Curriculum Vitae

Xuwei Liang

Contact

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USC Beaufort, 1 University Boulevard, Science and Technology Building Room 144,
Bluffton, SC 29909
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Research Interests

- Computational Biomedical Imaging and Bioinformatics
  - Computational techniques, quantitative analysis, and pattern and information retrieval for medical imaging data

- Computer Graphics and Visualization
  - Geometric and mathematical techniques for 3D image analysis, shape modeling, and scientific visualization

- High Performance Scientific Parallel Computing

- Pattern Recognition and Data Mining
  - Classification, mining and learning algorithms for imaging informatics

Education

- Ph.D. in Computer Science, 2011
  University of Kentucky, Lexington, Kentucky
  Dissertation: *Modeling and Quantitative Analysis of White Matter Fiber Tracts in Diffusion Tensor Imaging*
  Advisor: Dr. Jun Zhang

- M.A. in Computer Science, 2006
  Wayne State University, Detroit, Michigan
  Thesis: *Visual Analytics in Diffusion Tensor Imaging*
  Advisor: Dr. Jing Hua

- M.S. in Applied Statistics, 2003
  Bowling Green State University, Bowling Green, Ohio

- M.E. in Computer Control (Electrical and Computer Engineering), 1993
  Tianjin Polytechnic University, Tianjin, P. R. China

- B.E. in Technological Optics, 1986
  Beijing Institute of Technology, Beijing, P. R. China

Professional Experience

- Associate Professor   08/16/17 – present
  University of South Carolina Beaufort, Department of Computer Science,
  1 University Boulevard, Bluffton, SC 29909

- Assistant Professor   08/16/11 – 08/15/17
  University of South Carolina Beaufort, Department of Mathematics and
  Computational Science,
  1 University Boulevard, Bluffton, SC 29909

- Visiting Assistant Professor   12/09/10 - 05/11/11
  Eastern Kentucky University, Department of Computer Science,
  521 Lancaster Avenue, Richmond, KY 40475

- Graduate Teaching/Research Assistant   08/15/06 – 05/15/10
  University of Kentucky, Department of Computer Science,
  Davis Marksbury Building, 329 Rose Street, Lexington, KY 40506

- Associate Professor   07/16/99 - 08/01/00
  Tianjin Polytechnic University, Department of Electrical and Computer Engineering,
  No. 63 Chenglin Road, Hedong District, Tianjin 300160, P. R. China

- Lecturer   03/15/93 - 07/15/99
  Tianjin Polytechnic University, Department of Electrical and Computer Engineering,
  No. 63 Chenglin Road, Hedong District, Tianjin 300160, P. R. China

Honors and Awards

- The 2010 - 2011 Dissertation Year Fellowship from the President's Office of
  University of Kentucky

- The 2010 Thaddeus B. Curtz Memorial Scholarship in the Department of
  Computer Science at University of Kentucky

- One of the two best papers out of approximately 2200 submitted papers at the 2nd
  International Conference on Bioinformatics and Biomedical Engineering (iCBBE
  2008), Shanghai, China, May 15 – 18, 2008

- Student Travel Support from Graduate School Fellowship at University of Kentucky, 2009

- Student Travel Support from Graduate School Fellowship at University of Kentucky, 2008

- Student Travel Support from Graduate School Fellowship at University of Kentucky, 2007

Peer-Reviewed/Refereed Publications

1. Xuwei Liang and Jie Wang, "A Fiber Tract Clustering Framework to Facilitate Group Analysis in DT-MRI", Journal of Medical Engineering (JME) (Completed and will submit soon)

2. **Xuwei Liang** and Jun Zhang, "A Framework for Modeling and Clustering Randomly Structured White Matter Fiber Tracts in Diffusion Tensor Imaging", *International Journal of Medical Engineering and Informatics (IJMEI)*, Vol. 5, No. 4, pp. 334-351, 2013

