JAYA SREEVALSAN-NAIR

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SUMMARY

An academic career in computer science or computational engineering to pursue teaching and research in scientific visualization and computer graphics focusing in data analysis in interdisciplinary applications and computational sciences.

RESEARCH INTERESTS

Scientific and information visualization, data analysis, computer graphics, computational geometry, topology, scientific computing.

EDUCATION

Ph.D., Computer Science, University of California Davis.
March 2007.
Thesis: Computational and Interactive Visualization with a Focus on Topological Analysis, Dual Contouring, and Water-resource Data Representation.
Advisor: Professor Bernd Hamann.

M.S., Computational Engineering, Mississippi State University.
July 2002.
Thesis: Modular Processing of Two-dimensional Significance Maps for Efficient Feature Extraction.
Advisor: Professor David S. Thompson.

Bachelor of Technology, Aerospace Engineering, Indian Institute of Technology Madras.
July 2000.
Senior-year Project: Displacement-based Polygonal Finite Elements.
Advisor: Professor G. Subramanian.

WORK EXPERIENCE

Assistant Professor, 06/2010 - present
International Institute of Information Technology, Bangalore.

Research Associate, 04/2008 - 04/2009
Texas Advanced Computing Center, University of Texas at Austin.

Scientific Software Developer, 02/2007 - 03/2008
Enthought Inc., Austin.

Graduate Student Researcher, 09/2002 - 12/2006
Institute for Data Analysis and Visualization, U. C. Davis.

Graduate Research Assistant, 08/2000 - 07/2002
Engineering Research Center, Mississippi State University.

HONORS & AWARDS

- CITRIS Fellowship Award 2005-06.
- Top 99 percentile for nationwide IIT-JEE (joint entrance examination) in India, 1996.
- Top 99.9 percentile for All India Senior School Certificate Examination in Chemistry, 1996.
- Gold Medalist for proficiency in AISSCE in St.Thomas Central School, Thiruvananthapuram, India, 1996.
- Gold Medalist for proficiency in AISSE in St.Thomas Central School, Thiruvananthapuram, India, 1994.
- Distinction in 7th Arab Regional Junior U.N. Exam organized by United Schools International, 1992.

PUBLICATIONS

Refereed Conference Papers

C7. S. Parveen, and **J. Sreevalsan-Nair**, " Visualization of Small World Networks Using Similarity Matrices," (to appear) in Proceedings of Second International Conference on Big Data Analytics (BDA 2013), Mysore, India, December 2013.

C6. A. Narayan, **J. Sreevalsan-Nair**, K. Gaither, and B. Hamann, "Isosurface Extraction from Hybrid Unstructured Grids Containing Pentahedral Elements," Kraus, M., Laramee, R.S., Battiato, S., de Campos, T., Jurie, F., Kato, Z. and Raducanu, B., eds., Proceedings of International Conference on Information Visualization Theory and Applications 2012 (GRAPP/IVAPP 2012), 660-669.

C5. C. Auer, **J. Sreevalsan-Nair**, V. Zobel, and I. Hotz, "2D Tensor Field Segmentation," Proceedings of Dagstuhl Conference 2009 on Scientific Visualization: Interactions, Features, Metaphors, Dagstuhl Follow-Ups, Hagen, Hans (Ed.), Vol. 2, Schloss Dagstuhl–Leibniz-Zentrum für Informatik 2011, 17-35.

C4. I. Hotz, **J. Sreevalsan-Nair**, H. Hagen, and B. Hamann, "Tensor Field Reconstruction based on Eigenvector and Eigenvalue Interpolation," Scientific Visualization: Advanced Concepts, Schloss Dagstuhl-Leibniz-Zentrum fur Informatik 2010, 110-123.

C3. J. Sreevalsan-Nair, E. van Nieuwenhuyse, I. Hotz, L. Linsen, and B. Hamann, "An Interactive Visual Exploration Tool for Northern Californias Water-Monitoring System," Visualization and Data Analysis 2007.

C2. J. Sreevalsan-Nair, L. Linsen, and B. Hamann, "Using Ray Intersection for Dual Isosurfacing," Proceedings of International Conference on Computer Graphics Theory and Applications, Setúbal, Portugal, February 2006.

C1. J. Sreevalsan-Nair, L. Linsen, B.A. Ahlborn, M.S. Green, and B. Hamann, "Hierarchical Visualization of Large-scale Unstructured Hexahedral Volume Data,"

in R. Bajcsy, M. Gross, B. Hamann, K. Joy, O. Staadt, editors, Proceedings of Lake Tahoe Workshop on Collaborative Virtual Reality and Visualization 2003.

Refereed Journal Papers

J2. J. Sreevalsan-Nair, L. Linsen, and B. Hamann, "Topologically Accurate Dual Isosurfaces using Ray Intersection," Journal of Virtual Reality and Broadcasting 4(4), 2007 (invited to special issue of Intl Conf on Computer Graphics Theory & Applications, 2006).

