

Guido Gerig, PhD

Professor of Computer Science, School of Computing and Scientific Computing and Imaging Institute
Director Utah Center for Neuroimage Analysis

Scientific Computing and Imaging Institute (SCI)
University of Utah
72 South Campus Drive, 3750 WEB
Salt Lake City, UT 84112, USA

Phone: +1 (801) 585 0327
Fax: +1 801 585 6513
email: gerig@sci.utah.edu
Web CS: <http://www.sci.utah.edu/~gerig>
Web Bioen: <http://www.bioen.utah.edu/directory/>

Education Swiss Federal Institute of Technology, ETH Zurich, Switzerland
1993 Venia Legendi (Habilitation) Electrical Engineering
1987 Ph.D. Electrical Engineering & Computer Science
1981 Diploma Natural Sciences (Dept. X)

Academic Appointments

| | |
|--------------------|--|
| 2007 – present | Prof. Computer Science at School of Computing and Scientific Computing and Imaging Institute SCI, University of Utah |
| 2008 – present | Adjunct Professor Biomedical Engineering, University of Utah |
| 2007 – present | Adjunct Professor Dept. of Computer Science, UNC Chapel Hill |
| 2007 – present | Adjunct Professor Dept. of Psychiatry, UNC Chapel Hill |
| 1998 - 2007 | Taylor Grandy Professor of Computer Science and Psychiatry, UNC Chapel Hill |
| 1996 - 1998 | Temporary director of the image processing lab., EE, ETH Zurich |
| 1993 - 1998 | Assistant Prof. for Image Data Analysis, Dept. of EE, ETH Zurich |
| 1/08/91 – 30/10/91 | Visiting Ass. Prof. of Radiology, BWH, Harvard Medical School |
| 1/11/89 – 30/12/89 | Visiting Ass. Prof. of Radiology, BWH, Harvard Medical School |
| 1987 - 1993 | Postdoctoral research Dept. of EE, ETH Zurich, Switzerland |

Teaching School of Computing, University of Utah

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|-------|--------------|---------------------------|
| F2010 | CS/BIOEN6640 | Image Processing |
| S2010 | CS7960 | Advanced Image Processing |
| F2009 | CS6968 | 3D Computer Vision |
| F2008 | CS6320 | 3D Computer Vision |

Graduate Courses Department of Computer Science, UNC Chapel Hill:

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|------|---------|---|
| 2006 | Comp254 | Image Processing and Analysis (<i>Student Teaching Award</i>) |
| 2005 | Comp256 | Computer Vision (<i>Nomination UNC Teaching Award</i>) |
| 2004 | Comp254 | Image Processing and Analysis (<i>Student Teaching Award</i>) |
| 2003 | Comp255 | Recent Advances in Image Analysis |
| 2002 | Comp254 | Image Processing and Analysis |
| 2001 | Comp256 | Computer Vision |
| 2000 | Comp256 | Computer Vision |
| 1999 | Comp254 | Image Processing and Analysis (<i>Student Teaching Award</i>) |

Graduate Level Courses UNC Medical School (Depts. of Psychiatry and Neurology):

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|------|--|
| 2004 | Imaging the Developing Mind and Brain (block course) |
| 2003 | Imaging the Developing Mind and Brain (block course) |
| 2000 | Medical Image Analysis |

Graduate Courses School Weekly Research Seminars:
1999 Medical Image Analysis

SCI Image Graduate Seminar)
Lunch Undergraduate Students Exchange Program CPE Lyon, France:
(Computer 1999 – today: Supervision and advising of 2-3 undergraduate students / year
Science

Short Bios

Dr. Gerig joins the SCI Institute from the [University of North Carolina at Chapel Hill](#) where he is a Taylor Grandy Professor with joint appointments in the [Department of Computer Science](#) and the [Department of Psychiatry](#). He received his Ph.D. in 1987 from the Swiss Federal Institute of Technology, ETH Zurich, Switzerland and has held his position with UNC-Chapel Hill since August 1998. At the University of Utah, Dr. Gerig will have faculty positions within the School of Computing, Department of Psychiatry and SCI Institute.

Guido Gerig began research in the area of medical image analysis in 1985 at ETH Zurich, Switzerland. Since then, he has led a large number of national and international projects with close multidisciplinary collaboration between medicine, engineering, statistics, industry, and computer science. He has spent several research leaves as a Visiting Assistant Professor at the Brigham and Women's Hospital at Harvard Medical School. Dr. Gerig is a member of the editorial board of the Journal Medical Image Analysis published by Elsevier. He is a board member of MICCAI, the international society organizing the annual conference on Medical Image Computing and Computer Assisted Intervention, and has served on the committees of a number of computer vision and image analysis conferences and workshops. As the director of the UNC Neuroimage Analysis Laboratory, he supports a number of clinical neuroimaging projects with methodology for image processing, registration, atlas building, segmentation, shape analysis, and statistical analysis. Clinical driving problems are neurodevelopmental and neurodegenerative diseases and mental disorders such as schizophrenia, autism, fragile- X, chronic depression and Parkinson's disease. Current key research topics are segmentation of MRI/DTI of the early developing brain in healthy and high-risk subjects, longitudinal analysis of multi-shape complexes to describe growth trajectories of brain structures, building of normative population atlases of volumetric images and embedded shapes, and new methodologies for statistical analysis of brain white matter using diffusion tensor imaging (DTI). Tools and methods developed through driving clinical applications are open source (ITK) and made available to public.

Professional Activities

- Editorial Board (Executive Committee) MEDICAL IMAGE ANALYSIS Journal, published by Elsevier B.V., 2000 – today
- Co-editor of MedIA Elsevier special issue on MICCAI'09 conference, published Sept. 2010
- Board Member Medical Image Computing and Computer Assisted Intervention MICCAI (2006- Jan 2010)
- Board Member SPIE Conference IMAGING (2008-today)
- Program Committee 2010: ISBI, CVR
- Reviewer for journals: IEEE TMI, MedIA, NeuroImage, IEEE PAMI, Academic Radiology, JMIV
- Program Committee MICCAI 2009 (area chair, paper selection comm., paper award coordination)
- Program Committee IPMI 2009 (paper selection)
- Program Committee 2009: SPIE, CVPR, ISBI, ICCV
- Program Committee MICCAI 2008 (area chair and paper selection committee)
- Program Committee 2008: CVPR, MIAR, MMBIA, ECCV, SPIE
- Program Committee 2007: IPMI, MICCAI 2007 (area chair, paper selection), ICCV, CVPR, SPIE
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Awards and Honors

- 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
- 2006: Dept. of Computer Science UNC: Student Teaching Award
- 2004: Dept. of Computer Science UNC: Student Teaching Award
- 1999: Dept. of Computer Science UNC: Student Teaching Award
- January 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)

**PhD
advising**

Current:

- **Bo Wang** (start June 2010)
- **Neda Sadeghi** (start July 2008)
- **Anuja Sharma** (start August 2008)
- **James Fishbaugh** (start June 2009)
- **XiaoYue Huang** (start June 2009)
- **Avantika Vardhan** (start August 2009)
- **Christine Xu** (UNC, expected Graduation Summer 2010)
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Past:

- (Sophia Han, M.S. (Jan to August 2009), temporary advising)
- 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)
- DimitrDimitris Ekatodramis (PhD ETHZ 1998)
- Christian Brechbuehler (PhD ETHZ 1996)

**PhD co-
advising**

- **Seyed Mojtaba Seyedhossini Tarzjani**
- **Erik Anderson (expected summer 2010)**
- **Antony Deepak**
- **Joshua Blauer**
- Stanley Durrleman (PhD 2010, INRIA Sophia Antipolis)
- Hui Sun (PhD March 2010, U-Penn)
- Joshua Cates (PhD Fall 2009)
- Ender Konukoglu (graduation Feb. 2009, INRIA Sophia Antipolis, France)
- Sudipta Sinha (graduation August 2008, UNC Chapel Hill)
- David Borland (graduation August 2007, UNC Chapel Hill)
- Hui Zhang (graduation July 2007, U-Penn)
- Eric Bennett (graduation March 2007, UNC Chapel Hill)
- Pierre Fillard (graduation Jan. 2007, INRIA Sophia Antipolis, France)
- Oliver Commonwick (graduation 2006, INRIA Sophia Antipolis, France)
- Peter Lorenzen (graduation May 2006, UNC Chapel Hill)
- Michael Rosenthal (graduation March 2005, UNC Chapel Hill)
- Tom Fletcher (graduation 2004, UNC Chapel Hill)
- Yonatan Fridman (graduation 2004, UNC Chapel Hill)
- Paul Yushkevich (graduation 2003, UNC Chapel Hill)
- Ruigang Yang (graduation 2003, UNC Chapel Hill)
- Lucia Cevidanes (graduation 2003, UNC Chapel Hill)
- Jessica Crouch (graduation 2003, UNC Chapel Hill)
- Robert Katz (graduation 2001, UNC Chapel Hill)

**Graduate /
MS student
advising**

- Ran Tao (MS degree Fall 2009)
- Samuel Preston (MS completed May 2009), co-advising
- Kevin Gorczowski (MS Spring 2007)
- Bradley Moore (Fall 2007)
- Sampath Vetsa (MS Spring 2003)
- Megan Dunigan (MS Spring 2003)
- Nathan Moon (MS Spring 2002)

Undergraduate student advising

Undergraduate Internship Program with CEP Lyon

- **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 from CPE Lyon 2008/2009)
- Guillaume Rongier (internship from CPE Lyon 2008/2009)
- Alice Dufour (internship from CPE Lyon 2007/2008)
- Benoit Caldaïrou (internship from CPE Lyon 2006/2007)
- Delphine Ribes (internship from CPE Lyon 2006/2007)
- Clement Varchet (internship from CPE Lyon 2005/2006)
- Luc Fauvet (internship from CPE Lyon 2005/2006)
- Nathalie Strehel (internship from CPE Lyon 2005/2006)
- Aurelie Allain (internship from CPE Lyon 2004/2005)
- Sylvain Gouttard (internship from CPE Lyon 2004/2005)
- Benoit Pacquier (internship from CPE Lyon 2003/2004)
- Pierre Fillard (internship from CPE Lyon 2003/2004)
- M. Ruffin (internship from CPE Lyon 2002/2003)

Postdoc Advising: Stanley Durrleman (2010-2012)
Isabelle Corouge (2004-2006)

Grant Funding

Current:

- 1 R01 HD055741-01 Piven (PI) 06/01/07-05/30/12
NIH NIMH, A Longitudinal MRI Study of Infants at Risk for Autism, Autism Centers of Excellence (ACE) Network Role: PI Imaging Core
- 1 R01 NS055754-01 Lin (PI) 07/01/07-06/30/12
NIH NIBIB, Characterization of Normal Brain Development Using Parallel MRI, Role: Co-Investigator
- 2 P50 MH064065-06 Gilmore (PI) 08/01/07-07/31/12
NIH NIMH Prospective Studies of the Pathogenesis of Schizophrenia, Silvio O. Conte Center for the Neuroscience of Mental Disorders, Role: PI Imaging Core
- P01 DA022446-01 Johns (PI) 09/01/08-08/31/13
NIH NIDA, Neurobiological and Behavioral Consequences of Cocaine Use in Mother-Infant Dyads, Role: PI Imaging Core
- Award Number pending Kikinis (PI) 09/01/2010 – 08/31/2014
NIH NIBI, NA-MIC: National Alliance for Medical Image Computing, Role: Co-Investigator
- Award Number pending Gilmore (PI) 05/01/10 – 11/30/14
NIH, Prospective studies of Early Brain Development in Twins, Role: PI University of Utah, Role: PI University of Utah
- Award Number pending 06/01/2010 – 05/31/2011
NIH NLM, Score: Systematic Comparison through Objective Rating and Evaluation, Role: PI
- Award Number pending Jomier (PI) 08/01/10 – 07/30/11
NIH, Development of a web-based Infrastructure for Comparison and Validation of Image Computing methods (COVALIC), Role: PI University of Utah
- 1R01MH084795-01 Lainhart (PI) 09/01/08-08/31/13
NIH NIBIB, The Microstructural Basis of Abnormal Connectivity in Autism, Role: Consultant

Past: (only major multi-site grants listed):

- “National Alliance for Medical Imaging Computing,” (Co-PI for Utah), NIH (subcontract with Harvard, BWH), \$312,675 (7/07-7/10)
- NAAR (National Alliance of Autism Research): Quantitative white matter analysis of early brain development in Autism: New methods to assess differences in developmental trajectories of fiber tracts (PI at UNC), NAAR Autism Speaks, \$120,000 (1/07-1/09)
- Eli Lilly: Demonstration of drug effect (PI G. Gerig) (2004 – 2006)
- P01 NIBIB-NCR: Medical Image Presentation MIP (PI S.M. Pizer, Role G. Gerig: PI Project 3: Shape in Schizophrenia) (2002-2007)
- P30 NICHD: UNC Neurodevelopmental Disorders Research Center NDRC: Child Development and Mental Retardation (Role G. Gerig: Co-director Neuroimaging)
- U54 Gene-Brain-Behavior Relationships in Autism – STAART Center (PI Joseph Piven, Role Guido Gerig: co-investigator imaging core) (2002-2007)
- R01 Longitudinal MRI Study of Brain Development in Fragile X (PI Joseph Piven, Role Guido Gerig: Co-investigator imaging core) (2002-2007)
- R01 3D cerebral vessel location for surgical planning (PI Elizabeth Bullitt, Role Guido Gerig: Co-investigator)
- R01 Brain MRI/MRS (PI J. Lieberman, Role Guido Gerig: Co-investigator)

- U I J. Lieberman, Role Guido Gerig: PI Imaging Core) (1997 – 2002)
 - N European Community & Swiss BBW, 4th framework: BIOMED 2, #95084, Title: BIOMORPH", 6 European academic and clinical partners (1996-98)
 - C European Community AIM #A2003 & Swiss KWF, Advanced Informatics in Medicine: COVIRA: Computer Vision in Radiology, 17 partners (3 industrial, 8 academic, 6 clinical), (9192-95)
 - M European Community, ESPRIT & Swiss NSF, # BBW E 3300 Geometry-Driven Diffusion in Vision", 7 European and 5 US academic partners (1993-96)
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Publications

Articles in Journals

1. Hongtu Zhu; Linglong Kong; Runze Li; Martin S Styner; **Guido Gerig**; Weili Lin; John. H. Gilmore, FADTTS: Functional Analysis of Diffusion Tensor Tract Statistics, NeuroImage NIMG-10-2020R2, in print
2. Yi Wang, Aditya Gupta, Zhexing Liu, Hui Zhang, Maria L. Escolar, John H. Gilmore, Sylvain Gouttard, Pierre Fillard, Eric Maltbie, **Guido Gerig** and Martin Styner DTI registration in atlas based fiber analysis of infantile Krabbe disease, Neuroimage, in print
3. Rebecca C. Knickmeyer, Chaeryon Kang, Sandra Woolson, Keith J. Smith, Robert M. Hamer, Weili Lin, **Guido Gerig**, Martin Styner, John H. Gilmore, Twin-Singleton Differences in Neonatal Brain Structure, Twin Research and Human Genetics, accepted Jan. 2011, in print
4. Heather Cody Hazlett, Michele Poe, **Guido Gerig**, Martin Styner, Chad Chappell, Rachel Gimpel Smith, Clement Vachet, and Joseph Piven' Early Brain Overgrowth in Autism Associated with an Increase in Cortical Surface Area Before Age 2, Arch of Gen Psych, accepted Jan. 2011, in print

5. John H Gilmore, Chaeryon Kang, Dianne D. Evans, Honor M. Wolfe, J. Keith Smith, Jeffrey A. Lieberman, Weili Lin, Robert M. Hamer, Martin Styner, **Guido Gerig**, Prenatal and Neonatal Brain Structure and White Matter Maturation in Children at High Risk for Schizophrenia, Am J Psychiatry. 2010 Sep;167(9):1083-91. Epub 2010 Jun 1.PMID: 20516153
6. Feng Shi, Dinggang Shen, Pew-Thian Yap, Yong Fan, Jie-Zhi Cheng, Hongyu An, Lawrence L. Wald, **Guido Gerig**, John H. Gilmore, and Weili Lin, CENTS: Cortical Enhanced Neonatal Tissue Segmentation CENTS: Cortical Enhanced Neonatal Tissue Segmentation, Human Brain Mapping HBM, in print
7. Gilmore JH, Schmitt JE, Knickmeyer RC, Smith JK, Lin W, Styner M, **Gerig G**, Neale MC., Genetic and environmental contributions to neonatal brain structure: A twin study, Hum Brain Mapp. 2010 Aug;31(8):1174-82.PMID: 20063301
8. Mohamed El-Sayed, R. Grant Steen, Michele D. Poe, T. Carter Bethea, **Guido Gerig**, Jeffrey Lieberman, and Linmarie Sikich, Deficits in gray matter volume in psychotic youth with schizophrenia-spectrum disorders are not evident in psychotic youth with mood disorders, J Psychiatry Neurosci. 2010 Jul;35(4):229-36.PMID: 20569649
9. Kevin Gorcowski, Martin Styner, Ja Yeon Jeong, J. S. Marron, Joseph Piven, Heather Cody Hazlett, Stephen M. Pizer, **Guido Gerig**, "Multi-object Analysis of Volume, Pose, and Shape using Statistical Discrimination," Gorcowski K, Styner M, Jeong JY, Marron JS, Piven J, Hazlett HC, Pizer SM, Gerig G., IEEE Trans Pattern Anal Mach Intell. 2010 Apr;32(4):652-61.PMID: 20224121

10. Heather Cody Hazlett, Michele D. Poe, Amy A. Lightbody, **Guido Gerig**, James R. MacFall, Allison K. Ross, James Provenzale, Arianna Martin, Allan L. Reiss and Joseph Piven, Teasing apart the heterogeneity of autism: Same behavior, different brains in toddlers with fragile X syndrome and autism, Journal of Neurodevelopmental Disorders, Springer Verlag, Volume 1, Issue 1 (2009), Page 81
11. Prastawa M, Bullitt E, **Gerig G**, Simulation of brain tumors in MR images, Medical Image Analysis 13 (2009), pp. 297-311, PMID: 19119055
12. Mosconi MW, Cody-Hazlett H, Poe MD, **Gerig G**, Gimpel-Smith R, Piven J. A longitudinal study of amygdala volume and joint attention in 2-4 year old children with autism, Arch Gen Psychiatry. 2009 May;66(5):509-16. PMID: 19414710
13. Casey B. Goodlett, P. Thomas Fletcher, John H. Gilmore, and **Guido Gerig**, Group Analysis of DTI Fiber Tract Statistics with Application to Neurodevelopment, NeuroImage 45 (1) Supp. 1, 2009.p. S133-S142, PMID: 19059345, PMCID 2727755
14. Wei Gao, Yasheng Chen, **Guido Gerig**, Ph.D. J Keith Smith, M.D., Valerie Jewells, John H Gilmore, Weili Lin, Temporal and Spatial Development of Axonal Maturation and Myelination of