3. Jie Wang and **Xuwei Liang**, "Discovering the Rating Pattern of Online Reviewers Through Data Coclustering", in *Proceedings of* 2013 *IEEE International Conference on Intelligence and Security Informatics (ISI2013)*, Vol. 1, pp. 374-376, Seattle, Washington, USA, June 4-7, 2013 (ISBN: 978-1-4673-6213-9, Digital Object Identifier: 10.1109/ISI.2013.6578862)

4. **Xuwei Liang** and Jie Wang, "Using Fourier Descriptor Features in The Classification of White Matter Fiber Tracts in DTI", in *Proceedings of 2013 International Conference on Computational and Information Sciences (ICCIS2013)*, Vol.1, pp. 694–697, Shiyan, Hubei, China, June 21-23, 2013 (ISBN: 978-0-7695-5004-6, Digital Object Identifier: 10.1109/ICCIS.2013.188)

5. **Xuwei Liang**, "A Bayesian Approach to Inferring Fiber Tract Bundle Labels in Diffusion Tensor Imaging", in *Proceedings of the 2012 IEEE Signal Processing in Medicine and Biology (PMB12)*, Vol. 1, pp. 1-4, New York, NY, USA, December 1-1, 2012 (ISBN: 978-1-4673-5665-7, Digital Object Identifier: 10.1109/SPMB.2012.6469458)

6. **Xuwei Liang**, "An Implementation of The EM Algorithm in White Matter Fiber Tract Clustering", in *Proceedings of the 2012 IEEE Signal Processing in Medicine and Biology (PMB12)*, Vol. 1, pp. 1-4, New York, NY, USA, December 1-1, 2012 (ISBN: 978-1-4673-5665-7, Digital Object Identifier: 10.1109/SPMB.2012.6469457)

7. **Xuwei Liang**, Ning Kang, Stephen E. Rose, and Jun Zhang, "A framework for quantitative and visual analysis of white matter integrity using diffusion tensor

imaging", *International Journal of Functional Informatics and Personalised Medicine (IJFIPM)*, Vol. 2, No. 2, pp. 159–174, 2009.

8. **Xuwei Liang**, Jie Wang, Zhenmin Lin, and Jun Zhang, "White matter fiber tract segmentation using nonnegative matrix factorization", in *Proceedings of the 3rd International Conference on Bioinformatics and Biomedical Engineering (iCBBE 2009)*, Vol.1, pp. 1–4, Beijing, China ,June 11 - 13, 2009.

9. **Xuwei Liang**, Qi Zhuang, Ning Cao, and Jun Zhang, "Shape modeling and clustering of white matter fiber tracts using Fourier descriptors", in *Proceedings of the IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2009)*, pp. 292-297, Nashville, TN, USA, March 30 – April 2, 2009.

10. **Xuwei Liang** and Jun Zhang, "White matter integrity analysis along the cingulum paths in mild cognitive impairment - a geodesic distance approach", in *Proceedings of the 2nd International Conference on Bioinformatics and Biomedical Engineering (iCBBE 2008)*, Vol.1, pp. 510–513, Shanghai, China, May 15-18, 2008 (**Best Paper Award**).

11. Jun Zhang and **Xuwei Liang**, "Diffusion tensor analysis for detecting white matter changes in mild cognitive impairment", *The Journal of the Alzheimer's association*, Vol. 4, No. 4, (Suppl 2):T70, 2008.

12. Cui Lin, Shiyong Lu, **Xuwei Liang**, Jing Hua, and Otto Muzik, "Cocluster Analysis of Thalamo-Cortical Fiber Tracts Extracted from Diffusion Tensor MRI", *International Journal of Data Mining and Bioinformatics (IJDMB)*, Vol. 2, No. 4, pp. 342 – 361, 2008.

13. Ning Cao, Qi Zhuang, **Xuwei Liang**, Ruiwang Huang and Jun Zhang, "Computing White Matter Fiber Orientations in High Angular Resolution Diffusion-Weighted MRI", in *Proceedings of the 1st IEEE International Conference on Bioinformatics and Biomedical Engineering (ICBBE 2007)*, pp.752-755, Wuhan, China, July 6-8, 2007.

