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### **Education**

PhD, Electrical and Computer Engineering, North Carolina State University, 1985

MS, Electrical Engineering, North Carolina State University, 1982

BS, Electrical Engineering, Geneva College, 1980 (summa cum laude and with research honors)

### **Employment**

*Director:* Northern Gulf Institute, Mississippi State University, Jan 2011 to present

*Director:* Geosystems Research Institute, Mississippi State University, Jan 2010 to present

*Deputy Director:* Geosystems Research Institute, Mississippi State University, Aug 2007 to Dec 2009

*Associate Director for HPC:* Geosystems Research Institute, Mississippi State University, Oct 2005 to Dec 2009

*Enabling Technologies (ET) Functional Area Point of Contact (FAPOC):* DoD High Performance Computing Modernization Program, Nov 2001 to August 2009

*Deputy Director:* Computational GeoSpatial Technologies Center, Engineering Research Center, Mississippi State University, August 2001 to August 2002

*Director:* Visualization, Analysis, and Imaging Laboratory, HPC2, Mississippi State University, February 1999 to October 2005.

*Professor:* Department of Electrical and Computer Engineering, Mississippi State University, August 1998 to present

*Associate Professor:* Department of Electrical and Computer Engineering, Mississippi State University, August 1993 to August 1998

*Summer Faculty (Engineer):* Naval Oceanographic Office, Stennis Space Center, MS, 1991 - 1994, 1996 - 1998

*Scientific Visualization Research Thrust Leader:* National Science Foundation Engineering Research Center for Computational Field Simulation, Mississippi State University, April 1990 to April 2002

*Assistant Professor:* Department of Electrical and Computer Engineering, Mississippi State University, January 1989 to August 1993

*Research Staff Member:* IBM T. J. Watson Research Center, Image Technologies Department, August 1985 to December 1988

## Critically Reviewed and Refereed Publications

1. Keqin Wu, Song Zhang, Jibonananda Sanyal, Phil Amburn, Robert Moorhead, and David Thompson, "Fast LIC-Like Image for Flow Visualization," *IEEE Transactions on Visualization and Computer Graphics*, (under revision, originally submitted Dec 2009).
2. Jibonananda Sanyal, Phil Amburn, Jamie Dyer, Patrick Fitzpatrick, Keqin Wu, Song Zhang, and Robert Moorhead, "On Immersive Virtual Environments Facilitating Hurricane Modeling and Analysis," *Computers and Geoscience* (under revision; originally submitted Dec 2009).
3. Zhanping Liu, Shangshu Cai, Robert J. Moorhead, Edward Swan, Joel P. Martin, and T.J. Jankun-Kelly, "A 2D Flow Visualization User Study Using Explicit Flow Synthesis and Implicit Task Design," *IEEE Transactions on Visualization and Computer Graphics*, (accepted).
4. Jibonananda Sanyal, Song Zhang, Jamie Dyer, Andrew Mercer, Phil Amburn, and Robert Moorhead, "Noodles: An Interactive Tool for Visualization of Numerical Weather Model Ensemble Uncertainty," *IEEE Transactions on Visualization and Computer Graphics* (Proceedings Visualization / Information Visualization 2010), vol. 16, no. 6, pp. 1421-1430, Nov-Dec 2010.
5. Shangshu Cai, Qian Du, and Robert Moorhead, "Feature-Driven Multilayer Visualization for Remotely Sensed Hyperspectral Imagery," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 48, no. 9, pp. 3471-3481, Sept 2010, doi: 10.1109/TGRS.2010.2047021.
6. Keqin Wu, Zhanping Liu, Song Zhang, and Robert J. Moorhead II, "Topology-Aware Evenly Spaced Streamline Placement," *IEEE Transactions on Visualization and Computer Graphics*, vol. 16, no. 5, pp. 791-801, Sep./Oct. 2010, doi: 10.1109/TVCG.2009.206.
7. Jibonananda Sanyal, Song Zhang, Gargi Bhattacharya, Phil Amburn, and Robert Moorhead, "A User Study to Compare Four Uncertainty Visualization Methods for 1D and 2D Datasets," *IEEE Transactions on Visualization and Computer Graphics* (Proceedings Visualization / Information Visualization 2009), vol. 15, no. 5, pp. 1209-1218, Nov-Dec 2009.
8. Robert Moorhead, Yanlin Guan, Hans Hagen, Sven Boettger, Natallia Kotava, and Christian Wagner, "Illustrative Visualization: Interrogating Triangulated Surfaces," in Special Issue on Geometric Modeling (Dagstuhl 2008), *Computing*, vol. 86, no. 2-3, Oct 2009, pp. 131-150, doi: 10.1007/s00607-009-0051-x.
9. Qian Du, Nareenart Raksuntorn, Shangshu Cai, and Robert J. Moorhead, "Color Display for Hyperspectral Imagery," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 46, no. 6, June 2008, pp. 1858-1866.
10. Joel P. Martin, J. Edward Swan, Robert J. Moorhead II, Zhanping Liu, and Shangshu Cai, "Results of a user study on 2D hurricane visualization," *Computer Graphics Forum*, vol. 27, no. 3, pp. 991-998, May 2008. Presented at the EuroVis conference held May 26-28, Eindhoven, Netherlands.
11. Ikuko Fujisaki, David L. Evans, Robert J. Moorhead, Derek W. Irby, Mahnas Jean Mohammadi-Aragh, Scott D. Roberts, and Patrick D. Gerard, "Stand Assessment Through LiDAR-Based Forest Visualization Using a Stereoscopic Display," *Forest Science*. 54(1):1-7, 2008.
12. Zhanping Liu and Robert J. Moorhead II, "Interactive View-Driven Evenly Spaced Streamline Placement," *IS&T/SPIE Electronic Imaging Conference on Visualization and Data Analysis (VDA'08)*, San Jose, CA, Vol. 6809, paper #0A, pp. 1-12, 2008.
13. S. Cai, Q. Du, and R. J. Moorhead, "Hyperspectral Imagery Visualization Using Double Layers," *IEEE Transactions on Geoscience and Remote Sensing*, vol 45, no. 10, Oct. 2007, pp. 3028 – 3036.
14. Zhanping Liu and Robert J. Moorhead II, "Robust Loop Detection for Interactively Placing Evenly Spaced Streamlines," *IEEE Computing in Science and Engineering*, Vol. 9, No. 4, July/Aug 2007, pp. 86-91. (invited)
15. Ikuko Fujisaki, Mahnas Jean Mohammadi-Aragh, David L. Evans, Robert J. Moorhead, Derek W. Irby, Scott D. Roberts, Stephen C. Grado, and Emily B. Schultz, "Stand Assessment using Computer-Visualized

Forests,” *Journal of Landscape and Urban Planning*, Vol. 81, No. 1-2, May 2007, pp. 146-154.

16. Zhanping Liu, Robert Moorhead, and Joe Groner, “Fast and Efficient Placement of Evenly-Spaced Streamlines,” *IEEE Transactions on Visualization and Computer Graphics* (Proceedings Visualization / Information Visualization 2006), vol. 12, no. 5, Sept-Oct 2006, pp. 965-972.
17. R J Vickery, A Cedilnik, J P Martin, Y Dandass, T Atkison, R J Moorhead, J Clarke, and P Adams, “Web-based Secure High Performance Remote Visualization,” *Journal of Physics: Computer Series* **46**, SciDAC 2006, pp. 545-549.
18. B. Joseph Groner III, Matthew A. Lee, Robert J. Moorhead II, Joel P. Martin, and James Newman III, “Concurrent Visualization of a Parallelized Computational Fluid Dynamics Code,” *High Performance Computing Symposium 2006*, Society For Modeling and Simulation International, Huntsville, AL, April 2006.
19. Tamara Munzner, Chris Johnson, Robert Moorhead, Hanspeter Pfister, Penny Rheingans, and Terry S. Yoo, “NIH-NSF Visualization Research Challenges Report Summary,” *IEEE Computer Graphics and Applications*, March-April 2006, pp. 20-24.
20. Zhanping Liu and Robert Moorhead, “A Texture-Based Hardware-Independent Technique for Time-Varying Volume Flow Visualization,” *Journal of Visualization*, Vol. 8, No. 3, July 2005, pp. 235-244.
21. Philip Amburn, Thomas Broadstock, Michael Chupa, Richard Luczak, Jamie Moyers, David R. Pratt, Richard Schumeyer, Tim Menke, and Robert Moorhead, “Simplifying and Evaluating Threat and Target Models for Constructive and Virtual Simulations,” *ITEA Journal*, Vol. 26, No.2, June/July 2005, pp. 73-78.
22. Jean Mohammadi-Aragh, Derek Irby, Ikuko Fujisaki, Robert Moorhead, David Evans, and Scott Roberts, “Visualization of Computer-Modeled Forests for Forest Management,” *EuroVis 2005*, pp. 183-190, May 2005.
23. Joel P. Martin, Robert J. Moorhead, Michael A. Chupa, and Derek W. Irby, “Interactive, Cluster-based Visualization,” in *Proc. High Performance Computing Symposium 2005*, M. Parashar (ed.), Soc. For Modeling and Simulation International, San Diego, CA, pp. 203-208, April 2005.
24. Zhanping Liu and Robert Moorhead, “Accelerated Unsteady Flow Line Interval Convolution,” *IEEE Transactions on Visualization and Computer Graphics*, Vol. 11, No. 2, pp. 113-125, March-April 2005.
25. Zhanping Liu and Robert Moorhead, “Visualization of Confocal Microscopic Biomolecular Data,” *Visualization, Image-Guided Procedures, and Display*, Conference 5744, SPIE International Symposium on Medical Imaging, Feb. 12-17, pp. 566-576, 2005.
26. Ikuko Fujisaki, David L. Evans, Robert J. Moorhead, Mahnas Jean Mohammadi-Aragh, Derek W. Irby, and Scott D. Roberts, "Human Factor Integration into the Development of a Realistic Tree Rendering System Based on LiDAR Remote Sensing," *IS&T/SPIE 16<sup>th</sup> Annual Electronic Imaging Symposium*, San Clara, CA, January 18-22, vol. 5291, 2004.
27. S.B. Ziegeler, G.P. Gopal, E. Blades, R.J. Moorhead, D.L. Marcum, and Y. Guan, “Visualization of Fluid Flows in Virtual Environments,” *Journal of Visualization*, Vol. 7, No. 1, 2004, Frontispiece (invited).
28. Mahnas Jean Mohammadi-Aragh, Robert J. Moorhead, Derek W. Irby, David L. Evans, Ikuko Fujisaki, and Scott D. Roberts, "Rendering Realistic Pine Trees from LIDAR Data in a Virtual Forest," *ASPRS Annual Conference, Fairbanks, Alaska*, May 5-9, 2003.
29. Ikuko Fujisaki, David L. Evans, Robert J. Moorhead, Derek W. Irby, Mahnas Jean Mohammadi-Aragh, and Scott D. Roberts, “Lidar Based Forest Visualization: Modeling Forest Stands and User Studies,” *ASPRS Annual Conference, Fairbanks, Alaska*, May 5-9, 2003.
30. Rhonda J. Vickery, Timothy R. Keen, Robert J. Moorhead, Joerg Meyer, Randy J. Brou, Ashley M. Noble, Joel P. Martin, and Stephanie M. Doane, “Particle Rendering for 5D Scalar Fields in a Virtual Environment: The Need for Speed,” *High Performance Computing Symposium*, March 30 – April 3, 2003, Orlando, FL

