal Neonate Assessed with High resolution DTI and Quantitative Tractography, accepted abstract ICOS 2007

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ME Shenton, G Gerig, JS Kwon, C Deutsch, M Kubicki, RW McCarley "Midline-Bacum Septi Pellucidi Abnormalities, Hippocampal Shape Abnormalities, and Diffusion Tensor Corpus Callosum Asymmetry Abnormalities in Schizophrenia", Collegium Internationale Neuro-Psychopharmacologicum XXIVth CINP, June 23 2004

Guido Gerig, Pierre Fillard, Marcellinus Prastawa, Weili Lin, John H. Gilmore, "Neonatal Brain Development Assessed by new Quantitative Analysis of High-field 3Tesla MRI and DTI", Society of Biological Psychiatry SOBP, April 29 - May 1, 2004

Mohamed Elsayed, Linmarie Sikich, Cecil Charles, Sarang Joshi, Guido Gerig, Jeffrey A. Lieberman, "Volumetric MRI Study in Childhood and Adolescent Psychosis" , Society of Biological Psychiatry SOBP, April 29 - May 1, 2004

Guido Gerig, Pierre Fillard, Marcel Prastawa, Weili Lin and John Gilmore, "New quantitative analysis of high-field 3T MRI/DTI to assess neonatal brain development", ACNP 2003, December 2003, Abstract

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G Gerig, M Styner, DW Jones, DR Weinberger, JA Lieberman, "Ventricular shape of monozygotic twins discordant for schizophrenia reflects vulnerability", Schizophrenia Research, Vol. 60, No. 1, Elsevier, March 15, 2003, p. 194, Abstract

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G Gerig, M Styner, M Chakos, JA Lieberman, Hippocampal Shape Alterations in Schizophrenia: Results of a new Methodology, 11th Biennial Winter Workshop on Schizophrenia, Feb. 26, 2002, Abstract.

M Styner, G Gerig, DW Jones, DR Weinberger, JA Lieberman, Lateralized Differences in ventricular Shape in monozygotic Twins discordant for Schizophrenia, 11th Biennial Winter Workshop on Schizophrenia, Feb. 26, 2002, Abstract.

M. Styner, D.W. Jones, D Weinberger, JA Lieberman, G Gerig, "Shape analysis of ventricular structures in mono- and dizygotic twin study", Schizophrenia Research, Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p. 167, Abstract

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G Gerig, M Jomier, M Chakos, JA Lieberman, "Segmentation of hippocampal shape: Improved reliability by 2D and 3D visualization of segmented objects and of intra-/inter-rater variability", Schizophrenia Research, Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p. 154, Abstract

M Chakos, S Schobel, G Gerig, Cecil Charles, HB Gu, D Bradford, J Lieberman, "Clinical correlates of Structural Brain Abnormalities in Male Schizophrenic Patients", Schizophrenia Research, Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p. 152, Abstract

J.H. Gilmore, G. Gerig, B. Specter, C. Charles, J.S. Wilbur, B.S. Hertzberg, M.A. Kliever, "Neonatal Cerebral Ventricle volume: A comparison of 3D ultrasound and MRI", Schizophrenia Research, Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p. 152, Abstract

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Invited Talks

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Jan. 4, 2016, Institut du Cerveau et de la Moelle épinière – ICM, **invited plenary lecture**, *"Longitudinal Neuroimaging: Adding time dimension to assess brain changes"*

Dec. 9, 2015, NYU Tandon School of Engineering, Faculty meets Faculty Luncheon, "Medical Image Computing: Opportunities for Collaborative Research"

Dec. 11, 2015, NYU Center for Brain Health - Department of Psychiatry, "Medical Image Computing: Opportunities for Collaborative Research"

Dec. 1, 2015, Radiological Society of North America (RSNA) Hands-on course, "Learn Image Segmentation Basics with Hands-on Introduction to ITK-SNAP"

Nov. 19, 2015, ACE-IBIS annual meeting, New York, "Prisma Switch: Scanner Comparison"

Oct. 26, 2015, NYU Tisch School of Arts, Dept. of Photography and Imaging, "Open-source and open-platform software developments in imaging research"

Sept. 21, 2015, Nathan Kline Institute, The Center for Biomedical Imaging and Neuromodulation, "Cross-Sectional versus Longitudinal Imaging: Improved Insight into Group- and Subject-Specific Growth and Disease Processes"

April. 16, 2015, IEEE ISBI Conference, Brooklyn, "4D Processing and Analysis of Longitudinal Infant Imaging Reveals Spatiotemporal Pattern of Early Brain Growth"

