

Selected Publications

• Book Chapters; Edited Books/Journals/Proceedings

1. E. Özarslan, B. C. Vemuri and T. H. Mareci, “Higher rank tensors in diffusion MRI,” in *Visualization and Processing of Tensor Fields*, ed. J. Weickert and H. Hagen, Springer-Verlag, in 2006.
2. Z. Wang and B. C. Vemuri, “Segmentation of diffusion tensor images,” in *Mathematical methods in computer vision*, Ed., N. Paragios, Y. Chen and O. Faugeras, Springer Verlag, 2005.
3. B. C. Vemuri and Y. Chen, “PDE-based Algorithms for Simultaneous Image Registration and Segmentation,” in *Geometric Level-set Methods in Imaging, Vision and Graphics*, Eds. S. Osher and N. Paragios, Springer-Verlag, 2002.
4. B. C. Vemuri, S. Sahni, F. Chen, C.M. Leonard and J. Fitzsimmons, “Lossless image compression,” in *Electro-optic Encyclopedia*, 2001.
5. B. Zhao, C. Mandal, B. C. Vemuri and J. K. Aggarwal, “3D Shape reconstruction from multiple views,” in *Handbook of Video and Image Processing*, Academic Press, Feb. 2000.
6. B. C. Vemuri and James Duncan *Guest Editors* of the journal of *Medical Image Analysis*, Oxford University Press, Vol. 3, No. 4 1999.
7. B. C. Vemuri, “Proceedings of the IEEE Workshop on Biomedical Image Analysis,” edited volume (231 pages), IEEE Computer Society Press, June 26-27, Santa Barbara, CA, 1998.

• Selected Refereed Journals

Medical Image Analysis

1. B. Jian, B. C. Vemuri, E. Ozarslan, P. Carney and T. Mareci, “A novel tensor distribution model for the diffusion weighted MR signal,” *Neuroimage*, **submitted**.
2. A. Barmpoutis, B. C. Vemuri, T. Shepherd and J. Forder, “Tensor splines for interpolation and approximation of DT-MRI with applications to segmentation of isolated rat hippocampi,” *IEEE Trans. on Medical Imaging*, **submitted**.
3. A. R. Manazanres, M. Rivera, B. C. Vemuri, P. Carney and T. Mareci, “Basis functions for estimating intra-voxel structure in DW-MRI,” *IEEE Trans. on Medical Imaging*, **submitted**.
4. N. Lord, J. Ho, B. C. Vemuri and S. Eisnenschen, “Joint estimation and segmentation of the asymmetry map between the left and right hippocampi,” Special issue of the *IEEE Trans. on Medical Imaging on Computational Neuro-anatomy*, **accepted**.
5. S. Kodipaka, B. C. Vemuri, A. Rangarajan, C. M. Leonard, I. Schmallfuss and S. Eisen-schen, “Kernel Fischer discriminant for shape-based classification of epileptic focus,” *Medical Image Analysis*, **accepted**.
6. E. Özarslan, P. Basser, B. C. Vemuri, T. Shephard, P. E. Thelwall and S. J. Blackband, “High resolution q-space reconstruction”, *J Magn Reson.*, **accepted**.
7. F. Wang and B. C. Vemuri, “Non-rigid multi-modal image registration using cross-cumulative residual entropy,” *International Journal of Computer Vision*, **accepted**.