- White Matter in the Developing Brain, American Journal of Neuroradiology (AJNR) 30:290-296, February 2009
15. Niyati Mukherjee, Chaeryon Kang, Honor M. Wolfe, Barbara S. Hertzberg, J. Keith Smith, Weili Lin, **Guido Gerig**, Robert M. Hamer, John H. Gilmore, Discordance of Prenatal and Neonatal Brain Development in Twins, Early Hum Dev. 2009 Mar;85(3):171-5, PMID: 18804925
 16. Fan Zhang, Edwin R. Hancock, Casey Goodlett and **Guido Gerig**, Probabilistic White Matter Fiber Tracking using, Particle Filtering and von Mises-Fisher Sampling, Med Image Anal. 2009 Feb;13(1):5-18, PMID: 18602332
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17. Kubicki M, Styner M, Bouix S, Gerig G, Markant D, Smith K, Kikinis R, McCarley RW, Shenton ME. "Reduced Interhemispheric Connectivity in Schizophrenia- Tractography Based Segmentation of the Corpus Callosum". /*Schizophr Res*/ Dec 2008;106(2-3):125-131
 18. Weili Lin, Ph.D., Quan Zhu, M.S., Wei Gao, M.S. Yasheng Chen, D.Sc., Cheng-Hong Toh, M.D., Martin Styner, Ph.D., **Guido Gerig**, Ph.D., J Keith Smith, M.D., Ph.D., Bharat Biswal, Ph.D., John Gilmore, M.D., Functional Connectivity Magnetic Resonance Imaging Reveals Cortical Functional Connectivity in the Developing Brain, American Journal of Neuroradiology (AJNR) 29:1883-1889, November-December 2008
 19. John H. Gilmore, MD; Lauren Smith, BA, Honor Wolfe, MD; Barbara Hertzberg, MD; J. Keith Smith, MD; Nancy Chescheir; Dianne Evans, Chaeryon Kang; Robert M. Hamer, Weili Lin, **Guido Gerig**, Prenatal Mild Ventriculomegaly Predicts Abnormal Development of the Neonatal Brain, Biol Psychiatry. 2008 Dec 15;64(12):1069-76, PMID: 18835482
 20. Rebecca C. Knickmeyer, Sylvain Gouttard, Chaeryon Kang, Dianne Evans, Kathy Wilber, Keith J. Smith, Robert M. Hamer, Weili Lin, **Guido Gerig**, John H. Gilmore, A Structural MRI Study of Human Brain Development from Birth to Two Years, J Neurosci. 2008 Nov 19;28(47):12176-82, PMID: 19020011
 21. Belmonte MK, Mazziotta JC, Minshew NJ, Evans AC, Courchesne E, Dager SR, Bookheimer SY, Aylward EH, Amaral DG, Cantor RM, Chugani DC, Dale AM, Davatzikos C, **Gerig G**, Herbert MR, Lainhart JE, Murphy DG, Piven J, Reiss AL, Schultz RT, Zeffiro TA, Levi-Pearl, Offering to Share: How to Put Heads Together in Autism Neuroimaging. J Autism Dev Disord. 2008 Jan;38(1):2-13, PMID: 17347882
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22. J. H. Gilmore, W. Lin, I. Corouge, Y. S. K. Vetsa, J. K. Smith, Ch. Kang, H. Gu, R.M. Hamer, J. A. Lieberman, **G. Gerig**, Early Postnatal Development of Corpus Callosum and Corticospinal White Matter Assessed with Quantitative Tractography, AJNR Am J Neuroradiol. 2007 Oct;28(9):1789-95
 23. Huang X, Lee YZ, McKeown M, **Gerig G**, Gu H, Lin W, Lewis MM, Ford S, Troster AI, Weinberger DR, Styner, Asymmetrical ventricular enlargement in Parkinson's disease. Mov Disord 2007 Aug 15;22(11):1657-60, PMID: 17588238
 24. Taylor WD, MacFall JR, **Gerig G**, Krishnan KR. Structural integrity of the uncinate fasciculus in geriatric depression: Relationship with age of onset. Neuropsychiatric Disease and Treatment, 2007; 3(5):669-674, PMID: 19300596
 25. Gilmore JH, Lin W, Prastawa MW, Looney CB, Vetsa YSK, Knickmeyer RC, Evans DD, Smith JK, Hamer RM, Lieberman JA, **Gerig G**. Regional gray matter growth, sexual dimorphism, and cerebral asymmetry in the neonatal brain. Journal of Neuroscience 2007;27(6):1255-1260, PMID: 17287499
 26. Carissa J. Cascio, **Guido Gerig** and Joseph Piven, Diffusion Tensor Imaging: Application to the Study of the Developing Brain, J Am Acad Child Adolesc Psychiatry. 2007 Feb;46(2):213-23, PMID: 17242625
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27. John H. Gilmore, Weili Lin, and **Guido Gerig**, IMAGES IN NEUROSCIENCE: Fetal and Neonatal Brain Development, Am J Psychiatry, Dec 2006; 163: 2046.
 28. Cascio C, Styner M, Smith RG, Poe MD, **Gerig G**, Hazlett HC, Jomier M, Bammer R, Piven J., Reduced relationship to cortical white matter volume revealed by tractography-based segmentation of the corpus callosum in young children with developmental delay, Am J Psychiatry. 2006 Dec;163(12):2157-63. PMID: 17151168

29. Isabelle Corouge, P.Thomas Fletcher, Sarang Joshi, Sylvain Gouttard, **Guido Gerig**, Fiber Tract-Oriented Statistics for Quantitative Diffusion Tensor MRI Analysis, *Med Image Anal.* 2006 Oct;10(5):786-98. Epub 2006 Aug 22. PMID: 16926104
30. Yushkevich, PA, Piven, J., Cody Hazlett, H., Gimpel Smith, R., Ho, S, Gee, J.J., **Gerig, G.**; User-Guided 3D Active Contour Segmentation of Anatomical Structures: Significantly Improved Efficiency and Reliability. *Neuroimage.* 2006 Jul 1;31(3):1116-28. Epub 2006 Mar 20. PMID: 16545965
31. Peter Lorenzen, Marcel Prastawa, Brad Davis, **Guido Gerig**, Elizabeth Bullitt, and Sarang Joshi, Multi-Modal Image Set Registration and Atlas Formation, *Med Image Anal.* 2006 Jun;10(3):440-51. PMID: 15919231

32. Heather Cody Hazlett, Michele D. Poe, **Guido Gerig**, Rachel Gimpel Smith and Joseph Piven, Cortical Gray and White Brain Tissue Volume in Adolescents and Adults with Autism, *Biol Psychiatry.* 2006 Jan 1;59(1):1-6. Epub 2005 Sep 1. PMID: 16139816
33. Matthew J. Hoptman, Jan Volavka, Elisabeth M. Weiss, Pál Czobor, Philip R. Szeszko, **Guido Gerig**, Miranda Chakos, Joseph Blocher, Leslie L. Citrome, Jean-Pierre Lindenmayer, Brian Sheitman, Jeffrey A. Lieberman and Robert M. Bilder, Quantitative MRI Measures of Orbitofrontal Cortex in Patients with Chronic Schizophrenia or Schizoaffective Disorder, *Psychiatry Res.* 2005 Nov 30;140(2):133-45. Epub 2005 Oct 25. PMID: 16253482
34. Marcel Prastawa, John Gilmore, Weili Lin, and **Guido Gerig.** *Automatic Segmentation of MR Images of the Developing Newborn Brain.* *Med Image Anal.* 2005 Oct;9(5):457-66. PMID: 16019252
35. Amy Pinkham, David Penn, Bethany Wangelin, Diana Perkins, **Guido Gerig**, Hongbin Gu, and Jeffrey Lieberman, Facial Emotion Perception and Fusiform Gyrus Volume in First Episode Schizophrenia, *Schizophr Res.* 2005 Nov 15;79(2-3):341-3. Epub 2005 Aug 25. PMID: 16125902
36. Hazlett, Heather Cody, Poe, Michele, **Gerig, Guido**, Smith, Rachel, Provenzale, Jim, Ross, Allison, Gilmore, John H. and Piven, Joseph, An MRI and Head Circumference Study of Brain Size in Autism: Birth through age two years, *Arch Gen Psychiatry.* 2005 Dec;62(12):1366-76. PMID: 16330725
37. Elizabeth Bullitt, Donglin Zeng, **Guido Gerig**, Stephen Aylward, Sarang Joshi, J. Keith Smith, Weili Lin, Matthew G. Ewend, Vessel Tortuosity and Brain Tumor Malignancy: A Blinded Study, *Acad Radiol.* 2005 Oct;12(10):1232-40. PMID: 16179200
38. Martin Styner, Jeffrey A. Lieberman, Robert McClure, Daniel Weinberger, Douglas Jones, **Guido Gerig**, Morphometric analysis of lateral ventricles in schizophrenia and healthy controls regarding genetic and disease-specific factors, *Proc Natl Acad Sci U S A.* 2005 Mar 29;102(13):4872-7. Epub 2005 Mar 16. PMID: 15772166
39. Cevidanes LHS, Franco AA, **Gerig G**, Proffit. WR, Slice DE, Enlow DH, Vigorito JW, Lederman HM, Amorim, Assessment of mandibular growth and response to orthopedic therapy with 3-dimensional magnetic resonance images. *Am J Orthod Dentofacial Orthop*, 128:16-26, 2005
40. Cevidanes LHS, Franco AA, **Gerig G**, Proffit. WR, Slice DE, Enlow DH, Vigorito JW, Yamashita HK, Kim, Y., Comparison of relative mandibular growth vectors with high-resolution 3-dimensional imaging. *Am J Orthod Dentofacial Orthop*, 128:27-34, 2005

41. Sarang Joshi, Brad Davis, Matthieu Jomier, **Guido Gerig**, "Unbiased Diffeomorphic Atlas Construction for Computational Anatomy", *Supplement issue on Mathematics in Brain Imaging*, (PM Thompson, MI Miller, T Ratnanather, RA Poldrack, and TE Nichols, eds.), vol. 23, no. Supplement1, pp. S151-S160, Elsevier, Inc, 2004.
42. M.H. Chakos, S.A. Schobel, G. **Gerig**, H. Gu, C. Charles, J. Lieberman, Clinical correlates of hippocampal volume in schizophrenia as assessed by 3D manual segmentation, *British Journal of Psychiatry*, vol. 186, no. , pp. 26-31, 2005.
43. Abnormal vessel tortuosity as a marker of treatment response of malignant gliomas: Preliminary report. Elizabeth Bullitt, Matthew G. Ewend, Stephen Aylward, Weili Lin, **Guido Gerig**, Sarang

- Joshi, Inkyung Jung, Keith Muller, Keith Smith, Technology in Cancer Research and Treatment TCRT, Volume 3, No. 6 (p 525-670) Dec 2004
44. Marcel Prastawa, Elizabeth Bullitt, Sean Ho, **Guido Gerig**, "A Brain Tumor Segmentation Framework Based On Outlier Detection", Medical Image Analysis MEDIA, Elsevier, Vol. 8, Issue 3, Sept. 2004, Pages 275-283
 45. Martin Styner, Jeffrey A. Lieberman, and **Guido Gerig**, "Boundary and Medial Shape Analysis of the Hippocampus in Schizophrenia", Medical Image Analysis MEDIA, Elsevier, Vol. 8, Issue 3, Sept. 2004, Pages 197-203
 46. John H. Gilmore, Guihua Zhai, Kathy Wilber, J. Keith Smith, Weili Lin, and **Guido Gerig**, "3T magnetic resonance imaging of the brain in newborns", Psychiatric Research Neuroimaging 132 (2004): 81-85
-
47. Prastawa M, Bullitt E, Moon N, van Leemput K, **Gerig G**. Automatic tumor segmentation by subject specific modification of atlas priors. Acad Radiol, 2003; 10(12):1341-1348.
 48. Zhai, G., Lin, W., Wilber, K., **Gerig, G.**, and Gilmore, J., "Comparison of Regional White Matter Diffusion in Healthy Neonate and Adults Using a 3T Head-only MR Scanner", Radiology:229, 2003, pp. 673-681
 49. Styner M, **Gerig F**, Lieberman J, Jones D, Weinberger D. Statistical shape analysis of neuroanatomical structures based on medial models. Medical Image Analysis MEDIA (Elsevier), 2003;7(3):207-220
 50. Styner M, **Gerig G**, Pizer S, Joshi S. Automatic and robust computation of 3D medial models incorporating object variability. International Journal of Computer Vision IJCV, Vol. 55, No. 2/3, Nov/Dec 2003, pp. 107-122
 51. Joshi S, Lorenzen P, **Gerig G**, Bullitt E. Structural and radiometric asymmetry in brain images. Medical Image Analysis (MEDIA, Elsevier), 2003;7(2):155-170.
 52. Stephen M. Pizer, Guido **Gerig**, Sarang Joshi, Stephen R. Aylward, Multiscale Medial Shape-Based Analysis of Image Objects, Proceedings of the IEEE, Special Issue on: Emerging Med. Imag. Techn., 91 (10), October 2003
 53. Bullitt, E., and **Gerig, G.**, and Pizer, S., and Lin, W. and Aylward, S. Automatic Measuring Tortuosity of the Intracerebral Vasculature from MRA Images, IEEE Transactions on Medical Imaging TMI, 22(9), 2003, pp. 1163-1171
-
54. Shenton ME, **Gerig G**, McCarley RW, Szekely G, Kikinis R. Amygdala-hippocampus shape differences in schizophrenia: The application of 3D shape models to volumetric MR data. Psychiatry Res Neuroimaging, 2002;115:15-35.
 55. Gilmore JH, **Gerig G**, Specter B, Charles HC, Wilber JS, Hertzberg BS, Kliewer MA: Infant cerebral ventricle volume: a comparison of 3D ultrasound and magnetic resonance imaging. (Clinical Note). Ultrasound Med Biol, 2001;27(8):1143-6.
 56. Bullitt E, Aylward S, Bernard E, **Gerig G**, Computer-assisted visualization of arteriovenous malformations on the home personal computer. Neurosurgery, 2001; 48(3):576-82.
 57. **Gerig G**, Welti D, Guttmann CR, Colchester CA, Székely G. Exploring the discrimination power of the time domain for segmentation and characterization of lesions in serial MR data. Media, 2000; 4(1):31-42.
 58. Styner M, Brechbuehler C, Székely G, **Gerig G**, Parametric estimate of intensity inhomogeneities applied to MRI, IEEE Trans Med Imaging, 2000;19(3):153-65.
 59. Kelemen A, Szekely G, **Gerig G**. Elastic Model-Based Segmentation of 3-D Neuroradiological Data Sets, IEEE Trans Med Imaging (special issue on model-based segmentation), 1999; 18(10):828-39.
 60. Sato Y, Nakajima S, Shiraga N, Atsumi H, Yoshida S, Koller T, **Gerig G**, Kikinis R. Three-dimensional multi-scale line filter for segmentation and visualization of curvilinear structures in medical images. MEDIA, 1998;2(2):143-68.

