

Guido Gerig, PhD

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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

Graduate Courses Department of Computer Science, UNC Chapel Hill:

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):

2004	Imaging the Developing Mind and Brain (block course)
2003	Imaging the Developing Mind and Brain (block course)
2000	Medical Image Analysis
1999	Medical Image Analysis

Weekly Research Seminars:
SCI Image Lunch (Computer Science Graduate Seminar)

Undergraduate Students Exchange Program CPE Lyon, France:
1999 – today: Supervision and advising of 2-3 undergraduate students / year

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 and Affiliations

- Editorial Board (Executive Committee) MEDICAL IMAGE ANALYSIS Journal, published by Elsevier B.V.
- Board Member Medical Image Computing and Computer Assisted Intervention MICCAI
- Board Member IEEE SPIE Conference IMAGING
- Member MICCAI Society
- Senior Member IEEE
- Guest Editor Academic Radiology Dec. 2003
- NIH Study Sections: BISTI, HBR, SBIRs, P41
- Reviewer IEEE TMI, NeuroImage, MedIA, IJCV
- Reviewer Conferences: MICCAI, IPMI, MMBIA, SIGGRAPH, CVPR etc.

Awards and Honors

- 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
- 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

- **Christine Xu**
- **Ipek Oguz**
- **Casey Goodlett**
- **Neda Sadeghi**
- Marcel Prastawa (PhD UNC Nov. 2007)
- Timothy Terribery (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)
- Dimitri Ekatothramis (PhD ETHZ 1998)
- Christian Brechbuehler (PhD ETHZ 1996)

currently member of 15 other PhD committees

Graduate / MS student advising

- Kevin Gorczowski (MS Spring 2007)
- Bradley Moore (Fall 2007)
- Sampath Vetsa (MS Spring 2003)
- Megan Dunican (MS Spring 2003)
- Nathan Moon (MS Spring 2002)

Grant Funding

Current:

- U54 NIH Roadmap for Medical Research: NAMIC: National Alliance for Medical Imag Computing (PI Ron Kikinis, Role Guido Gerig: Co-investigator Core 1)
- P50 NIH Silvio Conte Research Center: Prospective Studies of the Pathogenesis of Schizo-phrenia, Silvio O. Conte Center for the Neuroscience of Mental Disorders (PI John Gilmore, Role G. Gerig: PI Neuroimaging Core)
- Characterization of Normal Brain Development Using Parallel MRI, BRP grant(PI Weili Lin, Role Guido Gerig: Co-investigator).
- A Longitudinal MRI Study of Infants at Risk for Autism, Autism Centers of Excellence (ACE) Network (PI Joseph Piven, Role Guido Gerig: PI Imaging Core)
- 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 G. Gerig)
- Eli Lilly: Demonstration of drug effect (PI G. Gerig)

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

- 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)
- UNC MHCRC (PI J. Lieberman, Role Guido Gerig: PI Imaging Core) (1997 – 2002)
- European Community & Swiss BBW, 4th framework: BIOMED 2, #95084, Title: BIOMORPH", 6 European academic and clinical partners (1996-98)
- 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)
- European Community, ESPRIT & Swiss NSF, # BBW E 3300 Geometry-Driven Diffusion in Vision", 7 European and 5 US academic partners (1993-96)

