Klaus Mueller

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EDUCATION

- **The Ohio State University**, Columbus, OH
  PhD in Computer and Information Science, 1998
  Advisor: Prof. Roni Yagel; Thesis: Fast and Accurate Three-Dimensional Reconstruction from Cone-Beam Projection Data Using Algebraic Methods
- **The Ohio State University**, Columbus, OH
  MS in Computer and Information Science, 1996
- **The Ohio State University**, Columbus, OH
  MS in Biomedical Engineering, 1990
- **Polytechnic University of Ulm**, Ulm, Germany
  BS in Electrical Engineering, 1987

AREAS OF EXPERTISE

- **Visualization**: visual analytics, volume rendering, computer graphics, graphics hardware
- **Medical imaging**: computed tomography, iterative CT
- **Image processing**: image analysis, image segmentation, computer vision
- **Artificial intelligence**: knowledge-based systems, machine learning
- **High performance computing**: parallel algorithms and hardware, GPU acceleration
- **Human-computer interaction:** visual perception, user studies
- **Face recognition**: dynamic facial expression analysis

EMPLOYMENT

- **Stony Brook University**, Stony Brook, NY
  Associate Professor, Computer Science, 2005 - present
- **Stony Brook University**, Stony Brook, NY
  Associate Professor, Biomedical Engineering, 2005 - present
- **Stony Brook University**, Stony Brook, NY
  Associate Professor, Radiology, 2005 - present
- **Stony Brook University**, Stony Brook, NY
  Assistant Professor, Computer Science, Biomedical Engineering, Radiology, 1999 - 2005
- **Brookhaven National Laboratory**, Upton, NY
  Adjunct Scientist, Computational Science Center, 1999 – present
- **The Ohio State University**, Columbus, OH
  Post-Doctoral Fellow, Computer Science, 1998 - 1999
- **Silicon Graphics Biomedical**, Jerusalem, Israel

Visiting Research Scientist, 11/1997 - 1/1998

- ◇ **The Ohio State University**, Columbus, OH
  Research Associate, Pediatrics, 1996 - 1998
- ◇ **Cleveland Clinics**, Cleveland, OH
  Research Associate, Biomedical Engineering, 1993 - 1995
- ◇ **The Ohio State University**, Columbus, OH
  Research Associate, Laboratory of Vascular Diseases, 1988 - 1993
- ◇ **Bopp+Reuter**, Mannheim, Germany
  Development Engineer, 1987 - 1988
- ◇ **Medical Devices Inc.**, Minneapolis, MN
  Development Engineer, 1984
- ◇ **Mercedes Benz**, Sindelfingen, Germany,
  Engineering Intern, 1981 - 1982

HONORS AND AWARDS

- ◇ **Best Paper Award**, Workshop on High Performance Image Reconstruction, with graduate students Eric Papenhausen and Ziyi Zheng, 2011
- ◇ **SUNY Chancellor Award** for Excellence in Scholarship and Creative Activity, 2011
- ◇ **Stony Brook University Undergraduate College Faculty Fellow**, awarded by the Office of the Provost, 2009
- ◇ **Best Paper Award**, Workshop on High Performance Image Reconstruction, with graduate student Wei Xu, 2009
- ◇ **State University of New York Promising Inventor Award**, 2004
- ◇ **Annual Teaching Award** for Excellence in Graduate Teaching and Education, Computer Science Department, Stony Brook University, 2002
- ◇ **Long Island Software Award**, for BrainMiner package, with graduate student Tom Welsh, 2001
- ◇ **NSF Early CAREER Award**, 2000
- ◇ **Best Hot Topic Award**, IEEE Visualization Conference, 1999
- ◇ **Notable Achievement Award**, Navy, 1999
- ◇ **Honorary Mention**, poster competition, SPIE Medical Imaging, 1998.
- ◇ **Best Paper Award**, IEEE Visualization Conference, 1997
- ◇ **Honorary Mention,** Annual Conference of Engineering, The Ohio State University, 1994, 1996
- ◇ **Cray Optimization Award**, Cray Research Inc. / Ohio Supercomputer Center, 1992
- ◇ **Best Paper Award**, Annual Conference of Engineering, The Ohio State University, 1991

NUMBERS

- ◇ **h-index:** 31 (as of June 2011)
- ◇ **Erdös number:** 3 (P. Erdös → F. Chung → S.-T. Yau → K. Mueller)

PUBLICATIONS

- ◇ **Books**

  1. *Volume Graphics 2005* (co-edited with Eduard Gröller, Issei Fujishiro, and Thomas Ertl), VGTC IEEE and EG Press
  2. *Volume Graphics 2003* (co-edited with Issei Fujishiro and Ari Kaufman), ACM Press

3. *Symposium on Volume Visualization and Graphics 2002* (co-edited with Chris Johnson), ACM Press

4. *Volume Graphics 2001* (co-edited with Ari Kaufman), Springer Verlag

5. *Fast and Accurate Three-Dimensional Reconstruction from Cone-Beam Projection Data Using Algebraic Methods*, Dissertation (advisor: Roni Yagel), The Ohio State University, Computer Science Department, 1998.