8. E. Özarslan, T. M. Shepherd, B. C. Vemuri, S. J. Blackband and T. H. Mareci, "Resolution of complex tissue micro-architecture using the diffusion orientation transform", *Neuroimage*, 2006, Vol. 31, 1086-1103.
9. F. Wang, B. C. Vemuri and S. Eisenschenk, "Joint registration and segmentation from brain MRI," *Academic Radiology*, Vol. 13 No. 9), Sept. 2006, pp. 1104-11.
10. E. Ozarslan, B. C. Vemuri and T. Mareci, "Trace, variance and entropy based generalized scalar measures for diffusion MRI," *Magnetic Resonance in Medicine (MRM)*, Vol. 53, 2005, pp. 866-876.
11. Z. Wang, B. C. Vemuri, Y. Chen and T. Mareci, "A constrained variational principle for tensor field restoration from complex-valued DWI," *IEEE Trans. on Medical Imaging*, Vol. 23, No. 8, 2004, pp. 930-939.
12. Z. Wang and B. C. Vemuri, "DTI Segmentation using an Information Theoretic Tensor Dissimilarity Measure," *IEEE Trans. on Medical Imaging*, Vol. 24, No. 10, 2004, pp. 1267-1277.
13. T. E. McGraw, B. C. Vemuri, Y. Chen, M. Rao, T. Mareci, "DT-MRI denoising and neuronal fiber tracking," *Medical Image Analysis*, Vol. 8, 2004, pp. 95-111.
14. B. C. Vemuri, J. Ye, Y. Chen and C. M. Leonard, "Image registration via level-set motion: applications to atlas-based segmentation," *Medical Image Analysis*, Vol. 7, No. 1, 2003, pp. 1-20.
15. J. L. Marroquin, B. C. Vemuri, S. Botello and F. Calderon, "An accurate and efficient Bayesian method for automatic segmentation of brain MRI," *IEEE Trans. on Medical Imaging*, Vol. 21, No. 8, 2002.
16. J. Liu, B. C. Vemuri and J. L. Marroquin, "Local frequency representations for robust multi-modal image registration," *IEEE Trans. on Medical Imaging*, Vol. 21, No. 5, 2002, pp. 462-469.
17. B. C. Vemuri, S. Huang, S. Sahni, C. M. Leonard, C. Mohr, R. Gilmore and J. Fitzsimmons, "An efficient motion estimator with application to medical image registration," *Medical Image Analysis*, Oxford University Press, Vol.2, No. 1, pp. 79-98, 1998 .

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18. F. Calderon, J. L. Marroquin, S. Botello and B. C. Vemuri, "The MPM-MAP algorithm for motion segmentation," *Computer Vision and Image Understanding*, Vol. 95, No. 2, 2004, pp. 165-183.
19. J. Liu, B. C. Vemuri and F. Bova, "Fast multi-modal image registration using local frequency representations," *Intl. Journal of Machine Vision and Applications*, Vol. 13, No. 3, 2002, pp. 149-163.
20. B. C. Vemuri, Y. Guo and Z. Wang, "Deformable pedal curves and surfaces: Hybrid geometric active models for shape recovery," *International Journal of Computer Vision*, Vol. 44, No. 2, 2001, pp. 137-155.
21. B. C. Vemuri and Y. Guo, "Snake Pedals: Compact and versatile geometric models with physics-based control," *IEEE Trans. on PAMI*, Vol 22, No. 5, 2000, pp. 445-459.
22. S. H. Lai and B. C. Vemuri, "Hybrid search for nonconvex optimization in visual reconstruction problems," *Image and Vision Computing*, Vol. 17, No. 1, 1999, pp. 37-49.

23. S. H. Lai and B. C. Vemuri, "Reliable and efficient computation of optical flow," *Intl. Journal of Computer Vision*, Vol. 29, No. 2, Oct. 1998, pp. 87-105.
24. S. H. Lai and B. C. Vemuri, "Physically-based adaptive preconditioning for early vision," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol 19, No. 6, 1997, pp. 594-607.
25. R. Malladi, J. Sethian and B. C. Vemuri, "Shape modeling with front propagation: A level set approach," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 17, No. 2, Jan. 1995, pp. 158-175.