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33. R. J. Brou, D. W. Carruth, R. J. Vickery, S. M. Doane, and R. J. Moorhead, "Effects of Disorientation on Human Spatial Cognition: Object Localization in Virtual Environments," *46<sup>th</sup> Annual Meeting of the Human Factors Society*, September 30-October 3, 2002, pp. 2184-2188, Baltimore, MD.
34. R. J. Brou, D. W. Carruth, R. J. Vickery, S. M. Doane, and R. J. Moorhead, "Effects of Disorientation on Human Spatial Cognition: Object Localization in Virtual Environments," *24<sup>th</sup> Annual Meeting of the Cognitive Science Society*, August 7-10, 2002, Fairfax, VA (poster presentation).
35. Z. Liu and R. Moorhead, "AUFLIC – Accelerated Unsteady Flow Line Interval Convolution," *Eurographics – IEEE Symposium on Visualization*, Barcelona, Spain, May 26-28, 2002, pp. 43-52.
36. H. Hagen, Y. Guan, and R. Moorhead, "Interactive Surface Interrogation Using IPT Technology," *IPT 2002 Symposium*, Orlando, FL, March 2002. On CD.
37. Rhonda J. Vickery, Timothy R. Keen, Robert J. Moorhead, Randy J. Brou, Daniel W. Carruth, and Stephanie M. Doane, "Volume Visualization of 5D Sedimentation Models," *Electronic Imaging Science & Technology Visualization and Data Analysis 2002*, R. F. Erbacher, P. C. Chen, M. Groehn, J. C. Roberts, and C. M. Wittenbrink, eds., Proc. SPIE 4665, pp. 165-176, Jan 21-22, 2002, San Jose, CA.
38. Y. Guan and R.J. Moorhead, "Contour-based Progressive Transmission of Cutting Plane Data," Visualization and Data Analysis Conference, *Electronic Imaging Science & Technology Visualization and Data Analysis 2002*, R. F. Erbacher, P. C. Chen, M. Groehn, J. C. Roberts, and C. M. Wittenbrink, eds., Proc. SPIE 4665, 12 pages, Jan 21-22, 2002, San Jose, CA.
39. D.L. Evans, S.D. Roberts, J.W. McCombs, R.J. Moorhead, D. Irby, and T. Wang, "Forest visualization through development of prototypical models of stands from LIDAR and multi-spectral data," Abstract in: Third International Conference on Geospatial Information in Agriculture and Forestry, Denver, CO, 5-7 November 2001. Veridian, Arlington, VA. On CD.
40. R. Scoggins, R. Machiraju, and R. Moorhead, "Approximate Shading for the Re-Illumination of Synthetic Images," *IEEE Visualization 2001*, Oct. 2001, pp. 379-386.
41. S. Ziegeler, R.J. Moorhead, P. Croft, and D. Lu, "The MetVR Case Study: Meteorological Visualization in an Immersive Virtual Environment," *IEEE Visualization 2001*, Oct. 2001, pp. 489-492.
42. R. J. Brou, D. W. Carruth, R. J. Vickery, S. M. Doane, and R. J. Moorhead, "Effects of Disorientation on User Ability to Spatially Locate Objects: Comparing Human Spatial Information Processing in Virtual and Real Environments," *Ninth International Conference on Human-Computer Interaction*, New Orleans, LA, August 5-10, 2001, Poster Sessions: Abridged Proceedings, pp. 50-52.
43. R. J. Vickery, R. J. Brou, D. W. Carruth, T.R. Keene, R. J. Moorhead, and S. M. Doane, "Usability Issues in the Development of an Immersive System for Visualization of 5D Sediment Models," *Ninth International Conference on Human-Computer Interaction*, New Orleans, LA, August 5-10, 2001, Poster Sessions: Abridged Proceedings, pp. 62-64.
44. R. Scoggins, R. Machiraju, and R. Moorhead, "Enabling Level-of-Detail Selection for Exterior Scene Synthesis," *IEEE Visualization 2000*, Oct. 2000, pp. 171-178.
45. M. Watson, N. Eggleston, D. Irby, R. Moorhead, D. Evans, "A Virtual Reality Interface for Analyzing Remotely Sensed Forestry Data," *SIGGRAPH 2000 Conference Abstracts and Applications, Sketches and Applications*, New Orleans, LA, July 23-28, 2000, p. 273.

46. Y. Guan and R. Moorhead, "Data Compression of Cutting Plane," *IEEE Data Compression Conference*, Snowbird, Utah, March 29-31, 1999, p. 528.
47. R. Machiraju, Z. Zhu, B. Fry, and R. Moorhead, "Structure Significant Representation of Structured Datasets," *IEEE Transactions on Visualization and Computer Graphics*, April - June 1998, Vol. 4, No. 2, pp. 117-133.
48. M.-H. Kiu, X.S. Du, R.J. Moorhead, D.C. Banks, and R. Machiraju, "Two Dimensional Sequence Compression Using MPEG," *Video Communications and Image Processing '98*, SPIE Vol. 3309, *SPIE/IS&T Electronic Imaging '98*, San Jose, CA, January 1998, pp. 914-921.
49. Z. Zhu, R. Machiraju, B. Fry, and R. Moorhead, "Wavelet-based Multiresolutional Representation of Computational Field Simulation Datasets," *IEEE Visualization '97*, Oct. 1997, pp. 151-158.
50. S. Nations, R. Moorhead, K. Gaither, S. Aukstakalnis, R. Vickery, W. C. Couvillion Jr., D. N. Fox, P. Flynn, A. Wallcraft, P. Hogan, O. M. Smedstad, "Interactive Visualization of Ocean Circulation Models," *IEEE Visualization '96*, Oct. 1996, pp. 429-432.
51. A. Trott, R. J. Moorhead, J. McGinley, "Wavelets Applied to Lossless Compression and Progressive Transmission of Floating Point Data in 3-D Curvilinear Grids," *IEEE Visualization '96*, Oct. 1996, pp. 385-388.
52. D. C. Banks, B. Hamann, P.-Y. Tsai, R. J. Moorhead, Jonathan Barlow, "Data Reduction and Interpolation for Visualizing 3D Soil-Quality Data," *IEEE Visualization '96*, Washington, D.C., Oct. 1996, pp. 421-424.
53. D. Fox and R. Moorhead, "Distributed Scientific Visualization of Ocean Models," APP-S96-007, SIGGRAPH Applications, Aug. 6-8, 1996.
54. W. Wang, R. Moorhead, R. Lengel, R. Cook, J. Lindner, S. Shepard, "Enhancement of Plasma Torch Control Using Arc Image Visualization and Feature Extraction," 27th AIAA Plasmadynamics and Lasers Conference, AIAA-96-2306, New Orleans, LA, June 18-20, 1996.
55. A. Trott, R. Moorhead, and J. McGinley, "The Application of Wavelets to Lossless Compression and Progressive Transmission of Floating Point Data in 3D Curvilinear Grids," *IEEE Data Compression Conference*, Snowbird, Utah, April 1-3, 1996, p. 458.
56. B. Hamann, D. Wu, and R. J. Moorhead, "On particle path generation based on quadrilinear interpolation and Bernstein-Bézier polynomials," *IEEE Trans. on Visualization and Computer Graphics*, Vol. 1, No. 3, Sept. 1995, pp. 210-217.
57. R. J. Moorhead and Z. Zhu, "Signal Processing Aspects of Scientific Visualization," *IEEE Signal Processing Magazine*, Vol. 12, No. 5, Sept. 1995, pp. 20-41.
58. Z. Zhu and R. J. Moorhead, "Extracting and Visualizing Ocean Eddies in Time-Varying Flow Fields," Proc. of the 7th International Symposium on Flow Visualization, Seattle, WA, Sept. 11-14, 1995, pp. 206-211.
59. A. Johannsen and R. J. Moorhead, "AGP: Ocean Model Flow Visualization," *IEEE Computer Graphics and Applications*, Vol. 15, No. 4, July 1995, pp. 28-33.
60. H. Tao and R. J. Moorhead, "Progressive Transmission of Scientific Data Using Biorthogonal Wavelet Transform," *IEEE Visualization '94*, Washington, D.C., Oct. 1994, pp. 93-99.
61. A. Johannsen and R. J. Moorhead, "Flow Visualization of Basin-Scale Ocean Data," *IEEE Visualization '94*, Washington, D.C., Oct. 1994, pp. 355-358.
62. Z. Zhu and R. J. Moorhead, "Exploring Feature Detection Techniques for Time-Varying Volumetric Data," *IEEE Workshop on Visualization and Machine Vision*, Seattle, WA, June 24, 1994, pp. 45-54.
63. E. R. Cespedes and R. J. Moorhead, "Adaptive Compression of Multisensor Image Data for Airborne Minefield Detection Applications," 19th Army Science Conference, Orlando, FL, June 20-23, 1994.
64. R. P. Nirgudkar, R. J. Moorhead, and W. D. Smith, "Modeling and Simulation of the Data Communication Network at the ASRM Facility," *IEEE Southeastcon '94*, Miami, FL, April 1994, pp. 258-264.
65. R. J. Moorhead and Z. Zhu, "Feature Extraction for Oceanographic Data Using A 3D Edge Operator," *IEEE Visualization '93*, San Jose, CA, Oct. 1993, pp. 402-405.