Publications

Articles in Journals

1. 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/* (In Press).
 2. Casey B. Goodlett, P. Thomas Fletcher, John H. Gilmore, and **Guido Gerig**, "Group Analysis of DTI Fiber Tract Statistics with Application to Neurodevelopment", *NeuroImage* (In Press)
 3. 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, *AJNR* (In Press)
 4. 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, August 2008, in press in *Early Human Development*
 5. 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, in print *AJNR*, to appear Fall 2008
 6. Fan Zhang, Edwin R. Hancock, Casey Goodlett and **Guido Gerig**, Probabilistic White Matter Fiber Tracking using, Particle Filtering and von Mises-Fisher Sampling, *Medical Image Analysis MedIA*, in print
 7. Taylor WD, MacFall JR, **Gerig G**, Krishnan KR. Structural integrity of the uncinate fasciculus in geriatric depression: Relationship with age of onset. In press, *Neuropsychiatric Disease and Treatment*., to appear 2008
 8. 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, in print *Biological Psychiatry*, to appear Summer 2008
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9. 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
 10. 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
 11. 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* 2007 Mar 9;():
 12. Taylor WD, MacFall JR, **Gerig G**, Krishnan KR. Structural integrity of the uncinate fasciculus in geriatric depression: Relationship with age of onset. In press, *Neuropsychiatric Disease and Treatment*.
 13. 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.
 14. 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
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15. John H. Gilmore, Weili Lin, and **Guido Gerig**, IMAGES IN NEUROSCIENCE: Fetal and Neonatal Brain Development, *Am J Psychiatry*, Dec 2006; 163: 2046.

16. Carissa J. Cascio, **Guido Gerig**, Joseph Piven, Diffusion Tensor Imaging: Application to the Study of the Developing Brain, *Am J Psychiatry*, Dec 2006; 163: 2157 – 2163
17. 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
18. Carissa J. Cascio, Martin Styner, Rachel G. Smith, Michele D. Poe, **Guido Gerig**, Heather C. Hazlett, Matthieu Jomier, Roland Bammer, and Joseph Piven, Tractography-based segmentation of the corpus callosum reveals a reduced relationship to cortical white matter volume in young children with developmental delay, in print *Amer. Journal of Psychiatry AJR*
19. 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
20. 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

21. 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
22. 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
23. 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
24. 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
25. 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
26. 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
27. 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
28. 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
29. 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

30. 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.
31. 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.
 32. 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
 33. 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
 34. 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
 35. 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
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36. 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.
 37. 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
 38. 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
 39. 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
 40. 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.
 41. 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
 42. 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
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43. 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.
 44. 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.
 45. 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.
 46. **Gerig G**, Welti D, Guttman 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.
 47. 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.

48. 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.
49. 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.
50. 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 .
51. 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.
52. 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.
53. 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.
54. 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.
55. **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.
56. **Gerig G**, Kikinis R, Kuebler O, Jolesz FA. Nonlinear anisotropic filtering of MRI data. *IEEE Trans Med Imaging*, 1992;11(2):221-32.
57. **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.
58. 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.
59. 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. 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, accepted as oral presentation at ISVC08 (4th Int. Symp. On Visual Computing), to appear Springer LNCS Fall 2008
2. Marcel Prastawa and **Guido Gerig**, Brain Lesion Segmentation through Physical Model Estimation, accepted as oral presentation at ISVC08 (4th Int. Symp. On Visual Computing), to appear Springer LNCS Fall 2008
3. Casey Goodlett, P. Thomas Fletcher, John Gilmore, and **Guido Gerig**, Group Statistics of DTI Fiber Bundles Using Spatial Functions of Tensor Measures, accepted MICCAI'08 conference, to appear Springer LNCS September 2008, nominated best paper award
4. Sylvain Gouttard, Martin Styner, Marcel Prastawa, Joseph Piven, and **Guido Gerig**, Assessment of Reliability of Multi-site Neuroimaging via Traveling Phantom Study, accepted MICCAI'08 conference, to appear September 2008
5. Shun Xu, Martin Styner, and **Guido Gerig**, "Multivariate Nonlinear Mixed Model to Analyze Longitudinal Image Data: MRI Study of Early Brain Development", full paper accepted MMBIA-CVPR Workshop, July 2008

6. 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 14-17 May 2008 Page(s): 1283 - 1286 Digital Object Identifier 10.1109/ISBI.2008.4541238
7. 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

8. 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
9. Fan Fan Zhang, Casey Goodlett, Edwin Hancock, **Guido Gerig**, "Probabilistic White Matter Fiber Tracking using Particle Filtering", accepted CVPR workshop EMMCVPR 2007
10. 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
11. 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
12. 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, in print *Proc. CVPR'07*, IEEE Press
13. 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*
14. Martin Styner, Shun Xu, Mohammed El-Sayed, **Guido Gerig**, Correspondence Evaluation in local shape analysis and structural subdivision, *ISBI 2007*, IEEE press
15. 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.
16. 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