Dec. 15, 2014, ICVGIP Conference, IISC Bangalore, India, **invited plenary lecture**,

Dec. 15, 2014, MedImage Conference, IISC Bangalore, India, **invited plenary lecture**, *"Longitudinal medical image analysis: From snapshots in time to spatiotemporal models"*

Nov. 19, 2014, ACE-IBIS annual meeting, Denver, "Patterns of early Brain Growth via longitudinal MRI Contrast Modeling",

Nov. 19, 2014, ACE-IBIS annual meeting, Denver, "Individual Predictive Modelling of Early Brain Maturation",

Oct. 19, 2014, MIDAG 40th anniversary research presentations, UNC Chapel HIll, NC, **invited presentation**, *"Shapes come to life - spatiotemporal image analysis",*

Sept. 18, 2014, MICCAI 2014 Workshop on Computational Diffusion MRI (CDMRI), Boston, **Paper presentation**, *"Motion is Inevitable: The Impact of Motion Correction Schemes on HARDI Reconstructions",*

July 30, 2014, Medical Imaging Summer School (MISS), Favignana, Italy, **invited plenary lecture II**,*"Quantification of Object Dynamics by Spatiotemporal Shape Analysis"*

July 30, 2014, Medical Imaging Summer School (MISS), Favignana, Italy, **invited plenary lecture I**,*"'Shaping up: Introduction into Shape Analysis"*

July 1st, 2014, 32nd Annual Neurotrauma Symposium, San Francisco, Special Session on

Advances in Multimodal Imaging of TBI, **invited plenary lecture**, *"Computational Considerations in TBI Neuroimaging Data Analysis"*

June 24, 2014, International Symposium "From Medical Images to Computational Medicine", Collège de France, Paris, France, **invited keynote lecture**, *"Spatiotemporal Analysis of Brain Development and Disease Progression"*

June 12, 2014, SHAPE 2014 Symposium on Statistical Shape Models & Applications, Delemont, Switzerland, **invited keynote lecture**, *"Spato-Temporal Shape Modeling and Analysis"*

May 13, 2014, ISMRM'14 Conference, Milan, Italy, Poster Presentation: "Subject-Motion Correction in HARDI Acquisitions: Choices and Consequences"

May 1, 2014, IEEE ISBI Conference, Beijing, Oral Podium Presentation: "A Preliminary Study on the Effect of Motion Correction on HARDI Reconstruction"

April 30, 2014, IEEE ISBI Conference, Beijing, Oral Podium Presentation: "Parametric Regression Scheme for Distributions: Analysis of DTI Fiber Tract Diffusion Changes in Early Brain Development"

April 30, 2014, IEEE ISBI Conference, Beijing, Poster Presentation: "Geodesic Regression of Image and Shape Data for Improved Modeling of 4D Trajectories"

April 14, 1014, Montreal Neurological Institute MNI, The Feindel Brain Imaging Lecture Series at the BIC, **invited keynote lecture**,*"Modeling of early-infant brain growth using longitudinal data from diffusion tensor imaging"*

April 2, 2014, Montreal Neurological Institute MNI, Neurology Seminar,"Individual Predictive Modelling"

April 4, 2014, McGill, Center for Intelligent Machines CIM, "Modeling brain injury and trajectory of brain changes from longitudinal multimodal imaging"

Nov. 27, 2013, Montreal Neurological Institute MNI, Neurology Seminar "4D Segmentation"

Nov. 20, 2013, Montreal Neurological Institute MNI, Neurology Seminar, "4D shape segmentation and analysis"

Nov. 18, 2013, U-Penn, Philadelphia, Dept. of Radiology, **invited seminar lecture***: "Subject-Specific Analysis of Neurodevelopmental and Neurodegeneration Trajectories by Spatiotemporal Modeling of Longitudinal Brain Imaging"*

Nov. 15, 2013, McGill, Montreal, **invited keynote lecture**, *CREATE Program in Medical Image Analysis (CREATE-MIA), "4D Dynamics and Statistics by Spatio-Temporal 3D Image and Shape Analysis"*

Nov. 10, 2013, Montreal Neurological Institute MNI, **invited keynote Killam Neurology Lecture**,*"Modeling Brain Injury and Trajectory of Brain Changes from Longitudinal Multimodal Imaging"*

Oct. 23, 2013, Montreal Neurological Institute MNI, Neurology Seminar "Modeling brain injury and trajectory of brain changes from longitudinal multimodal imaging"