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67. D. R. Thompson, R. J. Moorhead, and W. D. Smith, "Advanced Solid Rocket Motor (ASRM) Communications Network Analysis Using Bones," *IEEE Southeastcon '92*, Birmingham, AL, April 1992, pp. 276-282.
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70. L. A. Allman and R. J. Moorhead, "Image-Sequence Compression on a 68020-based Multiprocessor System," *Pattern Recognition and Image Processing ITL*, Toronto, Canada, August 1987 (IBM Confidential).
71. R. J. Moorhead and C. A. Gonzales, "Image Sequence Compression," *IBM RC 13047*, July 1987 (IBM Confidential).
72. R. J. Moorhead and S. A. Rajala, "Motion-Compensated Interframe Coding," *ICASSP '85*, Tampa, FL, March 26-29, 1985.

## Patents

1. Robert J. Moorhead and Sarah A. Rajala, **Image-Sequence Compression Using a Motion-Compensated Technique**, Patent No. 4,717,956, Issued Jan. 5, 1988.

## Books

1. Chris Johnson, Robert Moorhead, Tamara Munzner, Hanspeter Pfister, Penny Rheingans, and Terry S. Yoo, "NIH/NSF Visualization Research Challenges," IEEE, ISBN: 0-7695-2733-7, January 2006.

## Refereed Chapters in Books

1. Shangshu Cai, Robert Moorhead, and Qian Du, "An Evaluation of Visualization Techniques for Remotely Sensed Hyperspectral Imagery," in *Optical Remote Sensing—Advances in Signal Processing and Exploitation Techniques*, S. Prasad, L. M. Bruce, and J. Chanussot, Eds., chapter 6, Springer, 2011.
2. R. J. Moorhead and X. S. Du, *Concurrent Multiresolutional Visualization of Distributed Simulations*, in *Scientific Visualization - Dagstuhl '97*, IEEE Computer Society Press, H. Hagen, G.M. Nielson, and F. Post (ed.), March 2000.
3. R. J. Moorhead and P. Rheingans, *Vision and Visualization*, in *Electronic Imaging Technology*, SPIE Optical Engineering Press, pp. 83-119, Edward R. Dougherty, Editor, January 1999.
4. B. Hamann and R. J. Moorhead, Survey of Grid Generation Methodologies and Scientific Visualization Efforts, in *Scientific Visualization: overviews, methodologies and techniques*, IEEE Computer Society Press, G. M. Nielson, H. Hagen, and H. Mueller (ed.), 1997.
5. R.J. Moorhead, Sarah A. Rajala, and L.W. Cook, "Image Sequence Compression Using a Pel-Recursive Motion-Compensated Technique," included in *Digital Image Processing*, Rama Chellappa (ed.), IEEE Computer Society Press, 1992, pp. 598-612.
6. R.J. Moorhead, Sarah A. Rajala, and L.W. Cook, "Image Sequence Compression Using a Pel-Recursive Motion-Compensated Technique," included in *Visual Communication: Technology and Applications*, T.R. Hsing and A.G. Tescher (ed.), SPIE Press, Bellingham, Washington, 1990.

## Edited Books

1. G. Turk, J. van Wijk, and R. J. Moorhead (ed.), *Proceedings of IEEE Visualization 2003*, IEEE Computer Society, October 22-24, 2003.
2. R. J. Moorhead, K. Joy, and M. Gross (ed.), *Proceedings of IEEE Visualization 2002*, IEEE Computer Society, October 29-31, 2002.
3. R. J. Moorhead II, D. E. Silver, and S.P. Uzelton (ed.), *Visual Data Exploration and Analysis*, SPIE Vol. 2178, 1994.
4. R. J. Moorhead II, M. R. Civanlar, and S. Mitra (ed.), *Image Processing Algorithms and Techniques II*, SPIE Proc. 1452, San Jose, CA, February 25-March 1, 1991.
5. K. S. Pennington and R. J. Moorhead II (ed.), *Image Processing Algorithms and Techniques*, SPIE Proc. 1244, Santa Clara, CA, February 12-14, 1990.

## Other Publications

1. Jibonananda Sanyal, Phil Amburn, Song Zhang, Jamie Dyer, John van der Zwaag, Derek Irby, Robert Moorhead, "FloodViz - A Visualization Tool for River Flow and Inundation Simulation," *IEEE Visweek Poster Compendium*, October 2011, Providence, RI.
2. John van der Zwaag, Dave Reed, Jeff Graschel, David Welch, Katelyn Costanza, Phil Amburn, Jamie Dyer, Robert J. Moorhead II, Song Zhang, Derek Irby, and Jibonananda Sanyal, "FloodViz - Visual Analytics for Assessment and Interpretation of Simulated River Flooding," NOAA NGI Annual Meeting, Mobile, AL, May 2011 (oral presentation).
3. Keqin Wu, Song Zhang, and R.J. Moorhead, "Understanding the Impact of Data Uncertainty on Meteorological and Oceanographic Features," Mississippi-Alabama Bays and Bayous Symposium 2010, Mobile, AL, Dec 2010 (peer-reviewed abstract; oral presentation).
4. Jibonananda Sanyal, Song Zhang, Philip Amburn, Jamie Dyer, Andrew Mercer, and Robert Moorhead, "Uncertainty Visualization of Ensemble Weather Forecasts," Mississippi-Alabama Bays and Bayous Symposium 2010, Mobile, AL, Dec 2010 (peer-reviewed abstract; poster).
5. Jibonananda Sanyal, Phil Amburn, Derek Irby, John van der Zwaag, Song Zhang, and R.J. Moorhead II, "Level-of-Detail for Terrain Rendering," NOAA NGI Annual Meeting, Mobile, AL, May 2010 (poster).
6. Derek Irby, Mahnas Jean Mohammadi-Aragh, R. J. Moorhead II, Phil Amburn, and Louis L. Wasson, "WISDOM: Predictive Maps and Visualization," NOAA NGI Annual Meeting, Mobile, AL, May 2010 (poster).
7. Keqin Wu, Song Zhang, and R.J. Moorhead II, "Contour Tree-Based Spaghetti Plots for Visualizing WRF Ensemble Runs," NOAA NGI Annual Meeting, Mobile, AL, May 2010 (poster).
8. Derek Irby, Mahnas Mohammadi-Aragh, Robert Moorhead, and Phil Amburn, "Improving the Understanding of Hurricanes: Visualizing Storm Surge," *Proceedings of IEEE Oceans 2009*, October 27-29, Biloxi, MS.
9. Elton Phil Amburn, Michael Berberich, Robert Moorhead, Jamie Dyer, and Manfred Brill, "Geospatial Visualization Using Hardware Accelerated Real-Time Volume Rendering," *Proceedings of IEEE Oceans 2009*, October 27-29, Biloxi, MS.
10. Keqin Wu, Song Zhang, Phil Amburn, and Robert Moorhead, "Using FlowVis Techniques to Study Ocean Flow," *Proceedings of IEEE Oceans 2009*, October 27-29, Biloxi, MS.
11. Keqin Wu, Song Zhang, Phil Amburn, and Robert Moorhead, "Using LIC-like FlowVis Technique to Visualize Hurricanes," *IEEE Visualization Poster Compendium*, October 2009 (best poster award).
12. John van der Zwaag, Rhonda Vickery, and Robert Moorhead, "Vortex Detection Through the Visualization Toolkit," *Proceedings of the DoD HPCMP Users Group Conference 2009*, San Diego, CA, July 14-17,

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13. Michael Berberich, Phil Amburn, Robert Moorhead, Jamie Dyer and Manfred Brill, "HurricaneVis Geospatial Visualization using Hardware Accelerated Real-Time Volume Rendering," IEEE EuroVis 2009, June 2009, (poster/demo)
14. Keqin Wu, Song Zhang, Jibonananda Sanyal, Phil Amburn, and Robert J Moorhead, "Using FlowVis Techniques to study Hurricane cases," NOAA NGI Annual Meeting, Mobile, AL, May 2009 (presentation).
15. Derek Irby, Mahnas Jean Mohammadi-Aragh, Robert Moorhead, and Phil Amburn, "Improving the Understanding of Hurricane Visualizing WISDOM and UAS," NOAA NGI Annual Meeting, Mobile, AL, May 2009 (presentation).
16. Michael Berberich, Phil Amburn, Robert Moorhead, Jamie Dyer, and Manfred Brill, "HurricaneVis – GeoSpatial Visualization Using GPU Accelerated Real-Time Volume Rendering," NOAA NGI Annual Meeting, Mobile, AL, May 2009. (poster)
17. Keqin Wu, Jibonananda Sanyal, Song Zhang, Phil Amburn, and Robert J Moorhead, "Using LIC-like Flow Vis Technique to Visualize Hurricane Lili's Rapid Weakening," NOAA NGI Annual Meeting, Mobile, AL, May 2009. (poster)
18. Mahnas Jean Mohammadi-Aragh, Derek Irby, Phil Amburn, and Robert Moorhead, "Improving the Understanding of Hurricanes: Visualizing Storm Surge," NOAA NGI Annual Meeting, Mobile, AL, May 2009. (poster)
19. Mahnas Jean Mohammadi-Aragh, Derek Irby, Robert Moorhead, and Phil Amburn, "The UAS and WISDOM Visualization System," NOAA NGI Annual Meeting, Mobile, AL, May 2009. (poster)
20. Valentine G. Anantharaj, Paul R. Houser, F. Joseph Turk, Craig Peterson, Faisal Hossain, Robert J. Moorhead, David Toll, and Georgy Mostovoy, "A Rapid Prototyping Approach for the Evaluation of Potential GPM-Era Precipitation Products for Water Resources Management Applications," EGU 2009, Vienna, Austria: European Geosciences Union.
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### **Creative Works**

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6. Executive Producer, "Composite '91," NSF First Annual Review, NSF Engineering Research Center for Computational Field Simulation, Mississippi State University, February 1991.
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### **Invited Talks**

1. "Getting Environmental Visualization Real," Oak Ridge National Labs, October 11, 2010.
2. "Geospatial Visualization," University of Saarbrucken, July 27, 2010.
3. "Using FlowVis Techniques to Study Hurricanes," Jackson State University Summer Institute on Atmospheric Dispersion, June 5, 2009.
4. "Improving the Understanding of Hurricanes: Visualizing WISDOM and UAS," Jackson State University Summer Institute on Atmospheric Dispersion, June 5, 2009.
5. "3D Immersive Visualization and Evaluation of Mesoscale Model Outputs Simulating Hurricane Lili's (2002) Rapid Weakening." Keynote Address, Practical Virtual Environment Systems Workshop, IEEE 2008 Visualization Conference.
6. "Hyperspectral Image Visualization," Remote Sensing Seminar, Mississippi State University, Oct 1, 2008.
7. "Overview of Operational 3D Scientific Visualizations," Keynote Talk, NASA Workshop on 3-Dimensional Scientific Visualization of Air Quality Data, University of Maryland Baltimore County, MD, June 2-3, 2008.
8. "Visualizing New Buildings in Context," 3rd Workshop on Human Computer Interaction & Visualization (HCIV) – Large Data Sets - Large Displays," Kaiserslautern, Germany, April 15-16, 2008.
9. "What and Why – Visualization Research Issues," Dagstuhl Seminar on Scientific Visualization, Schloss Dagstuhl, Germany, July 15-20, 2007.
10. "HPC in the GeoResources Institute," Louisiana State University, May 9, 2007.
11. "The GeoResources Institute," MSU SBIR Workshop, Mississippi State University, Oct. 13, 2006.
12. "High Performance Computing in the GeoResources Institute," Remote Sensing Seminar, Mississippi State University, Sept 20, 2006.