61. Szekely G, Kelemen A, Brechbuehler C, **Gerig G**. Segmentation of 3D objects from MRI volume data using constrained elastic deformations of flexible Fourier surface models. *Medical Imaging Analysis MedIA*, 1996;1(1):19-34 .
62. Brechbuehler Ch, **Gerig G**, Kuebler O. Parametrization of closed surfaces for 3-D shape description. *Computer Vision and Image Understanding (CVIU)*, 1995;61(2):154-70.
63. Kikinis R, Shenton ME, **Gerig G**, Hokama H, Haimson HJ, O'Donnell BF, Wible CG, McCarley RW, Jolesz FA, Temporal lobe sulco-gyral pattern anomalies in schizophrenia: an in vivo MR three-dimensional surface rendering study. *Neuroscience Lett*, 1994; 182(1):7-12.
64. Pun T, **Gerig G**, Ratib O. Image analysis and computer vision in medicine. *Comput Med Imaging Graph. Multimedia techniques in the medical environment*. 1994; 18(2):85-96.
65. Kikinis R, Shenton ME, **Gerig G**, Martin J, Anderson M, Metcalf D, Guttmann CRG, McCarley RW, Lorensen B, Cline H, Jolesz FA. Routine quantitative analysis of brain and cerebrospinal fluid spaces with MR imaging. *J Magn Resonan Imaging*, 1992;2(6):619-29.
66. **Gerig G**, Martin J, Kikinis R, Kuebler O, Shenton M, Jolesz FA. Unsupervised tissue type segmentation of 3D dual-echo MR head data. *Image and Vision Computing*, 1992;10(6):349-60.
67. **Gerig G**, Kuebler O, Kikinis R, Jolesz FA. Nonlinear anisotropic filtering of MRI data. *IEEE Trans Med Imaging*, 1992;11(2):221-32.
68. **Gerig G**, Kikinis R, Kuoni W, von Schulthess GK, Kuebler O. Semiautomated ROI analysis in dynamic MRI-studies, Part I: Image analysis tools for automatic correction of organ displacements. *JCAT*, 1991;15(5):725-32.
69. von Schulthess GK, Kuoni W, **Gerig G**, Wuethrich R, Duewell St., Krestin G. Semiautomated ROI analysis in dynamic MRI-studies, Part II: Appl. to Renal Function Examination, First Experiences. *JCAT*, 1991;15(5):733-41.
70. Cline HE, Lorensen WE, Souza St P, Jolesz FA, Kikinis R, **Gerig G**, Kennedy Th E. 3D surface rendered MR images of the brain and its vasculature. *JCAT*, 1991;15(2):344-51.

Conference and Workshop Proceedings (peer reviewed full length articles)

1. Durrleman, Stanley, Gerig, Guido and Joshi, Sarang, Optimal data-driven sparse parameterization of diffeomorphisms for population analysis, IPMI 2011 conference, Springer LNCS, in print, to appear July 2011
 2. Sun Hyung Kim, Vladimir Fonov, Joe Piven, John Gilmore, Clement Vachet, **Guido Gerig**, D. Louis Collins, Martin Styner, Spatial Intensity Prior Correction for Tissue Segmentation in the Developing human Brain, *IEEE ISBI 2011*, to appear
-
3. N. Sadeghi, M. Prastawa, J. H. Gilmore, W. Lin, and **G. Gerig**, "Spatio-Temporal Analysis of Early Brain Development," in *Proceedings IEEE Asilomar Conference on Signals, Systems & Computers*, Nov. 2010, in print
 4. Prastawa, M., Sadhegi, N., Gilmore, J., Lin, W., **Gerig, G.**, A new framework for analyzing white matter maturation in early brain development, *IEEE conf. ISBI 2010*, April 2010
 5. Linh Ha, Marcel Prastawa, **Guido Gerig**, John H. Gilmore, Claudio Silva, Sarang Joshi, Image Registration Driven by Combined Probabilistic and Geometric Descriptors, *Med Image Comput Assist Interv*. 2010;13(Pt 2):602-9.PMID: 20879365
 6. Cassian Marc, Clement Vachet, Joseph E. Blocher, **Guido Gerig**, John H. Gilmore, Martin A. Styner, Changes of MR and DTI appearance in early human brain development, *SPIE Medical Imaging*, February 2010
 7. Zhexiong Liu, Casey Goodlett, **Guido Gerig**, Martin Styner, Evaluation of DTI Property Maps as Basis of DTI Atlas Building, *SPIE Medical Imaging*, February 2010
 8. Zhexiong Liu, Yi Wang, **Guido Gerig**, Sylvain Gouttard, Ran Tao, Thomas Fletcher, Martin A. Styner, Quality control of diffusion weighted images, *SPIE Medical Imaging*, February 2010
-

9. Neda Sadeghi, Marcel Prastawa, John H. Gilmore, Weili Lin, **Guido Gerig**, Towards Analysis of Growth Trajectory through Multi-modal Longitudinal MR Imaging, SPIE Medical Imaging, February 2010

10. Sylvain Gouttard, Marcel Prastawa, Elizabeth Bullitt, Casey Goodlett and **Guido Gerig**, Constrained Data Decomposition and Regression for Analyzing Healthy Aging from Fiber Tract Diffusion Properties, Springer LNCS 5761, Proc. MICCAI'09, pp. 321-328, 2009 (oral presentation, 5% acceptance rate)
11. Manasi Datar, Joshua Cates, P. Thomas Fletcher, Sylvain Gouttard, **Guido Gerig** and Ross Whitaker, Particle Based Shape Regression of Open Surfaces with Applications to Developmental Neuroimaging, Springer LNCS 5762, Proc. MICCAI'09, pp. 167-174, 2009 (30% acceptance rate)
12. Stanley Durrleman, Xavier Pennec, A. Trouve, **Guido Gerig**, Nicholas Ayache, Spatiotemporal Atlas Estimation for Developmental Delay Detection in Longitudinal Datasets, Springer LNCS 5761, Proc. MICCAI'09, pp. 297-302, 2009 (oral presentation, 5% acceptance rate)
13. Shi F, Yap PT, Fan Y, Cheng JZ, Wald LL, **Gerig G**, Lin W, Shen D., Cortical Enhanced Tissue Segmentation of Neonatal Brain MR Images Acquired by a Dedicated Phased Array Coil, Proc IEEE Comput Soc Conf Comput Vis Pattern Recognit. 2009;2009(5204348):39-45.PMID: 20862268 [PubMed]
14. Zhexiong Liu, Hongtu Zhu, Bonita L. Marks, Laurence M. Katz, Casey B. Goodlett, **Guido Gerig**, Martin Styner, Voxel-wise group analysis of DTI, Proceedings of the 6th IEEE International Symposium on Biomedical Imaging ISBI: From Nano to Macro 2009; 807-810. (50% acceptance rate).

15. A.Fedorov, E.Billet, M.Prastawa, **G.Gerig**, A.Radmanesh, S.K.Warfield, R.Kikinis, and N.Chrisochoides, Evaluation of Brain MRI Alignment with the Robust Hausdorff Distance Measures, Proceedings ISVC08 (4th Int. Symp. On Visual Computing), G. Bebis et al. (Eds.): ISVC 2008, Part I, LNCS 5358, Springer Verlag, pp. 594–603, 2008.
16. Marcel Prastawa and **Guido Gerig**, Brain Lesion Segmentation through Physical Model Estimation, Proceedings ISVC08 (4th Int. Symp. On Visual Computing), G. Bebis et al. (Eds.): ISVC 2008, Part I, LNCS 5358, Springer Verlag, pp. 562–571, 2008.
17. Casey Goodlett, P. Thomas Fletcher, John Gilmore, and **Guido Gerig**, Group Statistics of DTI Fiber Bundles Using Spatial Functions of Tensor Measures, Proc. MICCAI'08, Lecture Notes in Computer Science LNCS, Springer Verlag, Vol. 5241, Sept. 2008, pp. 1068 -- 1073, nominated best paper award, PMID: 18979851
18. Sylvain Gouttard, Martin Styner, Marcel Prastawa, Joseph Piven, and **Guido Gerig**, Assessment of Reliability of Multi-site Neuroimaging via Traveling Phantom Study, Proc. MICCAI'08, Lecture Notes in Computer Science LNCS, Springer Verlag, Vol. 5242, Sept. 2008, pp. 263 – 270, PMID: 18982614
19. Shun Xu, Martin Styner, and **Guido Gerig**, “Multivariate Nonlinear Mixed Model to Analyze Longitudinal Image Data: MRI Study of Early Brain Development”, Proc. of IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA) 2008, June 2008
20. Styner, M., Oguz, I., Heimann, T., Gerig, G., Minimum description length with local geometry, Biomedical Imaging: From Nano to Macro, 2008. ISBI 2008. 5th IEEE International Symposium on Biomedical Imaging, 14-17 May 2008 Page(s): 1283 - 1286 Digital Object Identifier 10.1109/ISBI.2008.4541238
21. Xu, Shun C. A. Styner, Martin, Gilmore, John H. **Gerig, Guido**, Multivariate longitudinal statistics for neonatal-pediatric brain tissue development, Proc. of SPIE, Medical Imaging 2008: Im. Proc., Vol. #, pp. , Feb. 17, 2008