Oct. 17, 2013, Chicago, Autism Centers of Excellence (ACE-IBIS) annual meeting, "Mod-

eling of early brain development from longitudinal diffusion MRI for assessment of growth trajectories"

Oct. 17, 2013, Chicago, Autism Centers of Excellence (ACE-IBIS) annual meeting, "Modeling multi-modal contrast changes from longitudinal infant MRI"

Sept. 21, 2013, Nagoya, Japan, MMBC (Mathematical Methods for Brain Connectivity) Workshop at MICCAI 2014, **invited keynote lecture***, "Modeling of Early Brain Development from Longitudinal Diffusion MRI for Assessment of Growth Trajectories"*

Sept. 21, 2013, Nagoya, Japan, MBIA (Multimodal Brain Image Analysis) Workshop at MICCAI 2014, paper presentation "Modeling 4D changes in pathological anatomy using domain adaptation: analysis of TBI imaging using a tumor database"

June 26, 2013, CARS Heidelberg workshop - DTI in TBI, **invited plenary lecture***, "Modeling brain injury and trajectory of brain changes from longitudinal multimodal imaging"*

June 11, 2013, University of Lugano, Switzerland, **invited seminar presentation***, "4D Shape Modeling for Spatiotemporal Analysis"*

May 12, 2013, University of Tokyo, International Workshop on Medical Imaging and Computer-assisted Intervention MICI, **Invited plenary lecture***:"What's Normal? Accounting for Population Variability in Building Normative Databases of Image Data"*

April 20, 2013, Salt Lake City, International Society for Magnetic Resonance in Medicine ISMRM'13 Conference, **invited plenary presentation***: "What's Normal? Accounting for Population Variability"*

Mar 22, 2013, Imperial College London, **invited presentation***: "Spatiotemporal Modeling and Analysis for Image Time Series"*

Mar 18-21, 2013, The Rank Prize Funds Symposium on Medical Imaging Meets Computer Vision, **invited plenary presentation***, "Spatiotemporal Modeling and Analysis for Image Time Series", Grasmere, U.K.*

Feb. 27, 2013, NIH NINDS Huntington's Disease Biomarker and Diagnostic Criteria Workshop, **invited plenary presentation***: "4D Shape Analysis for Modeling Spatiotemporal Change Trajectories in Huntington' s Disease", Washington DC*

Oct. 12, 2012, **invited presentation***, NYU-Poly, NYC, "Time Matters: Spatiotemporal Modeling and Analysis for Image Time Series"*

Aug. 8, 2012, **invited plenary presentation***, Iowa City, annual medical image analysis meeting and workshop, "Time Matters: Spatiotemporal Modeling and Analysis of Longitudinal Imaging Data"*

May 22, 2012, Presentation to Traumatic Brain Imaging Clinic UCLA, LA, "Methodologies and Tools for Analysis of TBI Imaging"

Feb. 5, 2012, **invited plenary lecture** *(SC1065) at SPIE Medical Imaging conference, San Diego, "Exploring Brain Connectivity in-vivo: from Theory to Practice"*

Dec 12, 2011, **invited Distinguished/Keynote talk***, University of Pennsylvania, "Spatio-Temporal Trajectories of Brain Change from Longitudinal Neuroimaging Studies"*

May 20, 2011, Indian Institute of Science IISc, Bangalore, **invited talk**, *"Time matters: Spatiotemporal Image Analysis for 4D Computational Anatomy"*

May 19, 2011, Siemens Corporate Research and Technologies India, Bangalore, , **invited talk**, *"Time matters: Spatiotemporal Image Analysis for 4D Computational Anatomy"*

May 18, 2011, Philips Research India, Bangalore, **invited talk**, *"Longitudinal imaging studies of early brain development: Towards defining neurostructural phenotypes in disorders and children at risk for mental illness"*

May 16, 2011, General Electric GE Medical Systems, Bangalore, **invited talk**, *"Spatiotemporal Image Analysis: Towards 4D Computational Anatomy"*

May 6th, 2011, Cognitive Neuroscience Laboratory, Duke-NUS Graduate Medical School, National University of Singapore, **invited talk**, *"Spatio-Temporal Trajectories of Brain Change from Longitudinal Neuroimaging Studies"*

May 4th, 2011, National University of Singapore (NUS), Division of Bioengineering, , Singapore, **invited talk**, *"Analysis of early brain growth trajectory from longitudinal neuroimage data"*