◇ **Book Chapters**

1. J. Giesen, K. Mueller, B. Taneva, and P. Zolliker, "Choice-Based Conjoint Analysis: Classification vs. Discrete Choice Models," *Preference Learning*, J. Fürnkranz and E. Hüllermeier, editors, pp. 297-316, Springer Verlag, 2010.

2. K. Mueller and A. Kaufman, "Volume Visualization in Medicine," *Handbook of Medical Image Processing and Analysis*, I. Bankman, editor, pp. 785-816, Elsevier, 2008.

3. W. Hong, N. Neophytou, K. Mueller and A. Kaufman, "Constructing 3D elliptical Gaussians for irregular data," *Mathematical Foundations of Scientific Visualization, Computer Graphics, and Massive Data Exploration*, Torsten Möller, editor, pp. 213-225, Springer Verlag, 2006.

4. K. Mueller, S. Lakare, and A. Kaufman, "Volume exploration made easy using feature maps," *Scientific Visualization: Extracting Information and Knowledge from Scientific Data*, G. Bonneau, T. Ertl, G. Nielson, editors, pp. 131-148, Springer Verlag, 2006.

5. A. Kaufman and K. Mueller, "Overview of Volume Rendering", *The Visualization Handbook*, C. Johnson and C. Hansen, editors, pp. 127-174, Academic Press, 2004.

6. A. Kaufman and K. Mueller, "Volume Visualization", *The Computer Science and Engineering Handbook,* 2nd edition, A. Tucker, editor, pp. 41.1-41.31, CRC Press, 2004.

◇ **Journals**

1. Z. Zheng, N. Ahmed, K. Mueller, "iView: Feature Clustering Framework for Suggesting Informative Views in Volume Visualization," (to appear), *IEEE Transactions on Visualization and Computer Graphics,* November 2011.

2. K. Mueller, S. Garg J. Nam, T. Berg, K. McDonnell, "Can Computers Master the Art of Communication? An Excursion with a Focus on Visual Analytics," *IEEE Computer Graphics & Applications,* 3(13):14-21, 2011

3. Z. Zheng, W. Xu, K. Mueller, "VDVR: Verifiable Volume Visualization of Projection-Based Data," *IEEE Transactions on Visualization and Computer Graphics*, 16(6): 1515–1524, 2010.

4. W. Xu, F. Xu, M. Jones, B. Keszthelyi, J. Sedat, D. Agard, K. Mueller, "High-Performance Iterative Electron Tomography Reconstruction with Long-Object Compensation using Graphics Processing Units (GPUs)," *Journal of Structural Biology*, 171(2):142-153, 2010.

5. S. Li, M. Jackowski, T. Varslot, D. Dione, L. Staib, K. Mueller, "Refraction Corrected Transmission Ultrasound Computed Tomography for Application in Breast Imaging," *Medical Physics,* 37(5):2233-2246, 2010.

6. F. Xu, W. Xu, M. Jones, B. Keszthelyi, J. Sedat, D. Agard, K. Mueller, "On the Efficiency of Iterative Ordered Subset Reconstruction Algorithms for Acceleration on GPUs," *Computer Methods and Programs in Biomedicine*, 98(3):261-270, 2010.

7. C. Men, X. Gu, D. Choi, A. Majundar. Z. Zheng, K. Mueller, S. Jiang, "GPU-based ultrafast IMRT plan optimization," *Physics in Medicine and Biology,* 54:6565-6573, 2009.

8. K. Petkov, F. Qiu, Z. Fan, A. Kaufman, K. Mueller, "Efficient LBM Visual Simulation on Face-Centered Cubic Lattices," *IEEE Transactions on Visualization and Computer Graphics*, 15(5): 802-814, 2009.

9. J. Nam, M. Maurer, K. Mueller, "A High-Dimensional Feature Clustering Approach to Support Knowledge-Assisted Visualization," *Computers & Graphics*, 33(5):607-615, 2009.