14. Jun Zhang and **Xuwei Liang**, "Diffusion tensor analysis of white matter pathways of amnestic mild cognitive impairment", in *Hot Topics Addendum of the Alzheimer's Association International Conference on Prevention of Dementia*, pages P–227, Washington, DC, USA, June 9 – 12, 2007.

15. Cui Lin, Shiyong Lu, **Xuwei Liang**, Jing Hua, and Otto Muzik, "Genetic cocluster analysis of Thalamo-Cortical Connectivity in Human Brain", in *Proceedings of MICWIC*, pp. 18-24, Hickory Corners, MI, USA, March, 2007.

16. Cui Lin, Shiyong Lu, **Xuwei Liang**, and Jing Hua, "GCA: A Coclustering Algorithm for Thalamo-Cortico-Thalamic Connectivity Analysis", in *Proceedings*

of IEEE International Conference on Data Mining (ICDM), pp. 163-168, Hong Kong, China, December 18 – 22, 2006

17. **Xuwei Liang**, Jing Hua, and Weiping Ren, "Volumetric Histology Data Visualization and Quantitative Analysis", in *Proceedings of 2005 NAFIPS Annual Conference on Soft Computing for Real World Applications*, pp. 638 - 643, Ann Arbor , Michigan, USA, June 22-25, 2005.

18. **Xuwei Liang**, Zhongyuan Wu, Xinguo Zhuang, Xianji Meng, Yanhua Liu, and Zheng Di, "A novel approach to reduce the computational workload for sensitivity analysis in cathodic protection System", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS), Vol. 18, No. 2, DOI: CNKI:SUN:TJFZ.0.1999-02-017, 1999.

19. **Xuwei Liang**, Zhongyuan Wu, Yanhua Liu, Zheng Di, Xinguo Zhuang, and Xianji Meng, "Optimal control of current in cathodic protection system", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS), Vol. 18, No. 1, pp. 37-41, DOI: cnki:ISSN:1000-1557.0.1999-01-008, 1999.

20. Xianji Meng, Zhongyuan Wu, **Xuwei Liang**, Xinguo Zhuang, Zhenkun Yuan, and Yanhua Liu, "Improvement of the algorithm for the regional cathodic protection model", *Journal of Chinese Society for Corrosion and Protection* (ISSN: 1005-4537 CN: 31-1421/TG), Vol. 18, No. 3, pp. 221 - 226, 1998.

21. **Xuwei Liang**, Zhongyuan Wu, Xianji Meng, and Xinguo Zhuang, "Study on the computer assisted optimal design for the regional cathodic protection system", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS),Vol. 17, No. 5, pp. 90-94, DOI: CNKI:SUN:TJFZ.0.1998-05-018, 1998.

22. Zhongyuan Wu, Yongcai Wang, **Xuwei Liang**, and Hongju Lin, "Stability of the optimization procedure and its improvement for the regional cathodic protection model", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS), Vol. 17, No. 5, pp. 95-98, DOI: CNKI:SUN:TJFZ.0.1998-05-019, 1998.

23. "A graduate Information Management System", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS), Vol. 16, No. 6, DOI: CNKI:SUN:TJFZ.0.1997-06-017, 1997.

24. "A novel technique of system floppy disk copy protection - the double lock", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS), Vol. 16, No. 4, DOI: CNKI:SUN:TJFZ.0.1997-04-013, 1997.

25. Zhongyuan Wu, **Xuwei Liang**, Xianji Meng, and Liping Bai, "Algorithmic improvement on the regional cathodic protection potential distribution", *Journal of the Tianjin Institute of Textile Science and Technology* (ISSN 1671-024X, CN 12-1341/TS), Vol. 16, No. 4, DOI：CNKI:SUN:TJFZ.0.1997-04-011, 1997.

26. "The evolvement and current development on the cathodic protection system design", *China Harbour Engineering*, 1996(6), DOI: CNKI:SUN:GKGC.0.1996-06-012, 1996.