13. "HPC in the GeoResources Institute," Scientific Computing Research Focus Group, Mississippi State University, Sept 6, 2006.
14. "Research Opportunities in Computer Engineering and Computer Science at Mississippi State University," Fachhochschule Kaiserslautern, Zweibruecken, Germany, June 21, 2006.
15. "An Introduction to OpenGL," AccessGrid Virtual Institute, Minority Serving Institution Network, July 27, 2005.
16. "Applied Visualization in Science and Engineering," Applied Visualization Conference, Apr. 29, 2005
17. "Data Mining for Maneuverability," ERDC/MSRC, Feb. 9, 2005.
18. "A Tale of Two Centers," Brown University, Dec 9, 2004.
19. "HPC Visualization for Geoscience," Jackson State University Summer Institute, June 18, 2004.
20. "Enabling Technologies for DoD High Performance Computing," NRL Monterrey, Oct 20, 2003.
21. "User Studies of Geospatial Data in Virtual Environments," Brown University, Oct 2, 2003.
22. "Geospatial Virtual Environments," Jackson State University Summer Institute, June 24, 2003.
23. "Two Geospatial Virtual Environments," 5rd Dagstuhl Seminar on Scientific Visualization, Schloss Dagstuhl, Germany, May 26-30, 2003.
24. "Scientific Visualization," Geneva College, May 19, 2001.
25. "Scientific Data Visualization: Now and Then," Plenary Talk, NAVO/MSRC PET Workshop on Scientific Visualization, January 25, 2000.
26. "Environmental Visualization in Virtual Environments: Oceanography, Meteorology, Topography, CAVEs, and BOOMs," Center for Computational Sciences, University of Kentucky, Sept. 1, 1999.
27. "Oceanography and Virtual Environments," Panel Presentation, Dynamics of the Networked Academy, Mississippi State University, Sept. 9-11, 1998.
28. "Visualization of Oceanographic Data," Gulf Coast Section Meeting, Marine Technology Society, Slidell, LA, July 23, 1997.
29. "Wavelet-based Multiresolutional Representation of Computational Field Simulation Datasets," 3rd Dagstuhl Seminar on Scientific Visualization, Schloss Dagstuhl, Germany, June 8-13, 1997.
30. "Visualization of Air/Sea Model Data," Approaches to the Analysis and Visualization of Massive Data Sets Workshop, San Diego SuperComputing Center, March 14-15, 1997.
31. "Visualization of METOC Data -- from the desktop to a virtual environment," Fleet Numerical Meteorology and Oceanography Center, Monterey, CA, Feb. 11, 1997.
32. "Visualization in Dynamic Physical Oceanography," Minisymposium on Scientific Visualization, 4th SIAM Conference on Geometric Design, Nashville, TN, Nov. 6-9, 1995.
33. "Visualization in Dynamic Physical Oceanography," University of Kaiserslautern, Kaiserslautern, Germany, May 30, 1995.
34. "Visualization in Dynamic Physical Oceanography," Delft University of Technology, Delft, The Netherlands, May 23, 1995.
35. "Visualization in Dynamic Physical Oceanography," Swiss Federal Institute of Technology, Zurich, Switzerland, May 16, 1995.
36. "Data Reduction and a Flow Visualization Technique for Layered Ocean Models," 2nd Dagstuhl Seminar on Scientific Visualization, Schloss Dagstuhl, Germany, May 22-27, 1994.

## Grants and Contracts

1. PI, "Magnolia-1 Small Satellite Program," NASA, \$10,940,713, (Jan 2007 to Dec 2010); (original PI: David Shaw, Jan 2007 to Dec 2009).

2. Co-PI (Phil Amburn, PI), "Visual Analytics for Assessment and Interpretation of Simulated River Flooding," NOAA Northern Gulf Institute, \$206,763 (Feb 2010 to Jan 2011).
3. PI, "A Rapid Prototyping Capability Experiment to Evaluate Potential Soil Moisture Retrievals of Aquarius Radiometer and Scatterometer" NASA, \$644,938, (Feb 2007 to June 2009); (original PI: Lori Bruce, 2/07-10/08)
4. PI, "A Rapid Prototyping Capability Experiment to Evaluate CrIS ATMS Observations for Urban Modeling Applications" NASA, \$515,883, (Feb 2007 to June 2009); (original PI: Lori Bruce, 2/07-10/08)
5. PI, "Evaluation of GPM Precipitation Estimates for Cross-cutting Earth Science Applications via Land Data Assimilation Studies" NASA, \$546,985, (Feb 2007 to June 2009); (original PI: Lori Bruce, 2/07-10/08)
6. PI, "Optimizing GPM Precipitation Estimation Using High Resolution Land Surface Modeling for Decision Support" NASA, \$537,883, (Feb 2007 to June 2009); (original PI: Lori Bruce, 2/07-10/08)
7. PI, "Using Simulated OCO Measurements for Assessing Terrestrial Carbon Pools in Southern United States" NASA, \$529,092, (Feb 2007 to June 2009); (original PI: Lori Bruce, 2/07-10/08)
8. Co-PI (Sean Ziegeler, PI), "Visual Data Analysis and Feature Extraction for CWO Data," DoD HPCMP, \$84,923, June 2008 to April 2009.
9. Co-PI (Sean Ziegeler, PI), "Parallel JPEG-2000-3D Compression of Structured Data Sets," DoD HPCMP, \$84,987, June 2008 to April 2009.
10. Co-PI (Rhonda Vickery, PI), "Visual Data Analysis and Feature Extraction for CCM and CFD," DoD HPCMP, \$84,909, June 2008 to April 2009.
11. PI, "Visual Data Analysis and Feature Extraction," DoD HPCMP, \$166,993, June 2007 to May 2008.
12. PI, "Visualization Techniques for Improving Public Understanding of Severe Storms," NOAA Northern Gulf Institute, \$663,801 (Feb 2007 to Jan 2010).
13. PI, "Remote Visualization using ParaView Enterprise Edition (PVEE)," DoD HPCMP, \$150,114, June 2006 to May 2007.
14. Co-PI (R. Vickery, PI), "FMS and CWO Component Based Data Mining for Event Playback Scenarios," DoD HPCMP, \$118,410, June 2006 to August 2007.
15. PI, "Rapid Prototyping Capability for Earth-Sun System Sciences," NASA/SSC, \$6,423,211, Jan 2006 to Sept 2008.
16. Co-PI (D. Shaw, PI), "Developing, Deploying, and Strategically Evolving the NASA Sun-Earth Research Knowledge Database, Enterprise Architecture, and Future Solutions Network," NASA/SSC, \$1,987,891, Jan 2006 to Jul 2007.
17. Co-PI (D. Shaw, PI), "Project 11 – Integration of NASA Results and Data from Land and Atmospheric Studies for Cross Cutting Applications," NASA/SSC, \$268,023, Dec 2005 to Jun 2007.
18. Co-PI (D. Shaw, PI), "Project 4 – Crop Surveillance and Bioproductivity Estimation to Support USDA FAS," NASA/SSC, \$502,045, Dec 2005 to Jun 2007.
19. Co-PI (D. Shaw, PI), "Project 1 – Integrating Climatic and Fuels Information into National Fire Risk Decision Support Tools," NASA/SSC, \$422,258, Dec 2005 to Jun 2007.
20. PI, "High Performance Computing and Visualization Initiative: Visualization User Studies and Computational Electromagnetics," Jackson State University, ERDC/MSRC, and DoD HPCMP, \$304,832, Aug 2005 to June 2007.
21. PI, "Remote Visualization," DoD HPCMP, \$152,851, June 2005 to May 2006.
22. PI, "CWO Data Mining," DoD HPCMP, \$99,394, June 2005 to May 2006.