*May 3rd, 2011, Biomedical Imaging Lab, Agency for Science, Technology&Research (A*STAR). Singapore,* **invited talk**, *"Time matters: Spatiotemporal Image Analysis for 4D Computational Anatomy"*

March 12, 2011, Tokushima University, **invited talk**, *"Spatiotemporal Change Trajectories: Towards 4D Computational Anatomy"*

March 10, 2011, Osaka University, **invited talk**, *"4D Computational Anatomy via Spatiotemporal Analysis of Brain MRI and Physical Modeling of Pathology: Applications in Early Brain Development, Healthy Aging, and Tumor and Lesion Growth"*

March 7th, 2011, **invited keynote talk** *at 2nd International Symposium on Computational Anatomy, title "Spatiotemporal Change Trajectories: Towards 4D Computational Anatomy"*

Nov 9, 2010, paper presentation, Asilomars, IEEE conference, Monterey, CA, USA, "Spatio-Temporal Image Analysis for Longitudinal and Time-Series Image Data"

Oct. 10, 2010, **Invited Plenary Talk**, *Analysis of early brain growth trajectory from longitudinal neuroimage data, NEUROSPIN, Paris, France (invitation J-F Mangin)*

Sept. 25, 2010, Introduction STIA'10, Spatio-temporal Image Analysis, Workshop Organizer MICCAI 2010, Beijing, China

Sept. 20, 2010, "Atlas-Based Classification ABC", Workshop MICCAI'10 "The NAMIC Platform", Beijing, China

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Nov 20, 2009, **Invited presentation**, *"Growth trajectory of the early developing brain derived from longitudinal MRI/DTI data", MIND Institute, Albuquerque, NM (invited by Vince Calhoun).*

Oct 16, 2009, **Invited Lecture**. *NA-MIC Satellite Workshop presentation "Diffusion tensor processing and visualization", Society for Neuroscience SfN, Neuroscience 2009 Meet-*

ing, Chicago.

Sept 28, 2009, Presentation "DTI Fiber Cup Challenge" Workshop, titled: "Fiber Challenge, SCI Utah Solution,

Sept 24, 2009, **Invited speaker** *for MICCAI'09 Tutorial "Image Analysis for the Developing Brain", titled "Growth trajectory of the early developing brain derived from longitudinal MRI/DTI", London, Imperial College.*

June 30th, 2009, **Invited presentation***, "Advanced methodology for quantitative analysis of white matter tracts from MR Diffusion Weighted Imaging", EPFL Lausanne, Switzerland, Advanced Clinical Imaging Technology CIBM*

April 21, 2009, **Invited Plenary Course Lecture***, ISMRM 2009 conference: Sunrise Session "Quantitative Neuro-anatomical and functional image assessment", titled: Recent progress on image registration and its applications. Outstanding Teacher Award ISMRM 2009.*

March 11, 2009, **Invited presentation***, "Image Analysis In Neuroimaging: Recent Progress", Penn State University-Milton S. Hershey Medical Center, PA*

Dec. 15, 2008, **Invited presentation***: New trends in medical image processing, theme session at Indian Conference on Computer Vision, Graphics and Image Processing ICVGIP, Orissa, India*

Dec. 10, 2008, **Invited panel presentation***: White Matter Development in Very Early Ages: Normative Models of Healthy Growth to study Risk Populations and Disease, ACNP 2008, Scottsdale, AZ*

Nov. 7, 2008, Mapping Early Brain Development via Neuroimaging, **invited presentation***, UCLA LONI CCB Seminar, Los Angeles, CA*

September 10, 2008, Mapping Brain Changes Over Time during Development: Challenges, Limits and Potential, **invited talk** *for Workshop on Studying the Early Developing Brain, MICCAI 2008, NYU, New York*

Sept. 6, 2008, Computational pipelines for clinical studies, **invited talk** *for Tutorial on DTI, MICCAI 2008, NYU, New York*

August 28. 2008, Analysis of brain white matter properties via DW MRI: The role of normative atlases, **invited presentation** *at 5th Annual World Congress of IBMISPS (Int. Brain Mapping and Intraoperative Surgical Planning Society), Los Angeles, CA*

July 14, 2008, Mapping Brain Changes Over Time during Development, Guido Gerig, IPAM (Institute for Pure and Applied Mathematics), UCLA, **invited plenary talk** *to Summer School: Mathematics in Brain Imaging*