J1. D. Thompson, R. Machiraju, M. Jiang, **J. Nair**, G. Craciun, and S. Venkata, "Physics-Based Feature Mining for Large Datasets," IEEE Computing in Science and Engineering, Vol. 4, No. 4, 2002, pp 22-30.

Books/Book Chapters

B3. J. Sreevalsan-Nair, C. Auer, B. Hamann, and I. Hotz, "Eigenvector-based Interpolation and Segmentation of 2D Tensor Fields," Topological Data Analysis and Visualization: Theory, Algorithms, and Applications, Springer-Verlag, Mathematics and Visualization Series, 2011, 139-150.

B2. J. Sreevalsan-Nair, "Using Duality in Various Scientific Visualizations," VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG Publishers, May 2008 (reprint of Ph.D. Dissertation).

B1. J. Sreevalsan-Nair, M. Verhoeven, D.L. Woodruff, I. Hotz, and B. Hamann, "Human-guided Enhancement of a Stochastic Local Search: Visualization and Adjustment of 3D Pheromone," Proceedings of Engineering Stochastic Local Search Algorithms (SLS) 2007, Lecture Notes in Computer Science (LNCS) Series, Vol. 4638, Springer-Verlag, Heidelberg, Germany, pp. 182-186.

Refereed Short Papers and Posters

S6. K. Prasad B. V., N. Kumar, S. Agrawal, H. Gangakhedkar, and **J. Sreevalsan-Nair**, "Partial Implementation of Hybrid MD5-Blowfish Algorithm in Kernel Space on the GPU Using CUDA," 19th Annual International Conference on High Performance Computing 2012 - Student Research Symposium (HiPC2012-SRS), Dec. 2012.

S5. K. Patel, J. Savalia, and **J. Sreevalsan-Nair**, "Parallelization of Complex Event Processing," 18th Annual International Conference on High Performance Computing 2011 - Student Research Symposium (HiPC2011-SRS), Dec. 2011, url

S4. M. Esteva, W. Xu, **J. Sreevalsan-Nair**, A. Athalye, and M. Hade, "Computational Analysis and Visualization of Electronic Records Collections," Joint Annual Meeting of the Society of American Archivists and the Council of State Archivists, Austin, TX, August 11, 2009.

S3. W. Xu, and **J. Sreevalsan-Nair**, "Visual Representation of Multiple Associations in Data using Constrained Graph Layout," Proceedings of EG UK Theory and Practice of Computer Graphics 2009, 65-68.

S2. Esteva, W. Xu, **J. Sreevalsan-Nair**, M. Hade, and A. Athalye, "Finding

Narratives of Activities through Archival Bond in Electronically Stored Information (ESI)," Global E-Discovery/E-Disclosure Workshop: A Pre-Conference Workshop at the 12th International Conference on Artificial Intelligence and Law, Barcelona, Spain, August 6, 2009.

S1. J. Sreevalsan-Nair, C.S. Co, E.van Nieuwenhuyse, L. Linsen, and B. Hamann, "Visualization of Water Resource Data," Poster presentation at U.C.Davis Student Workshop of Computing, California, 2003.

Technical Reports, Demonstrations, Contests

M4. B. Kumari, and **J. Sreevalsan-Nair**, "Three-dimensional Visualization of LiDAR Point Cloud Using Structural Feature Extraction," in Proceedings of NSDI (National Spatial Data Infrastructure) 2013 and Poster presentation.

M3. J. Sreevalsan-Nair, and W. Xu, "Analysis of Evacuation Traces," IEEE VAST Conference Compendium, 2008.

M2. E.van Nieuwenhuyse, **J. Sreevalsan-Nair**, I. Hotz, L. Linsen, and B. Hamann, "Demonstration of an interactive data visualization tool for water resource monitoring networks in the Delta and its catchment," Laptop demonstration at Interagency Ecological Program (IEP) Annual Workshop 2007, California, 2007.

M1. J. Sreevalsan-Nair, C.S. Co, E. van Nieuwennhuyse, L. Linsen, and B. Hamann, "Visualization of Water Resource Data," Proceedings of UC Davis Student Workshop on Computing, University of California, Davis, 2003.

Working Papers

P1. "Feature Extraction from Point Cloud in LiDaR Data," with B. Kumari, and K. Bhagirathi.

RESEARCH GRANTS

Principal Investigator

- *"Visualization for Security Analytics,"* EMC-RSA India Center of Excellence, INR 10,00,000/- ($\approx$ USD 16,000/-), 12 months, starting January 2014.
- *"LAN-Based Interactive Three Dimensional Visualization of LiDaR Data,"* Natural Resources Data Management System, Department of Science and Technology, INR. 32,25,000/- ($\approx$ USD 52,000/-), 24 months, starting August 2012, co-PI: Prof. S. Rajagopalan (IIIT-Bangalore).
- NVIDIA Center for Teaching CUDA (CTC), one-time institutional grant of USD. 2500/- for teaching assistant matching funds and four GeForce GTX480s and one Tesla C2070 graphics cards, August 2011.