Editor Reviewed Publications

1. **Xuwei Liang**, Qi Zhuang, Ning Cao, and Jun Zhang, "Quantitative and visual analysis of white matter integrity using diffusion tensor imaging", in *Proceedings of the International Society for Optical Engineering (SPIE) Medical Imaging 2009 (SPIE 2009)*, Vol. 7261, 726131 (2009), Lake Buena Vista (Orlando Area), Florida, USA, February 7 – 12, 2009.

2. Qi Zhuang, **Xuwei Liang**, Ning Cao, and Jun Zhang,"Generalized analytic expressions for the b matrix of twice-refocused spin echo pulse sequence", in *Proceedings of the International Society for Optical Engineering (SPIE) Medical Imaging 2009 (SPIE 2009)*, Vol. 7259, 725920 (2009), Lake Buena Vista (Orlando Area), Florida, USA, February 7 - 12 2009.

3. Ning Cao, **Xuwei Liang**, Qi Zhuang, and Jun Zhang, "Approximating high angular resolution apparent diffusion coefficient profiles using spherical harmonics under biGaussian assumption", in *Proceedings of the International Society for Optical Engineering (SPIE) Medical Imaging 2009 (SPIE 2009)*, Vol. 7262, 726204 (2009), Lake Buena Vista (Orlando Area), Florida, USA, February 7 - 12 2009.

Professional Presentations

1. "A Bayesian Approach to Inferring Fiber Tract Bundle Labels in Diffusion Tensor Imaging", *The 2012 IEEE Signal Processing in Medicine and Biology (PMB12)*, New York, NY, USA, December 1, 2012 (Oral)

2. "An Implementation of The EM Algorithm in White Matter Fiber Tract Clustering", *The 2012 IEEE Signal Processing in Medicine and Biology (PMB12),* New York, NY, USA, December 1, 2012 (Poster)

3. "Modeling and Clustering Randomly Structured White Matter Fiber Tracts in DTI", *The 3rd International Conference on Global Trends in Biomedical Informatics Research, Education and Globalization*, Newark, NJ, USA, November 15th, 2012 (Oral)

4. "Visual Analytics of Regional White Matter Alterations Using Diffusing Tensor Imaging", *2012 South Carolina Project EARB Meeting (EPSCoR)/South Carolina INBRE EAC Meeting*, Columbia, SC, USA, February 22, 2012 (Poster)

5. "Diffusion tensor analysis for detecting white matter changes in mild cognitive impairment", *Alzheimer's Association International Conference of Alzheimer's Disease*, Chicago, IL, USA, July 26 - 31, 2008 (Poster)

6. "Statistical Analysis of White Matter Integrity in Diffusion Tensor Imaging – A Geodesic Distance Approach", *the Twenty-Second Annual Symposium in the Mathematical, Statistical, and Computer Sciences*, Eastern Kentucky University, March 28, 2008. (Oral)

7. "Quantitative diffusion tensor imaging tractography measures along geodesic distances in amnestic mild cognitive impairment", *International Conference on Computational and Mathematical Methods in Science and Engineering*, Chicago, IL, June 21 - 23, 2007. (Oral)

8. "Visual analytics in diffusion tensor imaging", *the Twenty-First Annual Symposium in the Mathematical, Statistical, and Computer Sciences*, The Eastern Kentucky University, March, 2007. (Oral)

Grants/Proposals

1. *RII Track-2 FEC: Bridging Cognitive Science and Neuroscience Using Innovative Imaging Technologies*, $149,860, NSF/EPSCOR No.1539034, 08/01/2015 – 07/31/2019 (Co-PI)

2. *RISE: An Integrated White Matter Analysis System Using Diffusion Tensor Imaging*, $6,000, the Office of the Vice President for Research at University of South Carolina, 05/16/2015 – 12/31/2015 (**PI**)

3. *RISE: An Integrated White Matter Analysis System Using Diffusion Tensor Imaging*, $6,000, the Office of the Vice President for Research at University of South Carolina, May 15, 2014 – December 31, 2014 (**PI**)

4. *RISE: An Integrated White Matter Analysis System Using Diffusion Tensor Imaging*, $4,966, the Office of the Vice President for Research at University of South Carolina, May 15, 2013 – August 15, 2014 (**PI**)