22. Goodlett, C., Fletcher, P. Th. , Lin, W., and **Gerig, G.**, "Quantification of measurement error in DTI: Theoretical predictions and validation", Proc. MICCAI'07, Springer LNCS 4792, Nov. 2007, pp. 10-17

23. Fan Fan Zhang, Casey Goodlett, Edwin Hancock, **Guido Gerig**, "Probabilistic White Matter Fiber Tracking using Particle Filtering", accepted CVPR workshop EMMCVPR 2007
24. Fan Fan Zhang, Casey Goodlett, Edwin Hancock, **Guido Gerig**, Probabilistic White Matter Fiber Tracking using Particle Filtering, Proc. MICCAI 2007, Springer LNCS 4791, Nov. 2007, pp. 144-151
25. Terriberry TB, Damon JN, Pizer SM, Joshi SC, Gerig , Population-based fitting of medial shape models with correspondence optimization. Inf Process Med Imaging 2007;20():700-12
26. Gorczowski, K. Styner, M., Jeong, J.Y., Marron, J. S. , Piven, J., Cody Hazlett., H. Pizer, S.M., **Gerig, G.**, Statistical Shape Analysis of Multi-Object Complexes, Proc. CVPR'07, IEEE Press
27. C. B. Goodlett, P. T. Fletcher, W. Lin, and **G. Gerig**, Noise-induced bias in low-direction diffusion tensor MRI: Replication of Monte-Carlo simulation with in-vivo scans, short paper Proc. ISMRM 2007
28. Nain D., Styner M., Niethammer M., Levitt J.J., Shenton M.E., **Gerig G.**, Bobick A., Tannenbaum A. Statistical Shape Analysis of Brain Structures Using Spherical Wavelets. Proceedings of the 4th IEEE International Symposium on Biomedical Imaging: From Nano to Macro 2007; 4:209-212
29. Martin Styner, Shun Xu, Mohammed El-Sayed, **Guido Gerig**, Correspondence Evaluation in local shape analysis and structural subdivision, ISBI 2007, IEEE press
30. M. Styner, I. Oguz, S. Xu, D. Pantazis, and **G. Gerig**. Statistical group differences in anatomical shape analysis using hotelling T2 metric. Proc SPIE Medical Imaging Conference, Feb. 2007.
31. Sylvain Gouttard, Martin Styner, Sarang Joshi, Rachel G. Smith, Heather Cody, **Guido Gerig**, Subcortical structure segmentation using probabilistic atlas prior, Proc. SPIE conference, Feb. 2007

32. Martin Styner, Kevin Gorczowski, Tom Fletcher, Ja Yeon Jeong, Stephen M. Pizer, **Guido Gerig**, Multi-Object Statistics using Principal Geodesic Analysis in a Longitudinal Pediatric Study, Springer Lecture Notes in Computer Science LNCS No. 4091, G-Z Yang, T. Jiang, D. Shen, L. Gu and J. Yang, editors, Springer Verlag, Proc. MIAR conference, pp. 1 - 8, August 2006
33. Timothy B. Terriberry and **Guido Gerig**, A Continuous 3-D Medial Shape Model With Branching, Workshop on the Mathematical Foundations of Computational Anatomy MFCA-2006, in conjunction with MICCAI 2006
34. Casey Goodlett, Brad Davis, Remi Jean, John Gilmore, and **Guido, Gerig.**, Improved Correspondence for DTI Population Studies via Unbiased Atlas Building, Springer LNCS, Vol. 4191, Proc. MICCAI, Oct. 2006, pp. 260 – 267
35. Computational Anatomy to Assess Longitudinal Trajectory of Brain Growth, **G. Gerig**, B. Davis, P. Lorenzen, M. Jomier, J. Piven and S. Joshi, Proc. IEEE 3DPVT Conf., June 2006
36. Martin Styner, Matthieu Jomier, and **Guido Gerig**, Closed and open source neuroimage analysis tools and libraries at UNC, in IEEE Int. Symposium on Biomedical Imaging (ISBI), special session Open Source, pp. 702-705, Apr. 2006.
37. **Guido Gerig**, Sarang Joshi, Tom Fletcher, Kevin Gorczowski, Shun Xu, Stephen M. Pizer, Martin Styner, "Statistics of populations of images and its embedded objects: Driving applications in neuroimaging", in IEEE International Symposium on Biomedical Imaging (ISBI), special session Shape in Imaging, pp. 1120-1123, Apr. 2006
38. Shun Xu, Martin Styner, Brad Davis, Sarang Joshi, **Guido Gerig**, Group Mean Differences of Voxel and Surface Objects via Nonlinear Averaging, in IEEE Int. Symposium on Biomedical Imaging (ISBI), pp. 758-761, Apr. 2006

39. Corouge, I., Fletcher, T., Joshi, S., Gilmore J. and **Gerig, G.**, Fiber Tract-Oriented Statistics for Quantitative Diffusion Tensor MRI Analysis, Lecture Notes in Computer Science LNCS, James S. Duncan and Guido Gerig, editors, Springer Verlag, Vol. 3749, Oct. 2005, pp. 131 – 138
40. Prastawa, M., Bullitt, E. and **Gerig, G.**, Synthetic Ground Truth for Validation of Brain Tumor MRI Segmentation, Lecture Notes in Computer Science LNCS, James S. Duncan and Guido Gerig, editors, Springer Verlag, Vol. 3749, Oct. 2005, pp. 26 -- 33
41. Mortamet, B., Donglin, Z., **Gerig, G.**, Prastawa, M. and Bullitt, E., Effects of healthy aging measured by intracranial compartment volumes using designed MR brain database, Lecture Notes in

- Computer Science LNCS, James S. Duncan and Guido Gerig, editors, Springer Verlag, Vol. 3749, Oct. 2005, pp. 383 – 391
42. Terriberry, Tim, Joshi Sarang, and **Gerig, Gerig**, Hypothesis Testing with Nonlinear Shape Models, Lecture Notes in Computer Science LNCS, Gary E. Christensen and Milan Sonka, editors, Springer, Vol. 3565, July. 2005, pp. 15 -- 26

 43. Elizabeth Bullitt, Inkyung Jung, Keith Muller, **Guido Gerig**, Stephen Aylward, Sarang Joshi, Keith Smith, Matthew Ewend, "Determining Malignancy of Brain Tumors By Analysis of Vessel Shape", Lecture Notes in Computer Science LNCS 3217, Springer Verlag, pp. 645-653, 2004
 44. Peter Lorenzen, Brad Davis, **Guido Gerig**, Elizabeth Bullitt and Sarang Joshi, "Multi-class Posterior Atlas Formation via Unbiased Kullback-Leibler Template Estimation", Lecture Notes in Computer Science LNCS 3216, Springer Verlag, pp. 95-102, 2004
 45. Sean Ho and **Guido Gerig**, "Profile Scale-spaces for Multiscale Image Match", Lecture Notes in Computer Science LNCS 3216, Springer Verlag, pp. 176-183, 2004
 46. Marcel Prastawa, John Gilmore, Weili Lin, and **Guido Gerig**, "Automatic Segmentation of Neonatal Brain MRI", Lecture Notes in Computer Science LNCS 3216, Springer Verlag, pp. 10-17, 2004
 47. **Gerig G**, Gouttard S, Corouge I. Analysis of brain white matter via fiber tract modeling. *IEEE EMB*. 2004:426
 48. Corouge, Isabelle, Gouttard, Sylvain and **Gerig, Guido**, "A Statistical Shape Model of Individual Fiber Tracts Extracted from Diffusion Tensor MRI", Lecture Notes in Comp. Sc. LNCS 3217, Springer Verlag, pp. 671-679, 2004
 49. Corouge, Isabelle, Gouttard, Sylvain and **Gerig, Guido**, "Towards a Shape Model of White Matter Fiber Bundles using Diffusion Tensor MRI" , Int. Symp. on Biomedical Imaging (ISBI'04), (Piscataway, NJ), pp. 344-347, April 2004

 50. Prastawa M, Bullitt E, **Gerig G**, Robust estimation for brain tumor segmentation, Lecture Notes in Computer Science LNCS #2879 Springer, November 2003, 530-537
 51. Fillard P, Gilmore J, Lin W, **Gerig G**. Quantitative analysis of white matter fiber properties along geodesic paths. Lecture Notes in Computer Science LNCS #2879 Springer, Nov. 2003, pp. 16-23
 52. **Gerig G**, Muller KE, Kistner EO, Chi Y-Y, Chakos M, Styner M, Lieberman JA. Age and treatment related local hippocampal changes in schizophrenia explained by a novel shape analysis method. Lecture Notes in Computer Science LNCS #2879, Springer, Nov. 2003, 653-660
 53. Styner M, Lieberman JA, **Gerig G**. Boundary and medial shape analysis of the hippocampus in schizophrenia. Lecture Notes in Computer Science LNCS #2879, Springer, Nov. 2003, pp. 464-471
 54. Sampath Y, Vetsa K, Styner M, Pizer SM, Lieberman JA, **Gerig G**. Caudate shape discrimination in schizophrenia using template-free nonparametric tests", Lecture Notes in Computer Science LNCS #2879, Nov. 2003, pp. 661-669
 55. Bullitt E, **Gerig G**, Aylward S, Joshi S, Smith K, Ewend M, and Lin W. Vascular attributes and malignant brain tumors. Lecture Notes in Computer Science LNCS #2878, Springer, Nov. 2003, pp. 671-679

 56. Nathan M, Bullitt E, van Leemput K, **Gerig G**. Automatic brain and tumor segmentation. Proc. MICCAI 2002, Dohi T, Kikinis R (eds.), Lecture Notes in Computer Science, Springer LNCS 2488, September 2002.
 57. Moon M, Bullitt E, van Leemput K, **Gerig G**. Model-based brain and tumor segmentation. Proc. ICPR 2002, Aug.2002.
 58. Ho S, Bullitt E, **Gerig G**. Level set evolution with region competition: Automatic 3-D segmentation of brain tumors. Proc. ICPR2002, Aug 2002.
 59. Pizer SM, Fletcher T, Thall A, Styner M, **Gerig G**, Joshi S. Object models in multiscale intrinsic coordinates via M-reps. Proc. GMBV 2002 (Workshop: Generative Model-Based Vision), Fall 2002.