April 17th, 2008, Advanced methodology for quantitative analysis of white matter tracts from MR Diffusion Weighted Imaging, Guido Gerig, **invited presentation***, UNC BRIC GE Seminar Series, Chapel Hill, NC*

Feb. 6, 2008: Neuroimaging of the early developing brain: Challenges, limits and potential, **Invited Presentation** *at special Seminar on DTI imaging by Nicholas Ayache (with Peter Basser, C-F Westin et al.), INRIA Sophia Antipolis, France*

Dec. 12, 2007, Neuroimaging of the very early age to discover brain changes: Challenges, limits and potential, **invited presentation** *at chaired session, ACNP Conference, Florida*

Nov. 15, 2007: Computational NeuroImage Analysis Laboratory, Hanyang University, Seoul, Korea: **Invited Presentation***: Medical Image Analysis: Statistical Shape Analysis*

Nov. 14, 2007: Computational NeuroImage Analysis Laboratory, Hanyang University, Seoul, Korea: **Invited Presentation***: Medical Image Analysis: Diffusion Weighted Imaging*

Sept. 19, 2007: Coordinate systems for computing DTI statistics in population studies, **Invited Tutorial presentation** *MICCAI 2007, Brisbane, Autstralia*

June 6, 2007: MR-DTI: Non-invasive imaging of neuroanatomy of white matter, workshop presentation, Human Brain Mapping HBM conference, Chicago, Il

April 15, 2007, Medial Image Analysis: Advancing Medicine via Computational Science, **invited presentation** *CPE Lyon, France*

March 17, 2007, MR Imaging of Early Brain Development: Challenges and Insights, INRIA Sophia Antipolis, **invited seminar presentation**

November 9, 2006, **Invited Keynote Grand Rounds***, Dept. of Radiology U-Penn,"MR Imaging of Early Brain Development: Challenges and Insights"*

August 17, 2006, **invited plenary talk** *at Int. Workshop on Medical Imaging and Augmented Reality MIAR 2006, Shanghai, "Statistics of Pose and Shape in Multi-object Complexes using Principal Geodesic Analysis"*

August 11, 2006, **invited plenary talk** *National Institute of Pattern Recognition, Chinese Academy of Science, Beijing, "Brain Connectivity via Diffusion Tensor Imaging: Challenges for Image Processing, Shape Modeling and Scientific Visualization"*

June 21, 2006, **Invited seminar talk** *presentation ETH Zurich, Computer Science, visual computing lunch, "Brain Connectivity via Diffusion Tensor Imaging: Challenges for Image Processing, Shape Modeling and Scientific Visualization"*

June 1, 2006, **Invited Talk***, University of Utah, SCI, "Statistics of populations of 3D images and its embedded objects."*

May 20, 2006, **Invited Seminar Talk***, Johns Hopkins University, Biomedical Engineering, "Statistics of populations of 3-D images and its embedded objects"*

May 19, 2006, **Invited Talk***, NIH WasCAS meeting. "Mapping the trajectory of the early developing brain: Challenges and Rewards ?"*

Jan 6, 2006: **Invited Talk***, University of Utah, Salt Lake City (Prof. Chris Johnson): "Neuroimaging: What can we learn about brain development?"*

Nov. 18, 2005: **Invited Seminar Presentation** *ECE Department NC State University, "Statistics of images and shapes: From linear to nonlinear metrics"*

October 26, 2005: **Invited Seminar Talk** *UCLA IPAM, Center for Computational Biol-*

ogy (CCB), "Quantitative analysis of structural MRI and DTI to assess trajectory of early brain development"

June 2, 2005: **Invited Plenary Presentation** *National Institute of Mental Health (NIMH): "Early Brain Development Assessed by structural MRI"*

May 19-21, 2005: Society of Biological Psychiatry, Atlanta, GA: **Invited Symposium Presentation**, *"Early Brain Development Assessed by new Quantitative Analysis of structural MRI and DTI"*

April 5, 2005: Int. Cong. of Schizophrenia Res. ICOS, Savannah, GA: **Invited Symposium Presentation***: "Methodology of Pediatric Imaging"*

Dec. 14, 2004, American College of Neuropharmacology ACNP, San Juan, Puerto Rico, **Invited Research Symposium***: "Neonatal Brain Development Assessed by new Quantitative Analysis of High-field 3Tesla MRI and DTI"*

Nov. 31, 2004, Radiological Society of North America RSNA: **Invited lecture**, *Refresher's Course for Radiologists: "Image Segmentation"*