17. 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
18. 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
19. 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
20. 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
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4. 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>
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3. 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)
4. 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
5. 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)
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7. 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
8. 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
9. 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
10. 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)
11. 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)
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13. 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
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23. 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.
24. 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.
25. 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
26. J Park, G Gerig, M Chakos, *D Vandermeulen, JA Lieberman, "Neuroimaging of Psychiatry Disease: Reliabl e and efficient automatic brain tissue segmentation for increased sensitivity", Schizophrenia Res., Vol. 49, Nos. 1-2, Elsevier, April 28, 2001, p.163, Abstract
27. 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
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29. 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
30. 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
31. 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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1. Marcel Prastawa, Elizabeth Bullitt, and **Guido Gerig**, Simulation of Brain Tumors in MR Images for Evaluation of Segmentation Efficacy, Medical Image Analysis (MedIA), (In Press)
2. Heather Cody Hazlett, Michele 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 Autistic Disorder with and without fragile X syndrome, submitted to Journal of Neurodevelopmental Disorders, Springer, September 2008
3. 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, submitted to The Journal of Neuroscience, September 2008
4. 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
5. Matthew W. Mosconi, Ph.D., Heather Cody Hazlett, Ph.D., Michele D. Poe, Ph.D., **Guido Gerig**, Ph.D., Rachel Gimpel Smith, B.A., and Joseph Piven, M.D: A longitudinal study of amygdala volume and joint attention in 2-4 year old children with autism, submitted to AJNR April 2008

6. Shun Xu, Martin Styner, John Gilmore, and **Guido Gerig**, Multivariate Longitudinal Modeling and Statistics to Study Early Brain Development, submitted
7. Marcel Prastawa and **Guido Gerig**, Brain Lesion Classification through Inference of Physical Models, submitted Medial Image Analysis
8. A.Fedorov, E.Billet, M.Prastawa, **G.Gerig**, A.Radmanesh, S.K.Warfield, R.Kikinis, and N.Chrisochoides, Assessing Accuracy of Brain MRI Alignment with the Robust Hausdorff Distance Measures, submitted
9. Kevin Gorczowski, 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, submitted IEEE TMI April 2007
10. 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 5, 2000, NY, Swiss Eureka in America, Distinguished Lecture: Confluence of the Information and Life Sciences – Brain Imaging for the Study of Neurological Diseases
2. May 3rd 2001, Montreal Neurological Institute MNI: Invited talk: “Shape Models for Segmentation and Shape Analysis to study Neuropathology in Mental Illness”
3. May 4th, 2001, Montreal Kaleem Siddiqui’s lab: Seminar Presentation: “Building medial models representing shape populations of subcortical brain structures” May 16, 2001, Belgium, Catholic University of Leuven, KUL, Medical School, Model-based segmentation and shape description to study morphology in neuroimaging application 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
6. June 14, 2001, Allan Reiss, Stanford University, Pediatric Psychiatry, “Medical Image Analysis at UNC Chapel Hill”
7. 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”
8. 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
9. 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.
10. December 13th, 2001, MMBIA 2001, Invited Keynote Presentation
11. 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”
12. July 8, 2002, International IEEE Conference of Bioinformatics ISBI Washington, invited Paper Presentation, Statistical Shape Models for Segmentation and Structural Analysis”
13. Oct. 30: Harvard Medical School, Brigham and Women’s Hospital, Seminar Presentation: Segmentation and Shape Characterization in Clinical Brain Studies
14. Puerto Rico, Dec 8, 2002, American College of Neuropharmacology ACPN, Scientific Presentation: “Structural Imaging in Autism”
15. San Diego, Feb. 17, 2003, SPIE International Symposium Medical Imaging, Invited Workshop Talk: Statistical Characterization of Brain Structures using M-reps