23. PI, "Understanding Carbon Distributions through Next Generation Data Visualization Environments," NASA Earth Science Directorate, \$214,072, July 2004 to Sept 2005.
24. PI, "High Performance Computing and Visualization Initiative: Visualization, Sonification, and Computational Electromagnetics," Jackson State University, ERDC/MSRC, and DoD HPCMP, \$300,000, July 2004 to June 2005.
25. PI, "Domain Independent Data Mining," DoD HPCMP, \$254,920, June 2004 to May 2005.
26. PI, "Polygon Decimation Process for Threat / Target Models for Virtual Simulation Datasets, DoD HPCMP, \$209,880, June 2004 to May 2005.
27. PI, "Domain Independent Feature Detection," DoD HPCMP, \$175,720.17, Oct 2003 to May 2004.
28. PI, "Polygon Decimation Process for Threat / Target Models for Virtual Simulation," DoD HPCMP, \$50,000, Oct 2003 to May 2004.
29. PI, "A Consistent, Well-Documented Computational Environment," DoD HPCMP, \$30,000, Oct 2003 to May 2004.
30. PI, "An Environment for Multiple Concurrent Constructive Model Runs," DoD HPCMP, \$20,000, Oct 2003 to May 2004.
31. PI, "Cluster-based Geospatial Visualization," Jackson State University, ERDC/MSRC, and DoD HPCMP, \$200,000, June 2003 to August 2004.
32. PI, "EnVis and EnVisU – Distributed High Performance Batchmode Visualization," DoD HPCMO PET Program, \$126,447, Oct. 2002 to Sept. 2003.
33. Investigator, (J. Pote, PI), "Mississippi EPSCoR Research Infrastructure Improvement Program," NSF (EPS-0132618), \$9M, 2002-2005.
34. PI, "FAPOC for Enabling Technologies," DoD HPCMO PET Program, \$3,642,317 -- \$668,930 (June 2008-August 2009), \$607,092 (June 2007-May 2008), \$594,730 (June 2006-May 2007), \$457,230 (June 2005 to May 2006), \$395,709 (June 2004 to May 2005), \$456,119 (June 2003 to May 2004), \$322,126 (June 2002 to May 2003); \$140,381 (Nov. 2001 to May 2002).
35. PI, "EnVis and BMRT – Distributed High Performance Batchmode Visualization," DoD HPCMO PET Program, \$125,000, Oct. 1, 2001 to Sept. 30, 2002.
36. PI, "Automatic Determination of Tree Crown Shape, Volume, and Density Developed, Verified, and Visualized Using Virtual Environments," NASA Stennis via the MSU Remote Sensing Technology Center, \$281,465, Mar. 1, 2001 to June 30, 2004.
37. PI, "Senior Scientific Visualization Specialist/Computer Scientist (at ARL/MSRC)," Raytheon E-Systems, \$33,453, May 20, 2000 to August 9, 2000.
38. Co-PI (Joe McCaffrey, PI), "Distributed Marine Environment Forecast System," ONR, \$4,041,000, April 1, 2000 to November 30, 2002.
39. Co-PI (with Stephanie Doane), "Virtual Environments and Virtual Interfaces for Oceanographic and Meteorological Scientific Data Visualization," ONR, \$301,867, April 1, 2000 to March 30, 2003.
40. PI, "Enhancements and Extensions to ISTV," NAVO/MSRC PET Program, Logicon Corp., \$150,000, Oct. 1, 1999 to Sept. 30, 2000.
41. PI and Project Manager, "Integrated Systems and Remote Visualization," High Performance Visualization Center Initiative, Naval Oceanographic Office and DoD HPCMO, \$1,447,079, Sept. 15, 1999 to September 31, 2002.
42. PI, "A Virtual Environment for Analyzing Remotely Sensed Forestry Data," NASA Stennis via the MSU Remote Sensing Technology Center, \$168,981, July 1, 1999 to Nov. 30, 2000.
43. PI, "Topia - A Geodata Translation, Analysis, and Experimentation Tool," SBIR Phase 0 award, MSU Office of Research, \$3000, May 1, 1999 to June 30, 1999.

44. PI, "Virtual Environments for CWO/EQM Data Exploration," NAVO/MSRC PET Program, \$86,000, Logicon Corporation, December 1, 1998 to May 31, 1999.
45. Co-PI (Don Trotter, PI), "Exploring the Black Box: Spatially Immersive Virtual Environments for Computational Engineering Research and Application," \$599,430 from NSF, \$219,837 from ERC, August 15, 1998 to July 31, 1999.
46. PI, "Enhancements and Extensions to ISTV," NAVO/MSRC PET Program, Northrop Grumman Corp., \$76,000, June 1, 1998 to Sept. 30, 1999.
47. PI, "Visualization Support and Development," IPA, Naval Oceanographic Office, \$19,888, May 20, 1998 to May 19, 1999.
48. Collaborator (Ramon Vasquez and Lueny Morell, PIs), "Partnership for Spatial and Computational Research," NASA PAIR grant, University of Puerto Rico Mayaguez, \$2,485,801, July 1, 1998 to June 30, 2003.
49. PI, "Visualization of Very Large Ocean Datasets," CEWES/MSRC PET Program, Nichols Research Corporation, \$50,000, April 1, 1998 to March 31, 1999.
50. PI, "Advanced Data and Image Visualization," NASA/Stennis NAS13-564 Delivery Order 171, \$88,442, February 26, 1998 to December 31, 1998.
51. PI, "Visualization Support and Development," IPA, Naval Oceanographic Office, \$21,257, May 20, 1997 to May 19, 1998.
52. PI, "Local Concurrent Visualization of Remote Distributed Computations," MSU/NSF ERC, \$68,904, April 15, 1997 to April 14, 1998.
53. PI, "Distributed Visualization and Virtual Environment for Meteorology and Oceanography," ONR, \$199,912, Nov. 15, 1996 to Nov. 14, 1998.
54. Co-PI (with Dave Marcum), "CFD Simulations and Visual Analysis of Complex Time Dependent Flight Vehicles Flow Fields," AFOSR, \$430,000, September 1, 1996 to August 31, 2000.
55. PI, "Visualization Support and Development," IPA, Naval Oceanographic Office, \$21,221, May 20, 1996 to May 19, 1997.
56. PI, "Distributed Multiresolution Visualization System," MSU/NSF ERC, \$65,864, April 16, 1996 to April 15, 1997.
57. PI, "Visualization of Relocation of Dredged Material," Naval Research Lab, \$94,557, Oct. 19, 1995, to Nov. 30, 1996.
58. PI, "Oceanographic Product Improvement," NAS13-564 Delivery Order 69, Naval Oceanographic Office, \$24,500, Sept 25, 1995 to Feb. 28, 1996.
59. PI, "Accelerated Scattered Data Interpolation Algorithms for the Generation of Rectilinear Data from Scattered SCAPS Data," U.S. Army Corps of Engineers Waterways Experiment Station, \$37,009, July 17, 1995 to Sept. 30, 1995.
60. PI, "CFS Data Reduction, Multiresolution Analysis, and High-Speed Transfer," MSU/NSF ERC, \$24,608, April 16, 1995 to April 15, 1996.
61. PI, "A Unified Air-Sea Visualization System," ONR, \$456,606, Dec. 15, 1994 to Sept. 30, 1996.
62. PI, "Oceanographic Scientific Visualization," IPA, Naval Oceanographic Office, \$5,401, May 18, 1994 to May 17, 1995.
63. PI, "Multiresolution Analysis," MSU/NSF ERC, \$24,608, April 16, 1994 to April 15, 1995.
64. PI, "Visualization of Irregularly Sampled Data Obtained from Soil Contamination Measurement," U.S. Army Corps of Engineers Waterways Experiment Station, \$64,337, Sept 1, 1993 to March 15, 1994.
65. PI, "Multiresolution Analysis," MSU/NSF ERC, \$15,601, April 16, 1993 to April 15, 1994.
66. PI, "General Field Visualization," MSU/NSF ERC, \$19,550, April 16, 1993 to April 15, 1994.

67. PI, "Distributed Scientific Visualization Systems," MSU/NSF ERC, \$8,566, April 15, 1993 to April 15, 1994.
68. PI, "Visualization for Acoustic Monitoring of Global Ocean Climate," ARPA/NSF, \$2,293,300, August 1, 1993 to April 1, 2002 (funded in 4 phases).
69. PI, "Oceanographic Scientific Visualization," IPA, Naval Oceanographic Office, \$15,189, May 18, 1993 to May 17, 1994.
70. PI, "Virtual Environments for Visualizing CFS Faults and Features," MSU/NSF ERC, \$11,978, August 16, 1992 to May 15, 1993.
71. PI, "Data Compression, Filtering, and Graphical Formats," MSU/NSF ERC, \$4,392, August 15, 1992 to May 15, 1993.
72. PI, "Oceanographic Visualization Interactive Research Tool (Phase 2)," Naval Oceanographic Office, \$53,822, July 15, 1992 to April 15, 1993.
73. PI, "Scientific Visualization of Oceanographic Data," IPA, Naval Oceanographic Office, \$19,984, May 1992 to August 1992.
74. PI, "Volume Visualization of Oceanographic Data," CNOC/NAVO contract (NAS13-330), substitute task 4, \$33,000, January 15, 1992 to May 15, 1992.
75. PI/Co-PI on 4 projects in the MSU/NSF ERC, \$100,000, April 16, 1991, to April 15, 1992.
76. PI, "Connectivity Analysis," IPA, Naval Oceanographic Office, \$19,645, May 1991 to August 1991.
77. PI, "Analysis of Communications Networks for ASRM Facilities," NAG8-866, NASA Marshall Space Flight Center, \$235,687, Feb. 7, 1991 to May 6, 1994.
78. PI/Co-PI on 5 projects in the MSU/NSF ERC, \$174,012, April 16, 1990, to April 15, 1991.
79. Co-PI, "Space Lab System Analysis," Final Phase, NAS8-36717, NASA Marshall Space Flight Center, \$43,861, Nov. 1989 to Nov. 1990.

### **Dissertations Directed**

1. Shangshu Cai, "Hyperspectral image visualization using double and multiple layers," Mississippi State University, May 2009.
2. Rhonda Vickery, "New Visualization Techniques for Multi-Dimensional Variables in Complex Physical Domains," Mississippi State University, December 2003.
3. Randy Scoggins, "Signal Processing Approaches for Appearance Matching," Mississippi State University, May 2003.
4. Yanlin Guan, "Interactive and Immersive Surface Interrogation Techniques over Triangulated Surfaces," Mississippi State University, May 2003.
5. Stephen Charles Jones, "Information/Energy Based Partitioning for Vector Quantization in the Cosine Transform Domain," Mississippi State University, December 1995.
6. Zhifan Zhu, "New Feature Extraction Algorithms for Environmental Data," Mississippi State University, May 1995.
7. Ernesto R. Cespedes, "Adaptive Compression of Multisensor Image Data," Mississippi State University, December 1991.
8. Eric Burns Welch, "Image Processing in the HSI Color Space," Mississippi State University, May 1991.

### **Theses Directed**

1. Michael Berberich, "Geospatial Visualization using Hardware Accelerated Real Time Volume Rendering," AI Techniques, University of Applied Sciences Kaiserslautern, February 2009 (co-director).