5. *S-STEM: Enabling the Future: Scholarships in Computational Science*, $601,650, NSF No. 1259283, June 1, 2013 and expires May 31, 2018 (Co-PI)

6. *Designing a Computational Model for Online Recommendation via Opinion Mining*, $15,000, Research Project Initiation Grant from Indiana University Northwest, March 1, 2012 – February 28, 2014 (Co-PI)

Professional/Editorial Service

- 2016: peer reviewers for the IEEE Journal of Biomedical and Health Informatics

- 2015: Technical program committee member of the 8th International Conference on Mobile Multimedia Communications (2015)

- 2015: peer reviewer for the Scientific proposals for the Kentucky Science and Engineering Foundation

- 2015: peer reviewer for the Undergraduate Research Magellan Scholar proposals at University of South Carolina

- 2014: peer reviewer for the Undergraduate Research Magellan Scholar proposals at University of South Carolina

- 2013: Associate Chair, Technical Program Committee, *2013 International Conference on Computational and Information Sciences (ICCIS2013)*, Shiyan, China, June 21-23, 2013

- 2013: Member, Steering Committee, *2013 International Conference on Computational and Information Sciences (ICCIS2013)*, Shiyan, China, June 21-23, 2013

- 2013: Reviewer, Textbook proposal for a Second Edition of "*Computer Graphics through OpenGL – From Theory to Experiments*" by Sumanta Guha, Chapman & Hall/CRC Press

- 2012: Associate Chair, Technical Program Committee, *2012 International Conference on Computational and Information Sciences (ICCIS2012)*, Chongqing, China, August 17-19, 2012

- 2012: Member, Technical Program Committee, *2012 International Conference on Business Computing and Global Information (BCGIn2012)*, Shanghai, China, October 12-14, 2012

- 2011: Members, Technical Program Committee, *2011 International Conference on Computational and Information Sciences (ICCIS2011)*, Chengdu, Sichuan, China, October 21-23, 2011

- August, 2010: Reviewer, *2010 International Conference on Computational and Information Sciences (ICCIS2010)*, Chengdu, Sichuan, China, December 17-19, 2010

University Service

- 2014: Member, Faculty Welfare Committee, University of South Carolina Beaufort

- 2014: Member, Computational Science Faculty Search Committee, University of South Carolina Beaufort

- 2014: Student Mentor and Project Team Member, NSF S-STEM scholarship grant, University of South Carolina Beaufort

- 2013: Member, Faculty Welfare Committee, University of South Carolina Beaufort

- 2013: Member, Computational Science Faculty Search Committee, University of South Carolina Beaufort

- 2013: Student Mentor and Project Team Member, NSF S-STEM scholarship grant, University of South Carolina Beaufort

- 2013: Member, SharkBytes Organization Committee, University of South Carolina Beaufort, March 15, 2013

- 2013: Student Research Advisor, NSF EPSCoR grant, University of South Carolina Beaufort, Spring, 2013

- 2012: Member, Faculty Welfare Committee, University of South Carolina Beaufort

- 2012: Software Developer, the "USCB Student Tracking, Retention, Evaluation, and Graduate System (STREGS)" web application (worked together with Drs. Amy Sears and Yiming Ji)

- 2012: Instructor, NSF EPSCoR grant supported Computational Science summer workshop (Computer Game Development) at University of South Carolina Beaufort, July 1-31, 2012
- 2012: Student Research Advisor, NSF EPSCoR grant, University of South Carolina Beaufort, Spring, 2012

- 2011 – 2012: Course proposal and development of six new courses in computational science at University of South Carolina Beaufort

- 2011 – 2012: Curricula proposal and development of computational science program at University of South Carolina Beaufort (worked together with Drs. Yiming Ji and Brian Canada)

- 2011 - 2012: Member, faculty search committee for a mathematics professor, University of South Carolina Beaufort

- 2011 - 2012: Web Application Developer, 2012 USCB Student Research and Scholarship Day, University of South Carolina Beaufort

Teaching and Training Innovations
(development of curricular materials and pedagogical methods)

Development and/or refinement of research tools