TALKS & PRESENTATIONS

- BDA 2013, Mysore, India, 2013.
- Visualization and Graphics Lab, Indian Institute of Science, July 2012.
- IVAPP 2012, Italy, Rome, 2012.
- Monsanto Research Center, Bangalore, February 2012 – "Applying Non-traditional Visualization Techniques for Bioinformatics Datasets".

- GHC-India 2011, Bangalore, 2011 – Moderator for panel discussion on "Teaching as a Rewarding Career".
- VDA 2007, California, U.S.A, 2007
- GRAPP 2006, Setbal, Portugal, 2006
- Lake Tahoe Workshop on Collaborative Virtual Reality and Visualization, California, U.S.A., 2003
- EVITA Annual Symposium 2002, Ohio, U.S.A., 2002
- EVITA Annual Symposium 2001, Mississippi, U.S.A., 2001

TEACHING EXPERIENCE

- Teaching at IIIT-B
  - Introduction to Scientific Computing (Jan - Apr 2014).
  - Introduction to Computer Graphics (Aug - Dec: 2010, 2011, 2013, Jan - Apr 2014).
  - Preparatory Course: Probability & Statistics (Jul - Aug: 2010, 2011).
  - Algorithms in Bioinformatics: Clustering (Mar 2011).
  - Operating Systems (Jan - Apr: 2011, 2012).
- Teaching at National Institute of Design, Bangalore (by invitation)
  - Introduction to Information Visualization (Jul - Aug 2011)
- Teaching Assistant at Dept. of Computer Science, U.C.Davis
  - Discrete Mathematics & Its Applications (Jan - Mar 2006).
  - Introduction to Computer Graphics (Apr - Jun 2005).

ACADEMIC & INDUSTRIAL TRAINING EXPERIENCE

- Industrial training at LG India Pvt. Ltd.
  - Computer Graphics: Theory & Practice (Dec 2010).
- Training at Texas Advanced Computing Center
  - Introduction to Scientific Visualization (Oct 2008).

MENTORING/ADVISING

Post-doctoral researchers

- Dr. Kiruba Bagirathi (Ph.D.(Mathematics), 2012-13).

Post graduate students

- Ms. Beena Kumari (MS by research, IIIT-B, 2013-).
- Ms. Saima Parveen (MS by research, IIIT-B, 2011-13).

Research associates at IIITB

- Mr. Avijit Ashe (Jan 2014 -)
- Ms. Pavithra Rajendran (Nov 2013 -)

Summer interns at IIIT-B

- Mr. Dinesh Prashanth (B.E. (Year 2), NIT Trichy, 2011).
- Ms. Jai Brahmakshatriya (B.E. (Year 2), NIT Suratkal, 2011).

- Mr. Abhinit Modi (B.E. (Year 2), NIT Suratkal, 2011).

Miscellaneous

- ACM MentorNet (e-mentoring graduate & undergraduate students) (2007-).

INSTITUTIONAL ACTIVITIES

- Committee Member for M.S. by Research and Ph.D. Degree Admissions (2014-).
- M.S. by Research and Ph.D. Degree Program Coordinator (2014-).
- Founder & Head of Graphics-Visualization-Computing-Lab, IIIT-Bangalore (2013-).
- Convenor of Committee for Revision of Research Degree Programs (2013-).
- M.Tech. Oral Examination Committees (2010-).
- Committee Member for Curriculum Design of Integrated M.Tech. Program (2010-12).
- Steering Committee Member for IIIT-B Mediacenter (2011-).
- Committee Member for Library Management (2011-12).

INDUSTRIAL CONSULTANCY

- Advisory Board Member for EurekaZing Inc. (2010-12)

PROFESSIONAL ACTIVITIES/AFFILIATIONS

- Research:
  - Academic/Research Committee Member: GHC-India 2011.
  - Program Committee Member: ICFOCS 2011, AICWIC 2013, Eurovis 2013 Short Papers.
  - Program Co-chair: ACM Siggraph (Bangalore chapter) Elements 2011.
  - Session Chair: GRAPP 2006, ICFOCS 2011, BDA 2013.
  - Conference Reviewer: IEEE Visualization, IEEE VAST, Eurovis, ICFOCS, DNIS, BDA, PacificVis.
  - Journal Reviewer: TVCG, CGF.
  - Associate Member: IEEE, ACM.
- Academic Administration:
  - External thesis examiner for M.Engg. candidate, Kanuj Kumar, Indian Institute of Science, Karnataka – Jan 2013.
  - External viva examiner for Ph.D. candidate, Devi Sudheer Kumar CH, Sri Sathya Sai Institute of Higher Learning, Prashanthi Nilayam, Andhra Pradesh, India – Oct 2012.