Sept 24, 2004, **Invited Keynote Talk**, *Medical Image Understanding and Analysis MIAU, Imperial College, London, Studying neurodevelopment and neurodegeneration: Contributions from UNC Chapel Hill*

Sept. 10, 2004, UNC National Symposium "Imaging of the Developing Brain: **Invited Presentation***: "Image Analysis Tools for MRI of Early Development"*

July 16, 2004, UCLA IPAM, **invited talk** *graduate summer school: Mathematics in Brain Imaging, "Shape Analysis to assess neurodevelopment and neurodegeneration, Challenges for Imaging, Image Analysis and Visualization"*

Mar 26, 2004, Brigham and Women's Hospital, Harvard, Boston, **invited seminar presentation***: "Diffusion Tensor Imaging to explore white matter tracts:*

Mar 10, 2004, Nathan Kline Institute (NKI), Orangeburg NY, **invited plenary presentation***: "Improved imaging and image analysis to study brain change in mental illness"*

Dec. 3, 2003, Radiological Society of North America RSNA, **Invited Presentation***: "Image Processing: From Basics to Advance"*

Nov. 15, 2003 Medical Image Computing and Computer Assisted Intervention MICCAI'03, **Tutorial Presentation***: "Unifying Statistical Classification and Geometric Models"*

July 14, 2003: **Invited Seminar Talk**, *University Hospital of Geneva, Switzerland: "Image Analysis of Neonatal MRI"*

March 30, 2003: International Congress on Schizophrenia Research ICOS2003, Colorado Springs, Poster Presentation: "Age and Treatment related local hippocampal changes in schziophrenia"

San Diego, Feb. 17, 2003, SPIE International Symposium Medical Imaging, **Invited Workshop Talk***: Statistical Characterization of Brain Structures using M-reps*

Puerto Rico, Dec 8, 2002, American College of Neuropharmacology ACPN, **Paper Pre-**

sentation*: "Structural Imaging in Autism"*

Oct. 30: Harvard Medical School, Brigham and Women's Hospital, **Invited Seminar Presentation***: Segmentation and Shape Characterization in Clinical Brain Studies*

July 8, 2002, International IEEE Conference of Bioinformatics ISBI Washington, **invited plenary presentation***, Statistical Shape Models for Segmentation and Structural Analysis"*

May 27, 2002, **invited seminar talk***, Swiss Federal Institute of Technology ETH, Department of Electrical Engineering, Switzerland, "Model-based segmentation using atlas prior and intensity and shape model"*

December 13th, 2001, MMBIA 2001, **Invited Keynote Presentation***, Shape*

Dec 4, 2001, University of Richmond (Math Department, Michael Kerckhove), VA, **Invited Seminar Talk***, Three-dimensional Shape models for automatic segmentation and structural analysis applied to brain imaging studies.*

September 28, 2001, National Institute of Mental Health NIMH, Mood and Anxiety Disorders Program, **Invited Seminar Talk***, Model-Based Segmentation and Shape Analysis to Study the Morpholoy of Subcortical Structures*

August 15th, 2001, UCLA, **invited seminar talk***, Lab of Neuro-Imaging and Brain Mapping Division LONI, "Object Modeling for automatic segmentation and shape analysis to study morphology in neuroimaging applications"*

June 14, 2001, **Invited seminar talk** *Allan Reiss Lab., Stanford University, Pediatric Psychiatry, "Medical Image Analysis at UNC Chapel Hill"*

May 17, 2001, Belgium, Catholic University of Leuven, KUL, ESAT, **Invited seminar presentation***, 3D Shape Modeling in the Presence of Shape Variability: Combining Surface and Medial Shape Representation*

May 16, 2001, Belgium, Catholic University of Leuven, KUL, Medical School, **Invited seminar presentation***, Model-based segmentation and shape description to study morphology in neuroimaging application*

May 4th, 2001, Montreal Kaleem Siddiqui's lab: **Seminar Presentation***: "Building medial models representing shape populations of subcortical brain structures"*

May 3rd 2001, Montreal Neurological Institute MNI: **invited talk***: "Shape Models for Segmentation and Shape Analysis to study Neuropathology in Mental Illness"*

May 1st 2001, Whistler CA, ICOS Conference, **Conference Presentation***: Ventricle Shape*

Nov 5, 2000, NY, Swiss Eureka in America, **Distinguished/Keynote Lecture***: Confluence of the Information and Life Sciences - Brain Imaging for the Study of Neurological Diseases*

Talks before Nov. 2000 not listed.