-
60. **Gerig G**, Styner M, J. Lieberman J. Shape versus Size: Improved understanding of the morphology of brain structures, Proc. MICCAI2001, Kluwer, October 2001.
61. **Gerig G**, Jomier M, Chakos M. VALMET: A new validation tool for assessing and improving 3D object segmentation, Proc. MICCAI 2001, Kluwer, October 2001.
62. Styner M, and **Gerig G**. Three-dimensional medial shape representation incorporating object variability, Proc. of CVPR 2001 conference, IEEE, Dec. 2001.
63. Styner M., and **Gerig, G.**, Medial models incorporating object variability for 3D shape analysis, Lecture Notes in Computer Science LNCS 2082, Springer, pp. 502-516, June 2001
64. Welti, D., **Gerig, G.**, Radue, E-W. Kappos, L. and Szekely, G., Spatio-temporal Segmentation of Active Multiple Sclerosis Lesions in Serial MRI Data, Lecture Notes in Computer Science LNCS 2082, Springer, 438-445, June 2001
-
65. M. Styner and G. Gerig, Hybrid boundary-medial shape description for biologically variable shapes, Proc. of IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA) 2000, pp. 235-242, June 2000
66. M. Styner, Th. Coradi and **G. Gerig**, Brain morphometry by distance measurement in a non-Euclidean, curvilinear space, Proceedings of Image Processing in Medical Imaging IPMI'99, Springer LNCS #1613, pp. 364-369, June 1999
67. L. Bullitt, S. Aylward, A. Liu, J. Stone, S. K. Mukherji, Chris Coffey, **G. Gerig**, and S. M. Pizer, 3-D Graph Description of the Intracerebral Vasculature from Segmented MRA and Tests of Accuracy by Comparison with X-ray Angiograms, Proceedings of Image Processing in Medical Imaging IPMI'99, pp. 308-321, June 1999
-
68. M. Berger and **G. Gerig**, Motion measurements in low contrast X-ray imagery, Lecture Notes in Computer Science 1496, Proc. of MICCAI'98, editors: W. M. Wells, A. Colchester, S. Delp, 832-841, Oct. 1998
69. **G. Gerig**, D. Welti, Ch. Guttman, A. Colchester, G. Székely, Exploring the discrimination power of the time domain for segmentation and characterization of lesions in serial MR data, Springer LNCS #1496, 469-480, Oct. 1998
70. D. Ekatodramis, G. Székely and **G. Gerig**, Detecting and Inferring Brain Activation from functional MRI by Hypothesis-Testing based on the Likelihood Ratio, Springer LNCS #1496, Proc. of MICCAI'98, 578-589, Oct. 1998
71. Kelemen, G. Székely, and **G. Gerig**, Three-dimensional Model-based Segmentation, in Conference Proceedings of 1998 Workshop on Biomedical Image Analysis (WBIA'98, held in conjunction with CVPR'98), Edited by Baba Vemuri, IEEE Computer Society Press, Los Alamitos, CA, ISBN0-8186-8460-7, pp. 4-13, June 1998
72. Kelemen, G. Szekely, and **G. Gerig**, "Three-dimensional Model-based Segmentation", in Proceedings of MB3IA'98 IEEE International Workshop to be held in conjunction with ICCV'98 conference, Bombay, India, January 1998, pp. 87-96
-
73. Yoshinobu Sato, Shin Nakajima, Hideki Atsumi, Thomas Koller, **Guido Gerig**, Shigeyuki Yoshida and Ron Kikinis, "Multi-Scale Line Filter for 3D Medical Images: Segmentation-Less Visualization of Curvilinear Structures", Springer LNCS #1205, J. Trocca, E. Grimson and R. Moesges (Eds.), Proc. of CVRMed-MRCAS'97 conference, Springer, pp. 213-222, 1997
74. Tuomo Vehkomaki, **Guido Gerig** and Gabor Szekely "A user-guided tool for efficient segmentation of medical image data", , Springer LNCS 1205, Proc. of CVRMed-MRCAS'97 conference, Springer, pp. 685-694, 1997
-
75. D. Ekatodramis, G. Székely, E. Martin and **G. Gerig**, "A Simulation Environment for Validation and Comparison of fMRI Evaluation Procedures", NeuroImage, 1996
76. M. Berger, U.R. Meier, T. Hanselmann, **G. Gerig**, G. Székely, and U.M. Lütolf, Patient Displacement Analysis Using the Generalized Hough Transform, 4th International Workshop on Electronic Portal Imaging, June 1996
77. A. Kelemen, H-W. Reist, **G. Gerig** and G. Szekely, "Automatic segmentation of cell nuclei from confocal laser scanning microscopy images", Visual. in Biomed. Comput. Proc. VBC'96, Springer LNCS: 1131, pp. 193-202, Sept. 1996
78. Ch. Brechbuehler, **Guido Gerig** and Gabor Szekely, "Compensation of spatial inhomogeneity in MRI based on a multi-valued image model and a parametric bias estimate", Visual. in Biomed. Comp., Springer LNCS #1131, pp. 141-146, Sept. 1996

-
79. G. Székely, A. Kelemen, C. Brechbühler and **G. Gerig**, "Segmentation of 3D objects from MRI volume data using constrained elastic deformations of flexible Fourier surface models", Computer Vision, Virtual Reality and Robotics in Medicine, January 1995
80. G. Székely, T. Koller, R. Kikinis and **G. Gerig**, "Structural description and combined 3-D display for superior analysis of cerebral vascularity from MRA", Medical Imaging, 1995
81. T. Koller, **G. Gerig** and G. Székely, "Object-Centered Description for Analysis and Display of the Cerebral Vascularity", CAR'95 Computer Assisted Radiology, June 1995
82. Th. Koller, **G. Gerig**, G. Székely, and D. Dettwiler, "Multiscale Detection of Curvilinear Structures in 2-D and 3-D Image Data", Proceedings Fifth Int. Conf. on Computer Vision (ICCV'95), IEEE Computer Society Press, pp. 864-869, June 1995
83. T. Vehkomäki, **G. Gerig** and G. Székely, "Segmentation of Volume Data by Contour Fragment Grouping", CAR'95 Computer Assisted Radiology, June 1995
84. **G. Gerig**, G. Székely, Georg Israel and Martin Berger, "Detection and characterization of unsharp blobs by curve evolution", Information Processing in Medical Imaging (IPMI'95), Y. Bizais et al. (Eds.), Series on Computational Imaging and Vision, Kluwer Academic Publishers, pp. 165-176, June 1995
-
85. G. Székely, T. Koller, R. Kikinis and **G. Gerig**, "Structural Description and Combined 3-D Display for Superior Analysis of Cerebral Vascularity from MRA", Visualization in Biomedical Computing, 1994
-
86. **G. Gerig**, Th. Koller, G. Székely, Ch. Brechbuehler and O. Kuebler, "Symbolic description of 3-D structures applied to cerebral vessel tree obtained from MR angiography volume data", Lecture Notes in Computer Science No. 687, Information Processing in Medical Imaging IPMI'93, H.H. Barrett and A.F. Gmitro (Eds.), Springer Verlag, pp. 94-111, 1993
87. G. Székely, **G. Gerig**, Th. Koller, Ch. Brechbühler and O. Kübler, "Analysis of MR Angiography Volume Data Leading to the Structural Description of the Cerebral Vessel Tree", Computer Analysis of Images and Patterns, CAIP'93, 1993
-
88. C. Brechbühler, **G. Gerig** and O. Kübler, "Surface parametrization and shape description", Proc. Visualization in Biomedical Computing VBC'92, Chapel Hill, NC, October 1992
-
89. C. Brechbühler, **G. Gerig** and O. Kübler, "Towards representation of 3D shape: Global surface parametrization", Visual Form, Proc. of the IWVF (International Workshop on Visual Form), Capri, May 1991
-
90. **Gerig, G.**, "Linking Image-Space and Accumulator-Space: A New Approach for Object Recognition", Proceedings 1st Int. Conference on Computer Vision ICCV, IEEE Press, pp. 112-117, 1987
-
91. **Gerig G.** and Klein F. "Fast contour identification through efficient HoughTransform and simplified interpretation strategy," 8th IJCP, Paris, pp 498-500, 1986.

Other Articles

1. S. GOUTTARD, K. GREWEN, G. GERIG, J. GILMORE, E. BITAUD, J. JOHNS, Prenatal cocaine effects on infant brain development, Society for Neuroscience 2010, Nov, 2010, long abstract
2. G. GERIG, K. GREWEN, S. GOUTTARD, E. BITAUD, J. GILMORE, J. JOHNS, Prenatal cocaine effects on neonatal white matter development, Society for Neuroscience 2010, Nov, 2010, long abstract
3. S. Pujol, C-F. Westin, R. Whitaker, G. Gerig, T. Fletcher, V. Magnotta, S. Bouix, R. Kikinis, W. M. Wells III, and R. Gollub, PRELIMINARY RESULTS ON THE USE OF STAPLE FOR EVALUATING DT-MRI TRACTOGRAPHY IN THE ABSENCE OF GROUND TRUTH, short paper ISMRM conference April 2009
4. Oguz, Ipek, **Gerig, Guido**, Barre, Sebastien, Styner, Martin, A Quantitative KWMeshVisu: A Mesh Visualization Tool for Shape Analysis, 2006, ISC/NA-MIC Workshop on Open Science at MICCAI 2006, Online publication <http://hdl.handle.net/1926/220>
5. Styner, M. and Oguz, I. and Xu, S. and Brechbuehler, C. and Pantazis, D. and Levitt, J. and Shenton, M. and Gerig, G.: Framework for the Statistical Shape Analysis of Brain Structures using SPHARM-

- PDM, Open Science Workshop at MICCAI 2006, Kopenhagen, published at Insight Journal DSpace link: <http://hdl.handle.net/1926/215>
6. Yushkevich Paul A., Piven Joseph, Cody Heather, Ho Sean, Gee James C., **Gerig Guido**, User-Guided Level Set Segmentation of Anatomical Structures with ITK-SNAP, The Insight Journal, vol. ISC/NAMIC/ MICCAI Workshop on Open-Source Software, 2005, Online publication: <http://hdl.handle.net/1926/20>,
 7. C. Goodlett, I. Corouge, M. Jomier, and **G. Gerig**, A Quantitative DTI Fiber Tract Analysis Suite, The Insight Journal, vol. ISC/NAMIC/ MICCAI Workshop on Open-Source Software, 2005, Online publ.: <http://hdl.handle.net/1926/39>
 8. Pierre Fillard and **Guido Gerig**, "Analysis Tool For Diffusion Tensor MRI", SHORT PAPER, Lecture Notes in Computer Science LNCS #2879, pp. 967-968, Nov. 2003
 9. **Guido Gerig**, Marcel Prastawa, Weili Lin and John Gilmore, "Assessing Early Brain Development in Neonates by Segmentation of High-Resolution 3T MRI", SHORT PAPER, Lecture Notes in Computer Science LNCS #2879, pp. 979-980, Nov. 2003
 10. **Gerig, Guido**, Gouttard, Sylvain and Corouge, Isabelle, "Analysis of Brain White Matter via Fiber Tract Modeling", full paper IEEE Eng. in Medicine and Biology Society EMB 2004: IEEE Catalog No: 04CH37558C, ISBN: 0-7803-8440-7
 11. Styner M. and **Gerig, G.**, "Shape Analysis of Anatomical Structures corrected for Multiple Correlated Statistical Tests", Proc. of SPIE, Medical Imaging 2004: Im. Proc., M. Sonka, J. M. Fitzpatrick, Eds., Vol. #5370, pp. 233-240, Feb. 2004
 12. Styner M, Charles C, Park J, **Gerig G.** Multisite validation of image analysis methods – Assessing intra and inter-site variability, Proc. SPIE Vol. 4684, p. 278-286, Med. Imag.: Image Proc., M. Sonka; J. M. Fitzpatrick; Eds., Feb. 2002.
 13. Gabor Szekely, Thomas Koller, Ron Kikinis, and **Guido Gerig**, "Structural description and combined 3-D display for superior analysis of cerebral vascularity from MRA", in Proceedings Visualization in Biomedical Computing VBC'94, Editor: Richard R. Robb, SPIE P Vol. 2359, pp. 272-281, October 1994