16. March 30, 2003: International Congress on Schizophrenia Research ICOS2003, Colorado Springs, Poster Presentation: "Age and Treatment related local hippocampal changes in schziophrenia"
17. July 14, 2003: University Hospital of Geneva, Switzerland: "Image Analysis of Neonatal MRI", Invited Seminar Talk
18. Nov. 15, 2003 Medical Image Computing and Computer Assisted Intervention MICCAI'03, Tutorial: "Unifying Statistical Classification and Geometric Models"
19. Dec. 3, 2003, Radiological Society of North America RSNA, Invited Presentation: "Image Processing: From Basics to Advance"
20. Mar 10, 2004, Nathan Kline Institute (NKI), Orangeburg NY, invited presentation: "Improved imaging and image analysis to study brain change in mental illness"
21. Mar 26, 2004, Brigham and Women's Hospital, Harvard, Boston, invited seminar presentation: "Diffusion Tensor Imaging to explore white matter tracts: Challenges for Imaging, Image Analysis and Visualization"
22. July 16, 2004, UCLA IPAM, invited talk graduate summer school: Mathematics in Brain Imaging, "Shape Analysis to assess neurodevelopment and neurodegeneration".
23. Sept. 10, 2004, UNC National Symposium "Imaging of the Developing Brain": Invited Presentation: "Image Analysis Tools for MRI of Early Development"
24. Sept 24, 2004, Invited Talk, Medical Image Understanding and Analysis MIAU, Imperial College, London, Studying neurodevelopment and neurodegeneration: Contributions from UNC Chapel Hill
25. Nov. 31, 2004, Radiological Society of North America RSNA: Refresher's Course for Radiologists: "Image Segmentation"
26. 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"
27. April 5, 2005: Int. Cong. of Schizophrenia Res. ICOS, Savannah, GA: Invited Symposium Presentation: "Methodology of Pediatric Imaging"
28. 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"
29. June 2, 2005: Invited Seminar Presentation National Institute of Mental Health (NIMH): "Early Brain Development Assessed by structural MRI"
30. 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"
31. Nov. 18, 2005: Invited Seminar Presentation ECE Department NC State University, "Statistics of images and shapes: From linear to nonlinear metrics"
32. Jan 6, 2006: Invited Talk, University of Utah, Salt Lake City (Prof. Chris Johnson): "Neuroimaging: What can we learn about brain development?"
33. May 19, 2006, Invited Talk, NIH WasCAS meeting. "Mapping the trajectory of the early developing brain: Challenges and Rewards ?"
34. May 20, 2006, Invited Seminar Talk, Johns Hopkins University, Biomedical Engineering, "Statistics of populations of 3-D images and its embedded objects"
35. June 1, 2006, "Invited Talk, University of Utah, SCI, "Statistics of populations of 3D images and its embedded objects."
36. 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"
37. 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"

38. 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"
39. November 9, 2006, Grand Rounds Dept. of Radiology U-Penn, "MR Imaging of Early Brain Development: Challenges and Insights"
40. Nov. 14, 2007: Computational NeuroImage Analysis Laboratory, Hanyang University, Seoul, Korea: Invited Presentation: Medical Image Analysis: Diffusion Weighted Imaging
41. Nov. 15, 2007: Computational NeuroImage Analysis Laboratory, Hanyang University, Seoul, Korea: Invited Presentation: Medical Image Analysis: Statistical Shape Analysis
42. Feb. 6, 2008: Neuroimaging of the early developing brain: Challenges, limits and potential, INRIA Sophia Antipolis, Invited Presentation at special Seminar by Ayache on DTI imaging (with Basser, Westin et al.).
43. April 17th, 2008, Advanced methodology for quantitative analysis of white matter tracts from MR Diffusion Weighted Imaging, Guido Gerig, UNC BRIC GE Seminar Series, Chapel Hill, NC
44. 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
45. 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
46. Sept. 6, 2008, Computational pipelines for clinical studies, invited talk for Tutorial on DTI, MICCAI 2008, NYU, New York
47. 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

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:

- **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

Guido Gerig, Sept. 3, 2008