JAYA SREEVALSAN-NAIR

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SUMMARY

An academic career in the areas of computer science and computational engineering to pursue teaching and research in visualization and computer graphics focusing in data analysis in interdisciplinary applications (earth observations, healthcare) 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.

RESEARCH GRANTS

Principal Investigator

- *"Interactive Three-dimensional Visualization of Large-scale ARGO Data,"* Indian National Center for Ocean Information Services, Ministry of Earth Sciences, Government of India, INR 40,30,000/- (≈ USD 67,000/-), 3 years, starting August 2014. *(Ongoing)*
- *"Visualization for Security Analytics,"* EMC-RSA India Center of Excellence, INR 10,00,000/- (≈ USD 16,000/-), 12 months, starting January 2014. *(Completed)*
- *"LAN-Based Interactive Three Dimensional Visualization of LiDaR Data,"* Natural Resources Data Management System, Department of Science and Technology, Government of India, INR. 32,25,000/- (≈ USD 52,000/-), 30 months, starting August 2012. *(Completed)*
- NVIDIA Center for Teaching CUDA (CTC), one-time institutional grant of USD. 2500/- (≈ INR 1,35,000/-) for teaching assistant matching funds and four GeForce GTX480s and one Tesla C2070 graphics cards, August 2011.

HONORS & AWARDS

- International Travel Grant for Young Scientists, Dept. of Science & Technology, Govt. of India, 2012.
- 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

Peer-reviewed Books/Book Chapters:

B5. B. Kumari, A.Ashe, and **J. Sreevalsan-Nair**, "Remote Interactive Visualization of Parallel Implementation of Structural Feature Extraction of Three-dimensional Lidar Point Cloud," in the Proceedings of the Third International Conference on Big Data Analytics, Lecture Notes in Computer Science, Volume 8883, 2014, pp 129-132, Springer.

B4. S. Parveen, and **J. Sreevalsan-Nair**, "Visualization of Small World Networks Using Similarity Matrices," in the Proceedings of the Second International Conference on Big Data Analytics, Lecture Notes in Computer Science, Volume 8302, 2013, pp 151-170, Springer.

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.

Peer-reviewed/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," Computing in Science and Engineering, Vol. 4, No. 4, 2002, pp 22-30, IEEE Computer Society. *Impact factor: 0.973*

Peer-reviewed/Refereed Conference Papers:

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. *(Acceptance rate: 18%)*

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. *Invited paper from Dagstuhl Seminar*

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. *Invited paper from Dagstuhl Seminar*

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. *(Acceptance Rate: 50%)*

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. *Acceptance rate: 30%*

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.

Peer-reviewed/Refereed Short Papers

S2. B.Kumari, and **J. Sreevalsan-Nair**, "An Interactive Visual Analytic Tool for Semantic Classification of 3D Urban LiDAR Point Cloud," (*accepted*) in 23rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2015). *(Acceptance rate: 18%)*

S1. 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. *(Acceptance rate: 50%)*

Miscellaneous: Technical Reports, Demonstrations, Challenges

M8. 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.

M7. 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), Poster presentation, Dec. 2012. *(Acceptance rate: 20%)*

M6. 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), Oral Presentation, Dec. 2011, url *(Acceptance rate: 20%)*

M5. 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.

M4. 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.

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.

TALKS & PRESENTATIONS

- Data Science & Big Data Analytics (DSBDA 2015), C-DAC Bangalore, August 2015 – "Focus+Context Techniques for Visualizing Big Data".
- DST National Airborne Lidar Meeting, IIT Kanpur, January 2015.
- ACM-W India Celebrations of Women in Computing (AICWIC 2014), 2014 – "Visualization: Above All Else Show the Data".
- 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

* *designed and delivered courses*

- Teaching at IIITB
  - Operating Systems Laboratory for Integrated M.Tech. program (Aug - Dec 2014).
  - Data Visualization* (Aug - Dec 2014, 2015).
  - Advanced Computer Graphics* (Aug - Dec 2014).
  - Introduction to Scientific Computing* (Jan - Apr 2014, 2015).
  - Introduction to Computer Graphics* (Aug - Dec: 2010, 2011, 2013, Jan - Apr 2014, 2015).
  - 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-).

Post graduate students

- Ms. Preethi Dixit (Ph.D., IIITB, 2015-).
- Mr. Sainath Shanbagh (Ph.D., IIITB, 2015-).
- Ms. Anuja Pinge (M.Tech., Goa University, 2014-15).
- Mr. Manjunath K. E. (Ph.D., IIITB, 2015-).
- Ms. Subarna Sinha (Ph.D., IIITB, 2014-15).
- Mr. Amit Tomar (M.Tech., IIITB, 2014-15).
- Mr. Shivam Agarwal (M.Tech. IIITB, 2014-15).
- Ms. Beena Kumari (M.S. by research, IIITB, 2013-).
- Ms. Saima Parveen (M.S. by research, IIITB, 2011-13).

Research associates at IIITB

- Mr. Raghavendra G. S. (Jul 2015 -)
- Mr. Shivam Agarwal (Jul 2015 -)
- Mr. Avijit Ashe (Jan 2014 - Feb 2015)
- Ms. Pavithra Rajendran (Nov 2013 - Apr 2014)

Summer interns at IIITB

- Mr. Sudeep Sureshan (B.E. (Year 2), NIT Suratkal, 2014).
- 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) (2007-11).

INSTITUTIONAL ACTIVITIES @ IIIT-BANGALORE

- Research:
  - Chairperson of the e-health Committee at IIITB (2014-).
  - Founding Member of Center for Data Sciences, IIIT-Bangalore (2014-).
  - Founder & Head of Graphics-Visualization-Computing-Lab, IIIT-Bangalore (2012-).
  - Steering Committee Member for IIITB Mediacenter (2011-).
- Academic Administration:
  - Member of Internal Quality Assurance Committee (2014-).
  - Member for Research Programmes Admissions Committee (2014-).
  - Master of Science (Research) and Ph.D. Degree Programme Coordinator (2014-).
  - Editorial Board Member (2014-).
  - Convenor of Committee for Revision of Research Degree Programs (2013-).
  - Core Member of Internal Committee for Preparing for NAAC Accreditation (2013-14) *(IIIT-Bangalore has been accredited with A grade by NAAC in May 2014)*
  - Member of Institute Library Management Committee (2011-).
  - Member of Committee for Curriculum Design of Integrated M.Tech. Program (2011-12).
  - Serving on Ph.D. Comprehensive Examination Boards and Oral Examination Committees for M.Tech. and Master of Science by Research theses (2011-).

PROFESSIONAL ACTIVITIES/AFFILIATIONS

- Conferences/Journals:
  - Co-chair for ACM Siggraph (Bangalore chapter) 2013-.
  - Academic/Research Committee Member: GHC-India 2011.
  - Conference Reviewer(2006-): IEEE Visualization, IEEE Infovis, IEEE VAST, Eurovis, ICFOCS, DNIS, BDA, PacificVis, ICVGIP.
  - Journal Reviewer (2011-): TVCG (IEEE Transactions on Visualization and Computer Graphics), CGF (Computer Graphics Forum).
  - 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.
- Professional Society Memberships:
  - Associate Member: IEEE, ACM.
- Domain Contribution:
  - Invited member to a team deciding on revision of courses in Computer Graphics across India and revision of syllabus for AICTE listed basic Computer Graphics course. *(Active member)*
- Academic Administration:

- External Expert in selection committee for Project-Linked-Person (research associate) at ISI Bangalore, Aug 2015.
- 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.

INDUSTRIAL CONSULTANCY

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