Books, Book Chapters and Theses

- MedIA Sept 2010, Special Issue, Rueckert D, Hawkes D, **Gerig G**, Yang GZ. Med Image Anal. 2010 Oct;14(5):631-2. PMID: 20627174
- James S. Duncan and **Guido Gerig**, "Medical Image Computing and Computer-Assisted Intervention -- MICCAI 2005", Lecture Notes in Computer Science LNCS, Springer Verlag, Vol. LNCS 3749 and 3750
- Lin, Weili, An, Hongy, Chen, Yasheng, Nicholas, Peter, Zhai, GuiHua, **Gerig, Guido**, Gilmore, John, and Bullitt, Elizabeth, "Practical Consideration for 3T imaging" , Magn Reson Imaging Clin N Am (W.B. Saunders Company, Elsevier), 11(2003), 615-639 (Book Chapter)
- **Guido Gerig**, Daniel Welti, Gabor Szekely, Ernst W. Radue and Ludwig Kappos, Quantification of MS lesion evolution in a serial MRI Study, In: Multiple sclerosis: tissue destruction and repair, Edited by L Kappos, K Johnson, J Kesselring, and E W Radu, Published by Martin Dunitz Ltd, London, 2001. ISBN 1 85317 872 1, pp. 99-112
- **Guido Gerig**, Gabor Szekely, Cyril Burger, Digital Image Processing for functional analysis, in Functional Imaging - Principles and Methods, edited by von Schulthess, Gustav Konrand and Hennig, Jurgen, Lippincott-Raven Publishers, 1998, pp. 115-156
- Gabor Szekely, Thomas Koller, Ron Kikinis, and **Guido Gerig**, Structural description and combined 3-D display for superior analysis of cerebral vascularity from MRA, in Medical Imaging, L. Beolchi and M.H. Kuhn, editors, Studies in Health Technology and Informatics, Vol. 19, IOS Press, 1995, pp. 183-194

- Ross Whitaker and **Guido Gerig**, Vector-valued diffusion, pp. 93-134, in: Geometry-Driven Diffusion in Computer Vision, edited by Bart M. ter Haar Romeny, Kluwer Academic Publishers, Series on Computational Imaging and Vision, Volume 1, October 1994
- **Guido Gerig**, Multidimensional Image Analysis with applications to medical image data, Habilitation Monograph ETH Zurich, November 17, 1992
- **Guido Gerig**, Segmentierung zur symbolischen Beschreibung von Strukturen in Grauwertbildern, PhD thesis Nr. 8390, ETH-Zurich, 1987

Abstracts (only back to 2001)

1. Guido Gerig, Emmanuel Bitaud, Sylvain Gouttard, Karen Grewen, Prenatal cocaine effects on neonatal white matter development, Society for Neuroscience 2010
2. Sylvain Gouttard, Guido Gerig, Emmanuel Bitaud, John Gilmore, Karen Grewen, Prenatal cocaine effects on infant brain development, Society for Neuroscience 2010
3. Knickmeyer, Gilmore, Hamer, Gerig et al., Effects of early testosterone exposure on neonatal brain structure as assessed by MRI, ICNE 2010,
4. Gilmore, John H.; Smith, Lauren; Kang, Chaeryon; Hamer, Robert; Wolfe, Honor; Hertzberg, Barbara; Smith, J. Keith; Chescheir, Nancy; Lin, Weili; Gerig, Guido. Neonatal brain structure in children with prenatal isolated mild ventriculomegaly Proceedings ACNP 2007 (American Conference of Neuropharmacology), Dec. 2007, Boca Raton, FL
5. R.C. Knickmeyer, Y.S.K. Vetsa, S. Gouttard, W. Lin, D. Evans, K. Wilber, K.J. Smith, C. Kang, R. M. Hamer, G. Gerig, J.H. Gilmore, A Structural MRI Study of Human Brain Development from Birth to Age 2, Proceedings ACNP 2007 (American Conference of Neuropharmacology), Dec. 2007, Boca Raton, FL
6. Rebecca C. Knickmeyer, Y. Sampath K. Vetsa, Weili Lin, Dianne Evans, Kathy Wilber, Keith J. Smith, Guido Gerig, John H. Gilmore A Structural MRI Study of Human Brain Development from Birth to Age 2, accepted abstract /oral presentation SOBP 2007 (Society of Biological Psychiatry)
7. 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
8. A. Belger, G. Gerig, J. Blocher, H. Gu, D. O. Perkins, J. H. Gilmore Altered Brain Growth And Structure In Children And Adolescents At Genetic Risk For Schizophrenia, accepted oral presentation/abstract ICOS 2007 (Int. Conf. of Schizophrenia Research)
9. Gilmore John, Vesta Yethiraja, Lin Weili, Gerig Guido, Neonatal DTI, 61th Annual Convention: Society of Biological Psychiatry, May 2006
10. Gilmore John, Looney Christopher, Vesta Yethiraja, Smith J. Keith, Lin Weili, Lieberman Jeffery, Gerig Guido, Early Postnatal Brain Structure and Development in Humans: Sexual Dimorphism and Cerebral Asymmetry are Present at Birth, American Congress of Pharmacology ACNP, Dec. 2005, selected for HOT TOPICS presentation
11. Gerig Guido, Gilmore John H, Jomier Matthieu, Joshi Sarang, Piven Joseph, Computational anatomy to assess growth pattern of early brain development in healthy and disease populations, American Congress of Pharmacology ACNP, Dec. 2005
12. Hazlett, H.C., Poe, M., Smith, R.G., Gerig, G., and Piven, J., Update on a longitudinal MRI study of young children with autism, Int. Meeting for Autism Research IMFAR, 2005
13. Guido Gerig, Isabelle Corouge, Clement Vachet, Ranga Krishnan and James MacFall, Quantitative Analysis of Diffusion Properties of White Matter Fiber Tracts: A Validation Study, International Society of Magnetic Resonance ISMRM, May 2005 (peer reviewed long abstract)
14. Guido Gerig, Weili Lin, Sampath Vetsa, John Gilmore, Assessing White Matter Growth Trajectory of Early Neonatal Development by 3T MR-DTI, International Society of Magnetic Resonance ISMRM, May 2005 (peer reviewed long abstract)

15. G. Gerig and John H. Gilmore, Early Brain Development Assessed by new Quantitative Analysis of structural MRI and DTI, Society of Biological Psychiatry SOBP, Invited Symposium, May 2005
16. G. Gerig, S Joshi, H Gu, D Perkins, RG Steen, R Hamer, JA Lieberman, Automatic pipeline for quantitative brain tissue segmentation and parcellation: Experience with a large longitudinal schizophrenia MRI study, Int. Cong. of Schizophrenia ICOS, March 2005
17. M. El-Sayed, L. Sikich, C. Charles, G. Gerig, M. Styner, S. Joshi, J. Lieberman, Morphometric MRI study in childhood and adolescent psychoses, , 51st Annual Meeting of the AACAP (American Academy of Child & Adult Psychiatry), Washington, 2004.
18. G. Gerig and John Gilmore, Neonatal Brain Development Assessed by new Quantitative Analysis of High-field 3Tesla MRI and DTI, American College of Neuropharmacology ACNP, Invited Symposium, Dec. 2004
19. 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
20. 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
21. 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
22. 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
23. M Styner, G. Gerig, E Kistner, K Muller, JA Lieberman, "Age and treatment related local hippocampal changes in schizophrenia explained by a novel shape analysis method", Schizophrenia Research, Vol. 60, No. 1, Elsevier, March 15, 2003, p. 208, Abstract
24. 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
25. JH Gilmore, G Zhai, W Lin, K Wilber, G Gerig, "White Matter Development in Newborns Assessed with Diffusion Tensor Imaging", Schizophrenia Research, Vol. 60, No. 1, Elsevier, March 15, 2003, p. 195, Abstract
26. 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.
27. 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.
28. 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
29. J Park, G Gerig, M Chakos, *D Vandermeulen, JA Lieberman, "Neuroimaging of Psychiatry Disease: Reliable and efficient automatic brain tissue segmentation for increased sensitivity", Schizophrenia Res., Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p.163, Abstract
30. S. Schobel, Miranda Chakos, Guido Gerig, Henry Bridges, Hongbin Gu, Cecil Charles, Jeffrey Lieberman, "Duration and Severity of Illness and Hippocampal Volume in Schizophrenia as Assessed by 3-D Manual Segmentation", Schizophrenia Research, Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p. 165, Abstract

31. H Bridges, M Chakos, G Gerig, S Schobel, C Charles, H Gu, J Lieberman, "Association of Duration and Severity of Illness and Superior Temporal Gyrus Volume as Assessed by 3-D Manual Segmentation Measurements in Male Schizophrenic Patients", *Schizophrenia Research*, Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p. 151, Abstract
32. 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
33. 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
34. 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

Submitted:

1. Prastawa, M., Awate, S, Joshi, S., **Gerig, G.**, A Nonparametric Regression Model for Longitudinal Anatomical Changes: Application to Consistent 4D Segmentation, submitted MICCAI 2011
2. Sadhegi, N., Prastawa, M., Gilmore, J.H., **Gerig, G.**, Statistical Growth Modeling of Longitudinal DT-MRI for Regional Characterization of Early Brain Development, , submitted MICCAI 2011
3. Fishbaugh, J., Durrleman, S., **Gerig, G.**, Estimation of Smooth Growth Trajectories with Controlled Acceleration from Time Series Shape Data, submitted MICCAI 2011
4. Guido Gerig, Ipek Oguz, Hongyu An, Weili Lin, Matthew McMurray, Josephine Johns, Martin Andreas Styner, Synergy of image analysis for animal and human neuroimaging supports translational research on drug abuse, submitted Feb 25. 2011
5. Linh Ha, Marcel Prastawa, Guido Gerig, John H. Gilmore, Claudio T. Silva, Sarang Josh, Image-Currents: Efficient Probabilistic and Geometric Anatomical Mapping using Particle Mesh Approximation on GPUs, submitted March 1, 2011
6. Robert K. McClure, Martin Styner, Jeffrey A. Lieberman, Sylvain Gouttard, **Guido Gerig**, Xiaoyan Shi, and Hongtu Zhu, Localized differences in caudate and hippocampal shape are associated with schizophrenia but not antipsychotic type, submitted to Biological Psychiatry
7. Carissa Cascio, Ph.D., Matthew J. Gribbin, Ph.D. , Sylvain Gouttard, Rachel G. Smith, Matthieu Jomier, Michele D. Poe, Ph.D., Michael Graves, Heather C. Hazlett, Ph.D., Keith Muller, Ph.D., **Guido Gerig**, Ph.D., and Joseph Piven, M.D., "Fractional Anisotropy Distribution in 2-6 year old Children with Autism", submitted June 2008
8. Matthew Gribbin, Meagan Clement, Keith Muller, Michele Poe, Carissa Cascio, Matthew Jomier, Joseph Piven, and **Guido Gerig**, Statistical analysis of diffusion tensor image data based on first principles, , submitted March 2006