• **Selected Refereed Conference Papers**

Medical Image Analysis

1. F. Wang, B. C. Vemuri, A. Rangarajan, I. Schmallfuss and S. Eisenchenk, "Simultaneous Nonrigid Registration of Multiple Point Sets and Atlas Construction," European Conf. on Computer Vision (ECCV), 2006, Graz, Austria.
2. A. Barmoutis, B. C. Vemuri and J. Forder, "Robust tensor splines for interpolation of Diffusion Tensor MRI data," Mathematical Methods in Biomedical Image Analysis (MMBIA), 2006.
3. T. E. McGraw, B. C. Vemuri, R. Yeziarski and T. Mareci, "von-Mises mixture models of the diffusion ODF," Intl. Symposium on Biomedical Imaging (ISBI), 2006, Washington, DC.
4. E. Ozarslan, T. Shepherd, B. C. Vemuri, S. J. Blackband and T. Mareci, "A nonparametric reconstruction and its matrix implementation for the diffusion orientation transform," Intl. Symposium on Biomedical Imaging (ISBI), 2006, Washington, DC.
5. T. E. McGraw, B. C. Vemuri, R. Yeziarski and T. Mareci, "Segmentation of high angular resolution diffusion MRI modeled as a field of von-Mises mixtures," European Conf. on Computer Vision (ECCV), 2006, Graz, Austria.
6. E. Ozarslan, T. Shepard, B. C. Vemuri, S. J. Blackband and T. H. Mareci, "Fast orientation mapping from HARDI," *Intl. Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2005, Palm Springs, CA.
7. F. Wang and B. C. Vemuri, "Simultaneous registration and segmentation of brain MRI," in *Intl. Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2005, Palm Springs, CA.
8. E. Ozarslan, T. Shepard, B. C. Vemuri, S. J. Blackband and T. H. Mareci, "Fast orientation mapping from HARDI," *Intl. Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2005, Palm Springs, CA.
9. F. Wang and B. C. Vemuri, "Simultaneous registration and segmentation of brain MRI," in *Intl. Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2005.
10. B. Jiang, B. C. Vemuri and J. Marroquin, "Robust nonrigid multimodal image registration using local frequency maps," *Proc. of the Intl. Conf. on Information Processing in Medical Imaging (IPMI)*, 2005.
11. Y. Chen, W. Guo, Q. Zeng, X. Yan, F. Huang, H. Zhang, G. He, B. C. Vemuri and Y. Liu, "Estimation, smoothing and characterization of apparent diffusion coefficient profiles from high angular resolution DWI," *IEEE Computer Vision and Pattern Recognition (CVPR)*, Washington DC., 2004.