2. John Christopher Lakey, "Hierarchical Geographical Identifiers As An Indexing Technique For Geographic Information Retrieval," Mississippi State University, December 2008.
3. Joel Martin, "Results of a User Study on 2D Hurricane Visualization," Department of Electrical and Computer Engineering, Mississippi State University, August 2008.
4. Tobias Spies, "Geospatial Visualization Techniques," Digital Media, University of Applied Sciences Kaiserslautern, May 2007 (co-director).
5. Mahnas Jean Mohammadi-Aragh, "Visualization of Computer-Modeled Forests for Forest Management," Department of Electrical and Computer Engineering, Mississippi State University, December 2004.
6. Alexander Loeffler, "VRVIS – an API for immersive geospatial visualization," Digital Media, University of Applied Sciences Kaiserslautern, September 2004 (co-director).
7. Randall Hand, "A Faster Technique for Rendering Meshes in Multiple Display Systems," Department of Electrical and Computer Engineering, Mississippi State University, May 2002.
8. Sean Ziegeler, "Using Virtual Environments to Visualize Atmospheric Data: Can It Improve a Meteorologist's Potential to Analyze the Information?" Department of Electrical and Computer Engineering, Mississippi State University, May 2002.
9. Brandon R. Butler, "A Comparison of Wavelet Transforms as Applied to Different Stages of the Visualization Pipeline," Department of Electrical and Computer Engineering, Mississippi State University, December 2000.
10. Cass W. Everitt, "High Quality Hardware Accelerated Per-Pixel Illumination," Computational Engineering Program, Mississippi State University, May 2000.
11. D. Scott Nations, "A Virtual Environment for Visualizing and Steering a Remotely Executing Ocean Circulation Model," Computational Engineering Program, Mississippi State University, December 1997.
12. Xiaosong Du, "Multiresolutional Visualization of Evolving Distributed Simulations Using Wavelets and MPI," Department of Electrical and Computer Engineering, Mississippi State University, May 1997.
13. Sujay Shaunak, "DOMeS: A Distributed Ocean Modeling System," Department of Electrical and Computer Engineering, Mississippi State University, May 1997 (B. Soni, thesis director).
14. Gary Newcomb, "Graphical User Interface Designer: A GuiDe for Research and Education," Department of Electrical and Computer Engineering, Mississippi State University, May 1997.
15. Aaron Trott, "The Application of Wavelets to Lossless Compression and Progressive Transmission of Floating Point Data in 3-D Curvilinear Grids," Department of Electrical and Computer Engineering, Mississippi State University, May 1996.
16. Hai Tao, "A Progressive Transmission Algorithm Using the Biorthogonal Wavelet Transform and Its Application in Scientific Visualization," Department of Electrical and Computer Engineering, Mississippi State University, December 1994.
17. Ravindra Nirgudkar, "Analysis of the Data Communication Network at the Advanced Solid Rocket Motor Facility," Department of Electrical and Computer Engineering, Mississippi State University, May 1994.
18. Stephen Charles Jones, "Image-Sequence Dependent Color Quantization Used for the Animation of Computational Fluid Simulation Data," Department of Electrical Engineering, Mississippi State University, December 1992.
19. Dale R. Thompson, "ASRM Communication Network Analysis," Department of Electrical Engineering, Mississippi State University, May 1992.

#### **Non-thesis Masters Students Supervised:**

- |                   |           |
|-------------------|-----------|
| 1. Gopal, Gopi    | May 2004  |
| 2. Chupa, Michael | May 2003  |
| 3. Wang, Tao      | Dec. 2002 |
| 4. Kumar, Shashi  | May 2002  |

5. Zhang, Xinping (John)	Aug. 2000
6. Chayanam, Venkataravi (Ravi)	Aug. 2000
7. Shen, Yuzhong	Aug. 2000
8. Agarwal, Swapna	May 2000
9. Musinipally, Sandeep	May 2000
10. Maayah, Kais	Aug. 1999
11. Hong, Yaqin	Dec. 1997
12. Kiu, Ming Hoe	Aug. 1997
13. Yang, Steven	May 1996
14. Xu, Lizhen	May 1996
15. Zhao, Xiaodong	May 1995
16. Zhang, Rachel	May 1995
17. Hocutt, Ricky	May 1992
18. Sanders, Vince	May 1992
19. Patterson, Dwight	Dec. 1991
20. Nance, Robert	May 1991
21. Schumeyer, Richard	Dec. 1990

### Undergraduate Research Publications

1. Cass Everitt, (R.J. Moorhead, faculty advisor), "Using Classification and Feature Detection in Splatting of Scientific Datasets," National Conference on Undergraduate Research, Kalamazoo, MI, April 14-16, 1994.
2. Jonathan H. Barlow, (R.J. Moorhead, faculty advisor), "Scientific Visualization of Soil Content Data," National Conference on Undergraduate Research, Kalamazoo, MI, April 14-16, 1994.

### Courses Taught

MSU	ECE 8993	Environmental Visualization
MSU	ECE 8993	Level of Detail and Virtual Environments
MSU	ECE 8993	Realtime Rendering
MSU	ECE 3413	Introduction to Circuits
MSU	ECE 3153	Circuit Analysis II
MSU	ECE 8993	Virtual Environments
MSU	ECE 8993	Image and Video Coding
MSU	CME/CS/ECE 4993/6993	Scientific Visualization
MSU	EE 4993/6993	Computer Graphics Hardware
MSU	EE 8513:	Special Topics: Algorithms for Scientific Visualization
MSU	EE 8513:	Special Topics: Architectures for Scientific Visualization
MSU	CPE 8113:	Digital Image Processing
MSU	EE 3723:	Microprocessors I
MSU	EE 3713:	Digital Devices and Logic Design (course coordinator)
MSU	EE 3111:	Digital Devices Laboratory (lab director)
NCSU	EE 302:	Numerical Methods

### Short Courses Taught

1. Visualization for PCs, Clusters, and SuperComputers, University of Hawaii Summer Institute, July 25 – August 5, 2005 (2.5 days in that 2 week period).
2. Visualization for High Performance Computing, University of Hawaii Summer Institute, July 26 – August 6, 2004 (4 half days in that 2 week period).
3. EnVis, NAVO/MSRC, Sept 15, 2003 (with Mike Chupa).
4. EnVis, NAVO/MSRC, August 8, 2002 (with Mike Chupa).
5. EnVis, ERDC/MSRC, February 8, 2002 (with Mike Chupa).

6. *ISTV*, CEWES/MSRC, January 29, 1999 (with Mike Chupa).
7. *Wavelet and Numerical Methods for Visualization*, IEEE Visualization '98, October 18, 1998 (with Raghu Machiraju, Torsten Moeller, and Nelson Max).
8. *Wavelet and Numerical Methods for Visualization*, IEEE Visualization '97, October 20, 1997 (with Raghu Machiraju, Torsten Moeller, and Nelson Max).
9. *Introduction to Scientific Visualization*, Naval Oceanographic Office, November 25, 1996.
10. *Applications Programming in ANSI C*, Naval Oceanographic Office, June 17-27, 1996.
11. *Introduction to Scientific Visualization*, SPIE/IS&T Symposium on Electronic Imaging Science and Technology, San Jose, CA, Feb. 6, 1994 (half-day course).
12. *Introduction to Scientific Visualization*, Naval Oceanographic Office, July 1993 (one week, hands-on course).

### **Awards, Honors, and Recognition**

NSF Committee of Visitors, Computing and Communication Foundations Division, CISE, 2009  
 MSU Faculty Leadership Program, 2008-2009  
 Career Achievement Award, Bagley College of Engineering, Mississippi State University, 2006  
 Billie J. Ball Professor, Bagley College of Engineering, Mississippi State University, 2005-2010  
 Centers and Institutes Faculty Research Award, Mississippi State University, 2005  
 IEEE Computer Society Golden Core Member, presented June 2005  
 IEEE Computer Society Meritorious Service Award, 2004  
 Co-Guest Editor, IEEE Transactions on Visualization and Computer Graphics, 2004  
 Guest Editor, IEEE Transactions on Visualization and Computer Graphics, 2003  
 Keynote Speaker, MSU Research Orientation Workshop, Sept 2003  
 Hearin-Hess Distinguished Professor, Mississippi State University, 1997-98, 96-97, 95-96, 94-95, 93-94.  
 Outstanding Engineering Research Award, College of Engineering, 1996  
 Who's Who in Science and Engineering (4th Edition)  
 Who's Who in the South and Southwest (1992-1995)  
 Invited Panelist, "Applications of DSP to Digital Video," ISCAS '88  
 IBM VLSI Fellowship (1982-1983)  
 Microelectronics Center of North Carolina Fellowship (1981-1982)  
 Dean's Fellowship (1980-1981)  
 BSEE summa cum laude and with research honors (1980)  
 Eagle Scout (1974)

### **Service**

ECE Promotion and Tenure Committee (elected), 2004-2007 (Chair 2006-2007), 2009-2012 (Chair 2010-2012)  
 ECE Faculty Search Committee (elected), Chair, 2002-2003, 2007-2008, 2010-2011  
 Member, Computer Science and Engineering Promotion and Tenure Committee, 2010-2011  
 Member, MSU Ad-Hoc Committee, Research Faculty Promotion Policy, 2010  
 Office of Research, Ad-Hoc Select Committee on Strategic Investments, 2010  
 University Promotion and Tenure Committee (elected by College of Engineering), 2009-2010  
 Member, IFIP working group WG13.7 on HCI and Visualization (part of TC13: Human-Computer Interaction)  
 Member, search committee for joint Geosciences/GRI faculty position in computational meteorology, 2009  
 Member, search committee for joint Geosciences/GRI faculty position in remote sensing, 2009  
 Vice-Chair for Conferences, IEEE Computer Society TC on Visualization and Graphics, 2009-  
 Federal Demonstration Partnership, Faculty Representative, 2008  
 Chair, Summer Focus Group, Promotion Criteria/Procedures, ORED, MSU, 2008  
 NSF S-STEM Fellows Scholarship Program mentor, 2007-2011  
 Papers Committee, IEEE Visualization Conference, 2008, 2009  
 NSF TerraGrid Workshop, Chicago, IL, August 2007  
 NSF Panel Reviewer, 1998, 1999, 2001, 2002, 2004, 2005, 2007, 2008, 2010