Invited Talks (only back to 2000)

1. Nov 9, 2010, "*Spatio-Temporal Image Analysis for Longitudinal and Time-Series Image Data*", Asilomars, IEEE conference, Monterey, CA, USA
2. Oct. 18, 2010, "*Fiber tract analysis in infants at risk for autism*", ACE-IBIS Meeting, Chicago, USA
3. Oct. 10, 2010, **Plenary Talk**, Analysis of early brain growth trajectory from longitudinal neuroimage data, NEUROSPIN, Paris, France (invitation J-F Mangin)

4. Sept. 25, 2010, Introduction STIA'10, Spatio-temporal Image Analysis, Workshop Organizer MICCAI 2010, Beijing, China
 5. Sept. 20, 2010, "Atlas-Based Classification ABC", Workshop MICCAI'10 "The NAMIC Platform", Beijing, China
 6. Sept. 07, 2010, "Infant Imaging Core: Structural MRI and DTI Processing of Neonates", UNC Chapel Hill, NC
 7. Sept. 02, 2010, Progress update USTAR Imaging Cluster, USTAR governing board meeting, Salt Lake City, Utah
 8. Jan 25, 2010, "Computational Tools for Longitudinal Neuroimaging Infant Study", Advisory Board Meeting Silvio Conte Project, UNC Chapel Hill, NC
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9. 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).
 10. Oct 16, 2009, Invited Lecture/ NA-MIC Satellite Workshop presentation "*Diffusion tensor processing and visualization*", Society for Neuroscience SfN, Neuroscience 2009 Meeting, Chicago.
 11. Sept 28, 2009, Presentation "DTI Fiber Cup Challenge" Workshop, titled: "Fiber Challenge, SCI Utah Solution,
 12. Sept 24, 2009, Tutorial Co-organizer and 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.
 13. 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
 14. April 21, 2009, Invited Course 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.
 15. March 11, 2009, Invited presentation "*Image Analysis In Neuroimaging: Recent Progress*", Penn State University-Milton S. Hershey Medical Center, PA
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16. 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
 17. 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
 18. Nov. 7, 2008, Mapping Early Brain Development via Neuroimaging, invited presentation UCLA LONI CCB Seminar, Los Angeles, CA
 19. 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
 20. Sept. 6, 2008, Computational pipelines for clinical studies, invited talk for Tutorial on DTI, MICCAI 2008, NYU, New York
 21. 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
 22. July 14, 2008, Mapping Brain Changes Over Time during Development, Guido Gerig, IPAM (Institute for Pure and Applied Mathematics), UCLA, invited talk to Summer School: Mathematics in Brain Imaging
 23. 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

24. 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

25. Dec. 12, 2007, Neuroimaging of the very early age to discover brain changes: Challenges, limits and potential, invited presentation chaired session, ACNP Conference, Florida
26. Nov. 15, 2007: Computational NeuroImage Analysis Laboratory, Hanyang University, Seoul, Korea: Invited Presentation: Medical Image Analysis: Statistical Shape Analysis
27. Nov. 14, 2007: Computational NeuroImage Analysis Laboratory, Hanyang University, Seoul, Korea: Invited Presentation: Medical Image Analysis: Diffusion Weighted Imaging
28. Sept. 19, 2007: *Coordinate systems for computing DTI statistics in population studies, Tutorial presentation MICCAI 2007, Brisbane, Australia*
29. June 6, 2007: MR-DTI: Non-invasive imaging of neuroanatomy of white matter, workshop presentation, Human Brain Mapping HBM conference, Chicago, IL
30. April 15, 2007, Medial Image Analysis: Advancing Medicine via Computational Science, invited presentation CPE Lyon, France
31. March 17, 2007, MR Imaging of Early Brain Development: Challenges and Insights, INRIA Sophia Antipolis, invited seminar presentation

32. November 9, 2006, Grand Rounds Dept. of Radiology U-Penn, "MR Imaging of Early Brain Development: Challenges and Insights"
33. August 17, 2006, Invited 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"
34. August 11, 2006, Invited 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"
35. June 21, 2006, "Invited seminar presentation ETH Zurich, Computer Science, visual computing lunch, "Brain Connectivity via Diffusion Tensor Imaging: Challenges for Image Processing, Shape Modeling and Scientific Visualization"
36. June 1, 2006, "Invited Talk, University of Utah, SCI, "Statistics of populations of 3D images and its embedded objects."
37. May 20, 2006, Invited Seminar Talk, Johns Hopkins University, Biomedical Engineering, "Statistics of populations of 3-D images and its embedded objects"
38. May 19, 2006, Invited Talk, NIH WasCAS meeting. "Mapping the trajectory of the early developing brain: Challenges and Rewards ?"
39. Jan 6, 2006: Invited Talk, University of Utah, Salt Lake City (Prof. Chris Johnson): "Neuroimaging: What can we learn about brain development?"

40. Nov. 18, 2005: Invited Seminar Presentation ECE Department NC State University, "Statistics of images and shapes: From linear to nonlinear metrics"
41. October 26, 2005: Invited Talk UCLA IPAM, Center for Computational Biology (CCB), "Quantitative analysis of structural MRI and DTI to assess trajectory of early brain development"
42. June 2, 2005: Invited Seminar Presentation National Institute of Mental Health (NIMH): "Early Brain Development Assessed by structural MRI"
43. 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"
44. April 5, 2005: Int. Cong. of Schizophrenia Res. ICOS, Savannah, GA: Invited Symposium Presentation: "Methodology of Pediatric Imaging"

45. 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"

46. Nov. 31, 2004, Radiological Society of North America RSNA: Refresher's Course for Radiologists: "Image Segmentation"
47. Sept 24, 2004, Invited Talk, Medical Image Understanding and Analysis MIAU, Imperial College, London, Studying neurodevelopment and neurodegeneration: Contributions from UNC Chapel Hill
48. Sept. 10, 2004, UNC National Symposium "Imaging of the Developing Brain": Invited Presentation: "Image Analysis Tools for MRI of Early Development"
49. July 16, 2004, UCLA IPAM, invited talk graduate summer school: Mathematics in Brain Imaging, "Shape Analysis to assess neurodevelopment and neurodegeneration".
50. Challenges for Imaging, Image Analysis and Visualization"
51. Mar 26, 2004, Brigham and Women's Hospital, Harvard, Boston, invited seminar presentation: "Diffusion Tensor Imaging to explore white matter tracts:
52. Mar 10, 2004, Nathan Kline Institute (NKI), Orangeburg NY, invited presentation: "Improved imaging and image analysis to study brain change in mental illness"

53. Dec. 3, 2003, Radiological Society of North America RSNA, Invited Presentation: "Image Processing: From Basics to Advance"
54. Nov. 15, 2003 Medical Image Computing and Computer Assisted Intervention MICCAI'03, Tutorial: "Unifying Statistical Classification and Geometric Models"
55. July 14, 2003: University Hospital of Geneva, Switzerland: "Image Analysis of Neonatal MRI", Invited Seminar Talk
56. March 30, 2003: International Congress on Schizophrenia Research ICOS2003, Colorado Springs, Poster Presentation: "Age and Treatment related local hippocampal changes in schizophrenia"
57. San Diego, Feb. 17, 2003, SPIE International Symposium Medical Imaging, Invited Workshop Talk: Statistical Characterization of Brain Structures using M-reps

58. Puerto Rico, Dec 8, 2002, American College of Neuropharmacology ACPN, Scientific Presentation: "Structural Imaging in Autism"
59. Oct. 30: Harvard Medical School, Brigham and Women's Hospital, Seminar Presentation: Segmentation and Shape Characterization in Clinical Brain Studies
60. July 8, 2002, International IEEE Conference of Bioinformatics ISBI Washington, invited Paper Presentation, Statistical Shape Models for Segmentation and Structural Analysis"
61. May 27, 2002, Swiss Federal Institute of Technology ETH, Department of Electrical Engineering, Switzerland, "Model-based segmentation using atlas prior and intensity and shape model"

62. December 13th, 2001, MMBIA 2001, Invited Keynote Presentation
63. Dec 4, 2001, University of Richmond (Math Department, Michael Kerckhove), VA, Invited Talk, Three-dimensional Shape models for automatic segmentation and structural analysis applied to brain imaging studies.
64. September 28, 2001, National Institute of Mental Health NIMH, Mood and Anxiety Disorders Program, Invited Talk, Model-Based Segmentation and Shape Analysis to Study the Morphology of Subcortical Structures
65. August 15th, 2001, UCLA, Lab of Neuro-Imaging and Brain Mapping Division LONI, "Object Modeling for automatic segmentation and shape analysis to study morphology in neuroimaging applications"
66. June 14, 2001, Allan Reiss, Stanford University, Pediatric Psychiatry, "Medical Image Analysis at UNC Chapel Hill"
67. May 17, 2001, Belgium, Catholic University of Leuven, KUL, ESAT, 3D Shape Modeling in the Presence of Shape Variability: Combining Surface and Medial Shape Representation
68. May 16, 2001, Belgium, Catholic University of Leuven, KUL, Medical School, Model-based segmentation and shape description to study morphology in neuroimaging application

69. May 4th, 2001, Montreal Kaleem Siddiqui's lab: Seminar Presentation: "Building medial models representing shape populations of subcortical brain structures"
 70. May 3rd 2001, Montreal Neurological Institute MNI: Invited talk: "Shape Models for Segmentation and Shape Analysis to study Neuropathology in Mental Illness"
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71. Nov 5, 2000, NY, Swiss Eureka in America, Distinguished Lecture: Confluence of the Information and Life Sciences – Brain Imaging for the Study of Neurological Diseases

Open Source Software Development

The UNC Neuroimaging Laboratory is closely linked to the Insight Toolkit (ITK) Open Source development and distribution of software for medical image analysis.

Web download of UNC Neurolab Software and Tutorials: <http://www.ia.unc.edu/dev>

Major packages available to the international community:

- **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
- **Insight SNAP**: User-guided 3D segmentation and 3D implicit snake segmentation
- **EMS**: Automatic MRI brain tissue segmentation
- **Head Circumference**: Head circumference measurement from 3D brain MRI
- **Imagine**: Dataflow pipeline software for ITK modules
- **Intensity Rescaler**: Adjustment 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