12. E. Ozarslan, B. C. Vemuri and T. Mareci, "Fiber orientation mapping using generalized diffusion tensor imaging," in Proc. of the *IEEE Intl. Symposium on Biomedical Imaging (ISBI)*, Arlington, VA, 2004.
13. Z. Wang, B. C. Vemuri, E. Ozarslan, Y. Chen and T. Mareci, "Statistical analysis of a nonlinear estimator for ADC and its application to the optimization of the diffusion weighting factor," in Proc. of the *IEEE Intl. Symposium on Biomedical Imaging (ISBI)*, Arlington, VA, 2004.
14. Y. Chen, W. Guo, Q.Zeng, G. He, B. C. Vemuri, Y. Liu, "Recovery of intra-voxel structure from HARD DWI," in Proc. of the *IEEE Intl. Symposium on Biomedical Imaging (ISBI)*, Arlington, VA, 2004.
15. X. Gu and B. C. Vemuri, "3D shape matching using 2D conformal representations," *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2004.
16. Z. Wang and B. C. Vemuri, "Tensor field segmentation using active contours," *European Conf. on Computer Vision (ECCV)*, Prague, 2004.
17. Z. Wang and B. C. Vemuri, "An Affine Invariant Tensor Dissimilarity Measure and its Applications to Tensor-valued Image Segmentation," *IEEE Computer Vision and Pattern Recognition (CVPR)*, Washington DC., 2004.
18. Z. Wang, B. C. Vemuri, Y. Chen and T. Mareci, "Simultaneous smoothing and estimation of the tensor field from DT-MRI," in *IEEE Computer Vision and Pattern Recognition (CVPR'03)*.
19. Z. Wang, B. C. Vemuri, Y. Chen and T. Mareci, "A constrained variational principle for simultaneous estimation and smoothing of the diffusion tensor field from DWI," Proc. of the *Intl. Conf. on Information Processing in Medical Imaging (IPMI)*, Ambleside, UK, 2003, pp. 660-671.
20. F. Wang, B. C. Vemuri, M. Rao and Y. Chen, "A new and robust information theoretic measure and its application to image alignment," Proc. of the Intl. Conf. on Information Processing in Medical Imaging (IPMI), Ambleside, UK, 2003, pp. 388-400.
21. N. Vohra, B. C. Vemuri, A. Rangarajan and C. M. Leonard, "Kernel Fisher for shape-based classification in epilepsy," *Vth International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, Tokyo, Japan, Sept. 2002, pp. 436-443.
22. T. McGraw, Z. Wang, B. C. Vemuri, Y. Chen, M. Rao and T. Mareci, "LIC for visualization of fiber tract maps," *Vth International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, Tokyo, Japan, Sept. 2002, pp. 615-622.
23. F. Wang, T. E. Davis and B. C. Vemuri, "Real-time DRR generation using cylindrical harmonics," *Vth International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, Tokyo, Japan, Sept. 2002, pp. 671-678.
24. B. C. Vemuri, Y. Chen, Z. Wang, T.E. McGraw, T. Mareci, S. J. Blackband and P. Reier, "Automatic fiber tractography from DTI and its validation," *IEEE First Intl. Symp. on Biomedical Imaging (ISBI)*, Washington DC., 2002.
25. J. L. Marroquin, B. C. Vemuri, S. Botello and F. Calderon, "Accurate and fast segmentation of brain MRI," *European Conference on Computer Vision (ECCV)*, 2002.
26. B. C. Vemuri, Y. Chen, M. Rao, T. McGraw, Z. Wang and T. Mareci, "Fiber tract mapping in the CNS using DT-MRI," in *IEEE Workshop on Variational and Level-set Methods (VLSM)*, July 2001, Vancouver, Canada, pp. 81-88.

27. B. C. Vemuri, J. Liu and J. L. Marroquin, "Robust multi-modal image registration using local frequency representations," *International Conference on Information Processing in Medical Imaging (IPMI)*, 2001, pp. 176-182
28. B. C. Vemuri, J. Ye, Y. Chen and C. M. Leonard, "A level-set based approach to image registration," *IEEE Workshop on Mathematical Methods in Biomedical Image Analysis*," June, 2000, Hilton Head, SC, pp.86-93.

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29. A. Banerjee, S. Kodipaka and B. C Vemuri, "A conic section classifier and its application to image data sets," *IEEE Conf. on Computer Vision and Pattern Recognition, (CVPR) 2006*.
30. F. Wang, B. C. Vemuri, and A. Rangarajan, "Group-wise point pattern matching using a novel CDF-based Jensen-Shannon divergence," *IEEE Conf. on Computer Vision and Pattern Recognition, (CVPR) 2006*.
31. E. Spellman, B. C. Vemuri and M. Rao "Using the KL-center for efficient and accurate retrieval of distributions with applications to texture," *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2005,
32. B. Jiang and B. C Vemuri, "A robust algorithm for point set registration using mixture of Gaussians," *Proc. of the IEEE Intl. Conf. on Computer Vision (ICCV)*, Beijing, China, 2005.
33. B. C. Vemuri, Y. Chen and Z. Wang, "Registration assisted image segmentation," *European Conference on Computer Vision (ECCV)*, Denmark, Copenhagen, 2002, pp. 546-559.
34. J. L. Marroquin, S. Botello, C. S. Felix and B. C. Vemuri, "The MPM-MAP algorithm for Image segmentation," *Intl. Conference on Pattern Recognition (ICPR)*, Barcelona, Spain, 2000, Vol. 1, pp. 303-308.
35. J. Liu, B. C. Vemuri and F. Bova, "Multi-modal image registration using local frequency," *IEEE Workshop on the Application of Computer (WACV)*, Palm Springs, Dec. 2000, pp. 120-125.