IEEE VisWeek Executive Committee, 2007-present  
Dean Search Committee (elected), Bagley College of Engineering, 2007-2008  
Session Co-Organizer, AGU, Dec 2006  
Program Committee, International Symposium on Visual Computing (ISVC), 2006, 2008  
ECE Department Head Search Committee (elected), MSU, 2005-2006  
Chair, Signal Processing Emphasis Committee (elected), ECE Dept., MSU, 2000-2004, 2005-2010  
University ad hoc Committee on Biocomputing, 2004  
Co-Chair, NIH/NSF Panel on Visualization Research Challenges, 2004-2005  
Hosted Jackson State University Summer Institute, June 18, 2004  
University ad hoc Committee on fMRI procurement, utilization, and access, 2003  
Faculty Research Advisory Committee, Mississippi State University, 2003-2009  
Program Committee, 6th Joint EUROGRAPHICS-IEEE Symposium on Visualization, May 19-21, 2004  
Papers Co-Chair (1 of 3), IEEE Visualization 2003 Conference  
Search and Screening Committee for the Vice President of Research (elected), MSU, 2002-2004  
Computer Engineering Coordinating Committee, Mississippi State University, 2002-  
ECE Departmental Awards Committee, 2002-2003  
Search Committee for EIC for IEEE Transactions on Visualization and Graphics, 2002  
Director, IEEE Computer Society Technical Committee on Visualization and Computer Graphics, 2002-  
Papers Co-Chair (lead), IEEE Visualization 2002 Conference  
Program Committee, IPT2002, Orlando, FL, March 24-25, 2002  
ERC Executive Director Search Committee, 2001  
Screening Committee for the Director of Sponsored Programs Administration, MSU, 2000-2001  
Program Committee, IPT2001, Stuttgart, Germany, May 16-18, 2001  
Program Committee, 3rd Joint EUROGRAPHICS-IEEE Symposium on Visualization, May 28-30, 2001  
SGI Visual Serving Initiative, 2000-2002  
IEEE VR Conference Steering Committee, 2000-2003, 2008-present  
IEEE Visualization Conference Steering Committee, 2000-present  
Computational Engineering Coordinating Committee, Mississippi State University, 1999-  
Program Committee, 2nd Joint EUROGRAPHICS-IEEE Symposium on Visualization, May 29-31, 2000.  
Program Committee, IPT2000, Ames, Iowa, June 19-20, 2000.  
Chair (elected), IEEE Computer Society Technical Committee on Visualization and Graphics, 1999-2001  
Papers Committee, IEEE Visualization 1999 Conference  
Program Committee, SURA Advanced Network Applications Workshop, UAB, Sept. 7-9, 1999.  
Associate Editor, IEEE Transactions on Visualization and Computer Graphics, 1999-2002  
Program Committee, 1st Joint EUROGRAPHICS-IEEE Symposium on Visualization, May 26-28, 1999.  
Vice-Chair for Conferences, IEEE Computer Society Technical Committee on Visualization and Graphics,  
1997-1999, 2008-present  
Conference Co-Chair (past), IEEE Visualization '98 Conference.  
Conference Co-Chair (lead), IEEE Visualization '97 Conference.  
Program Chair, IEEE Visualization '96 Conference.  
Computational Engineering Program Advisory Committee, Mississippi State University, 1995-1996  
Publicity Chair, IEEE Visualization '95 Conference.  
Session Organizer and Chair, Special Session on Ocean Visualization, IEEE Oceans '95 Conference.  
Program Committee, International Workshop: "Computer Graphics Technology for the Exploration of the Sea,"  
Rostock, Germany, May 1995.  
Associate Editor, Journal of Electronic Imaging, 1995-1999  
Conference Chair, *Visual Data Exploration and Analysis*,  
SPIE/IS&T Symposium on Electronic Imaging Science and Technology,  
San Jose, CA, Feb. 6-10, 1994  
Digital Signal Processing Faculty Search Committee (elected), Chair, 1993-1994.  
Technology in Education task force, appointed by Provost, June 1993.  
MSU Representative, Task Force, DoD EPSCoR Proposal (1992-1993), State of Mississippi  
Science and Technology Council (Physical Science and Technology), MSU 1992  
Program Committee, 1992 IEEE Workshop of Visual Signal Processing and Communications  
Computational Engineering Faculty, Member, 1991-

Electrical & Computer Engineering Department Head Search Committee, 1991-1992  
AIAA Technical Committee on Interactive Computer Graphics, 1991 - 1997  
Conference Co-Chair, *Image Processing Algorithms and Techniques II*,  
SPIE/IS&T Symposium on Electronic Imaging Science and Technology,  
San Jose, CA, Feb. 24-March 1, 1991  
University Committee on Tuition Remission Appeals (1990-1991)  
Secretary of *Visual Signal Processing and Communications* Technical Committee of  
IEEE Circuits and Systems Society (1990-1992)  
Conference Co-Chair, *Conference on Image Processing Algorithms and Techniques*,  
SPIE/SPSE Symposium on Electronic Imaging,  
Santa Clara, CA, Feb. 11-16, 1990  
Summer Faculty Fellow, NASA MSFC, summer 1989  
Co-founder and first President of the Electrical and Computer Engineering (NCSU)  
Graduate Student Association (1983-1984)

### **Professional Affiliations (Member and Elected)**

AUVSI  
IEEE (Senior Member)  
IEEE Computer Society  
IEEE Signal Processing Society  
IEEE Geoscience and Remote Sensing Society  
Tau Beta Pi  
Sigma Xi (inactive)

### **Reviewer for**

Mississippi EPSCoR seed proposals, 2011  
Bagley College of Engineering, State Pride and Hearin Awards, 2010 and 2011  
Economic Development Generating Excellence (EDGE) Endowment Fund, State of Oklahoma, 2009  
DoE Office of Science, 2009  
NASA AIST Program, 2008  
International Symposium on Visual Computing (2006-2009)  
VAST – Visual Analytics Science and Technology Symposium (2006)  
Eurographics (2006)  
SPIE Electronic Imaging Symposium (2002)  
Immersive Projection Technology Workshop (IPT) (2000 - 2002)  
VisSym – Joint EUROGRAPHICS-IEEE Symposium on Visualization (1999-2001, 2004)  
National Science Foundation (1997-2002, 2004-2005, 2007-2009)  
IEEE Transactions on Visualization and Computer Graphics (1994-2004, 2006-2011)  
IEEE Computer Graphics and Applications (1998, 1999, 2001, 2003, 2005, 2011)  
IEEE Visualization Conference (1995-2010, 2012)  
Morgan Kaufman (2000, 2004)  
ACM Transactions on Graphics (2000)  
IEEE Transactions on Image Processing (1995)  
Computer Graphics Technology for the Exploration of the Sea (1995)  
SBT/IEEE International Telecommunications Symposium (1994)  
IEEE Supercomputing Conference (1994)  
Academic Press (Journal on Visual Communications and Image Representation) (1990, 1992, 1994)  
AIAA Aerospace Sciences Conference (1993)  
IEEE Transactions on Circuits and Systems for Video Technology (1991, 1992)  
IEEE Transactions on Acoustics, Speech, and Signal Processing (1985-1991)  
IEEE Transactions on Communications  
IEEE Southeastcon (1992)  
Houghton-Mifflin Publishing Company (1990)

### **Courses and Conferences Attended:**

AUVSI System Review, Feb 2011, Washington, DC  
Alabama / Mississippi Bays and Bayous Conference, Dec 2010, Mobile, AL  
IEEE Visualization 2010, Oct 2010, Salt Lake City, UT  
    Doctoral Colloquium Reviewer  
    Best Paper Committee  
AUVSI Unmanned Systems North America, Aug 2010  
NGI Annual Conference, May 18-20, 2010, Mobile, AL  
IEEE Virtual Reality 2010, March 2010, Boston, MA  
AUVSI System Review, Feb 2010, Washington, DC  
UAS TAAC 2009 Conference, Dec 8-10, 2009, Albuquerque, NM  
DoD Interactive Visualization Working Group, Nov 2-5, 2009, Suffolk, VA  
IEEE Oceans 2009, Oct 26-30, 2009, Biloxi, MS  
    session organizer and session chair  
    demonstrator  
IEEE Visualization 2009, Oct 12-16, 2009, Atlantic City, NJ  
DoD HPCMP User's Group Conference, June 2009, San Diego, CA  
NGI Annual Conference, May 19-21, 2009  
IEEE Virtual Reality 2009, March 14-18, 2009, Lafayette, LA  
SC2008, Nov 2008, Austin, TX  
IEEE Visualization 2008, Oct 2008, Columbus, OH  
    presented poster  
    keynote address at a workshop  
IEEE Oceans 2008, September 2008, Quebec City, Canada  
DoD HPCMP User's Group Conference, July 2008, Seattle, WA  
    attended  
NGI Annual Conference, May 13-14, 2008  
IEEE Virtual Reality 2008, March 7-13, 2008, Reno, NV  
IEEE Visualization 2007, Oct 28-Nov 1, 2007, Sacramento, CA  
    attended, participated in many meetings  
SIGGRAPH 2007, August 5-9, 2008, San Diego, CA  
    attended (Exhibits, Emerging Displays, Posters)  
IGARSS, July 22-27, 2007, Barcelona, Spain  
    presented poster  
Dagstuhl Seminar on Scientific Visualization, July 15-20, 2007, Schloss Dagstuhl, Germany  
    presenter  
DoD HPCMP User's Group Conference, June 18-22, 2007, Pittsburgh, PA  
    attended  
DoD HPCMP Large Data Workshop and IMT/FMS Colloquium, Mar 3-5, 2007, Los Angeles, CA  
    presenter  
AGU Annual Meeting, Dec 10-14, 2006, San Francisco, CA  
    presenter, session co-organizer, session co-chair  
SC2006, Nov 13-17, Tampa, FL  
NASA RPC Data Access Mini-Workshop, Greenbelt, MD  
    co-organized, co-hosted, presenter  
IEEE Visualization 2006, Oct 29-Nov 2, 2006, Baltimore, MD  
    attended, participated in many meetings  
IGARSS, July 30-Aug 1, 2006, Denver, CO  
DoD HPCMP User's Group Conference, June 26-29, 2006, Denver, CO  
DoE SciDAC, June 25-28, 2006, Denver, CO  
HPC Symposium 2006, Society for Modeling and Simulation International, April 3, 2006, Huntsville, AL  
    session chair  
CEI Viz06, Feb 22-23, 2006  
SC2005, Nov 12-17, 2005, Seattle, WA  
    demo in DoD HPCMP booth and MSU booth

IEEE Visualization 2005, Oct 24-28, 2005, Minneapolis, MN  
attended, participated in many meetings

DoD HPCMP User's Group Conference, June 27-30, 2005, Nashville, TN

NIH/NSF Spring 2005 Workshop on Visualization Research Challenges, May 2-3, 2005, Salt Lake City, UT

Applied Visualization Conference, April 28-29, 2005, Asheville, NC  
plenary speaker  
panelist

IEEE Visualization 2004, Oct 10-15, 2004, Austin, TX  
on 2 panels (National Initiative and Visualization Courses)  
attended several tutorials, symposia, and conference

NIH/NSF Fall 2004 Workshop on Visualization Research Challenges, September 22-23, 2004, Bethesda, MD  
chair

ACM SIGGRAPH '04, August 8-10, 2004, Los Angeles, CA  
attended courses and conference

DoD HPCMP User's Group Conference, June 7-10, 2004, Williamsburg, VA

Association of American Geographers 100th Annual Meeting, March 14-19, 2004, Philadelphia, PA.  
Presented paper

IEEE Visualization 2003, Oct 20-24, 2003, Seattle, WA  
paper chair  
attended several tutorials, symposia, and conference

On the Use of Commodity Clusters for Large-Scale Scientific Applications, July 22-23, 2003  
A symposium jointly sponsored by ARL, Raytheon and OSC in Tysons Corner, VA

DoD HPCMO User's Group Conference, June 9-13, 2003, Bellevue, WA

SC2002, Nov. 15-22, 2002, Baltimore, MD  
Boothmeister for booth "Research Universities in Mississippi"

IEEE Visualization 2002, Oct 26-Nov 1, 2002, Boston, MA  
paper chair  
attended several tutorials, symposia, and conference

ACM SIGGRAPH '02, July 22-27, 2002, San Antonio, TX  
attended courses and conference

DoD HPCMO User's Group Conference, June 10-13, 2002, Austin, TX  
session chair

IEEE Virtual Reality Conference, March 25-27, 2002, Orlando, FL  
attended IPT Symposium

SC2001, Nov. 12-14, 2001, Denver, CO

IEEE Visualization 2001, Oct 21-26, 2001, San Diego, CA  
session chair

ACM SIGGRAPH '01, August 11-17, 2001, Los Angeles, CA  
attended courses (efficient graphics software) and conference

NVIDIA-U, July 30-August 1, 2001, Austin, TX

DoD HPCMO User's Group Conference, June 18-21, 2001, Biloxi, MS

RCSIG, Ames, Iowa, May 9-10, 2001  
invited speaker/panelist

SC2000, Nov. 6-10, 2000, Dallas, TX

IEEE Visualization 2000, Oct 7-13, 2000, Salt Lake City, Utah  
session chair  
attended tutorial on *Multiresolution Techniques for Surfaces and Volume*

ACM SIGGRAPH '00, July 24-28, 2000, New Orleans, LA  
attended courses on LOD and VR and conference

IPT 2000, June 18-20, 2000, Ames, Iowa

SC99, Nov. 15-18, 1999, Portland, OR

IEEE Visualization '99, Oct 24-29, 1999, San Francisco, CA  
session chair  
attended tutorial on Environmental Visualization

ACM SIGGRAPH '99, Aug. 8-13, 1999, Los Angeles, CA  
attended courses (Intro to OpenGL and Large Scale Visualization) and conference  
Autometric Edge Training, May 17-21, 1999, ERC, Mississippi State University  
hosted the weeklong training and took the course  
IEEE Data Compression Conference, March 29-31, 1999, Snowbird, UT  
presented poster  
IEEE Virtual Reality Conference (VR99), March 14-17, 1999, Houston, TX  
SC98, Nov. 9-13, 1998, Orlando, FL  
demonstrator  
IEEE Visualization '98, Oct 17-23, 1998, RTP, NC  
Conference Chair  
session chair  
taught a tutorial  
attended workshop on *Multi-Resolution Representation of 3D Geometry for Progressive Transmission*  
ACM SIGGRAPH '98, July 19-24, 1998, Orlando, FL  
attended courses on virtual environments and conference  
ASPRS, Apr. 1-3, 1998, Tampa, FL  
SC97, Nov. 18-21, 1997, San Jose, CA  
demonstrator  
IEEE Visualization '97, Oct 18-25, 1997, Phoenix, AZ  
Conference Chair  
presented a paper  
taught a tutorial  
ACM SIGGRAPH '97, Aug 3-9, 1997, Los Angeles, CA  
attended conference  
attended course on *Principles of Visual Perception and Its Applications in Computer Graphics*  
SPIE/IS&T Symposium on Electronic Imaging Science and Technology, Feb. 9-14, 1997, San Jose, CA  
SuperComputing '96  
demonstration in DoD HPCMO booth  
demonstration in MSU booth  
IEEE Visualization '96  
Program Chair  
ACM SIGGRAPH '96  
demonstrator in Naval Oceanographics Office booth  
SuperComputing '95  
Entry #33 (Ocean Model Visualization) in IWAY/GII Testbed  
technical coordinator in MSU research demonstration booth  
4th SIAM Conference on Geometric Design, Nov. 6-9, 1995  
presented invited paper in minisymposium  
IEEE Visualization '95, Oct. 29-Nov. 3, 1995  
publicity chair  
session chair  
MTS/IEEE Oceans '95  
session chair/organizer  
LaRC/ICASE Symposium on Visualizing Time-Varying Data, Sept 19-20, 1995  
session chair  
ACM SIGGRAPH '95, August 6-11, 1995  
IEEE Southeastern Symposium on System Theory, March 1995  
session chair  
SPIE/IS&T Symposium on Electronic Imaging Science and Technology, Feb. 5-10, 1995  
IEEE International Conference on Image Processing, Nov. 13-16, 1994  
presented paper  
IEEE Visualization '94, Oct. 17-21, 1994  
presented paper  
academic demonstrator

ACM SIGGRAPH '94, July 24-29, 1994  
attended conference and 2 short courses  
*Programming Open Inventor*  
*The Science of Digital Color*

SPIE/IS&T Symposium on Electronic Imaging Science and Technology, Feb. 6-10, 1994  
presented paper  
taught one short course  
*Introduction to Scientific Visualization*  
conference chair for *Visual Data Exploration and Analysis*

IEEE Visualization '93, Oct. 25-29, 1993  
presented paper  
attended 2 short courses  
*Visualization of Vector and Tensor Fields*  
*Vector Field Topology*

ACM SIGGRAPH '93  
attended conference and 3 short courses  
*The OpenGL Graphics Interface*  
*Volume Visualization*  
*Visualizing Planet Earth*

Navy Scientific Visualization and Virtual Reality Seminar, June 20, 1993  
presented paper

SPIE/IS&T Symposium on Electronic Imaging Science and Technology, Jan. 31-Feb. 4, 1993  
attended two short courses  
*Colorimetry and Color Perception*  
*Device Independent Color*  
session chair

IEEE Visualization '92, Oct. 20-23, 1992

IEEE Workshop on Visual Signal Processing and Communications, Sept. 2-3, 1992  
presented paper  
program committee  
session chair

NASA/SSC Symposium on Research Opportunities, August 6, 1992

ACM SIGGRAPH '92  
attended conference and 2 short courses  
*OpenGL Tutorial*  
*Distributed Scientific Visualization*

InterOp 92  
attended conference and 2 short courses  
*Introduction to the X Window System*  
*Introduction to the X Toolkits*

IEEE Southeastcon (April 13-14, 1992)  
session chair

IEEE Data Compression Conference, March 23-27, 1992

SPIE/IS&T Symposium on Electronic Imaging Science and Technology, Feb. 9-14, 1992  
presented paper in *Visual Data Interpretation* conference

NSF Fellowship to attend Data Visualization Workshop at National Center for Supercomputing Applications, June 3-14, 1991

ACM SIGGRAPH '91  
attended conference and 2 short courses:  
*State of the Art in Volume Visualization*  
*Technical Evaluation of 3D Graphics Workstations*

IEEE Data Compression Conference, April 5-11, 1991

SPIE/IS&T Symposium on Electronic Imaging Science and Technology, Feb. 24-March 1, 1991  
conference chair for *Image Processing Algorithms and Techniques*

ACM SIGGRAPH '90  
attended conference and 2 short courses:

*Parallel Algorithms and Architectures for 3D Image Generation*  
*Volume Visualization Algorithms and Architectures*  
 NASA/Stanford Scientific Visualization Workshop, June 11-13, 1990  
 Texas Instruments Workshop on TMS34010 GSP Design, May 8-11, 1990  
 International Symposium on Circuits and Systems, May 1-3, 1990  
 National Association Broadcasters, March 31-April 1, 1990  
 SPIE/SPSE Electronic Imaging Symposium, Feb. 11-16, 1990  
     conference chair for *Image Processing Algorithms and Techniques*  
     presented paper in *Image Processing Algorithms and Techniques*  
     attended 3 short courses  
         *Mathematics and Algorithms for Splines*  
         *Models of Human Vision*  
         *Analysis of Sampling, Scanning, Printing, and Display Subsystems*  
 NASA Proportional Conference on Data Analysis NRA, Jan. 23, 1990  
 National Communications Forum, Oct. 1-3, 1989  
 ACM SIGGRAPH '89  
     attended conference and 2 short courses:  
         *Parallel Processing & Advanced Architectures in Computer Graphics*  
         *2D and 3D Visual Workshop*  
 SPIE Aerospace Sensing Symposium '89, March 1989  
     presented paper in *Advances in Image Compression and Automatic Target Recognition* conference  
 SPIE OE/LASE '89, January 1989  
     presented paper in *Digital Image Processing Applications* conference  
 ISCAS '88  
     presented paper  
 ICASSP '88  
     attended  
 ICASSP '87  
     attended  
 Electronic Imaging '86, Nov. 3-6, 1986  
     attended  
 GLOBECOM '85  
     attended  
 ICASSP '85  
     presented paper  
 IEEE Computer Society Workshop on CAPAIDM (1983)

### **Extracurricular Activities**

Starkville Soccer Association  
     Treasurer, 2002-2005  
     Referee, 1998-2003, 2008-present  
     Coach, E license, 1992-present  
 Boy Scouts of America, Troop 27  
     Troop Committee Chair, 2007-present  
     Assistant Scout Master, 2006-present  
 St. Joseph's Catholic Church, Starkville  
     CCD Teacher, 7<sup>th</sup>-8<sup>th</sup> grade, 2001-2002  
 First Baptist Church, Starkville  
     Sunday School Teacher, 1989-1998, 2004-2010, various classes (adult, 4<sup>th</sup> grade, 5<sup>th</sup> grade, university)

### **Miscellaneous**

Consultant, Desert Research Institute, 2008-2009  
 Author, EE 2111 (Digital Devices Lab) Lab Manual, 4th edition, January 1994.  
 Consultant, USACE Waterways Experiment Station, 1991-1992.

Home Address: 1106 Yorkshire  
Starkville, MS 39759  
(662) 323-1838

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