10. N. Volkow, Y. Ma, W. Zhu, J. Fowler, J. Li, M. Rao, K. Mueller, K, Pradhan, C. Wong, G.-J. Wang, "Moderate Doses of Alcohol Disrupt the Functional Organization of the Human Brain," *Psychiatric Research Neuroimaging*, 162(3):205-213, 2008.

11. L. Wang, J. Giesen, K. McDonnell, P. Zolliker, K. Mueller, "Color Design for Illustrative Visualization," *IEEE Transactions on Visualization and Computer Graphics*, 14(6):1739-1754, 2008.

12. A. Zelenyuk, D. Imre, E. Nam, Y. Han, K. Mueller, "ClusterSculptor: Software for Expert-Steered Classification of Single Particle Mass Spectra," *International Journal of Mass Spectrometry*, 275(1-3):1-10, 2008.

13. K. McDonnell and K. Mueller, "Illustrative Parallel Coordinates," *Computer Graphics Forum*, 27(3):1031-1038, 2008.

14. N. Neophytou and K, Mueller, "Color-Space CAD: Direct Gamut Editing in 3D*," IEEE Computer Graphics & Applications*, 28(3):88-98, 2008.

15. F. Qiu, F. Xu, Z. Fan, N. Neophytou, A. Kaufman, and K. Mueller, "Lattice-based volumetric global illumination," *IEEE Transactions on Visualization and Computer Graphics,* 13(6):1576-1583, 2007.

16. J. Giesen, K. Mueller, E. Schuberth, L. Wang, and P. Zolliker, "Conjoint analysis to measure the perceived quality in volume rendering," *IEEE Transactions on Visualization and Computer Graphics,*13(6): 1664-1671, 2007.

17. F. Xu and K. Mueller, "Real-Time 3D Computed Tomographic Reconstruction Using Commodity Graphics Hardware*," Physics in Medicine and Biology*, 52:3405–3419, 2007.

18. Y. Zhao, Y. Han, Z. Fan, F. Qiu, Y.-C. Kuo, A. Kaufman, and K. Mueller, "Visual simulation of heat shimmering and mirage," *IEEE Transactions on Visualization and Computer Graphics*, 13(1):179-189, 2007.

19. A. Zelenyuk, D. Imre, Y. Cai, K. Mueller, Y. Han, and P. Imrich, "SpectraMiner, an Interactive Data Mining and Visualization Software for Single Particle Mass Spectroscopy: A Laboratory Test Case," *International Journal of Mass Spectrometry*, 258:58-73, 2006.

20. Y. Zhao, L. Wang, F. Qiu, A. Kaufman, and K. Mueller, "Melting and Flowing in Multiphase Environment," *Computers & Graphics*, 30(4):519-528, 2006.

21. L. Wang, X. Gu, K. Mueller, and S.-T. Yau, "Uniform texture synthesis and texture mapping using global parameterization," *Visual Computer*, 21(8):801-810, 2005.

22. F. Xu and K. Mueller, "Accelerating popular tomographic reconstruction algorithms on commodity PC graphics hardware," *IEEE Transactions on Nuclear Science*, 52(3):654-663, 2005.

23. R. Schulte, V. Bashkirov, T. Li, Z. Liang, K. Mueller, et al., "Conceptual design of a proton computed tomography system for applications in proton radiation therapy," *IEEE Transactions on Nuclear Science,* 51(3):866-872, 2004.

24. X. Wei, W. Li, K. Mueller, and A. Kaufman, "The Lattice-Boltzmann method for gaseous phenomena," *IEEE Transactions on Visualization and Computer Graphics*, 10(2):164-176, 2004.

25. K. Sidhu, E. Ford. S. Spirou, E. Yorke, J. Chang, K. Mueller, D. Todor, K. Rosenzweig, G. Mageras, C.Chui, C. Ling, H. Amols. "Optimization of conformal thoracic radiotherapy using cone-beam CT imaging for treatment verification," *International Journal of Radiation Oncology, Biology, Physics*, 55(3):757-67, 2003.

26. E. Ford, J. Chang, K. Mueller, K. Sidhu, D. Todor, G. Mageras, E. Yorke, C. Ling, H. Amols, "Cone-beam CT with megavoltage beams and an amorphous silicon electronic portal imaging device: potential for verification of radiotherapy of lung cancer," *Medical Physics*, 29(12): 2913-2924, 2002.

27. N. Volkow, W. Zhu, C. Felder, K. Mueller, T. Welsh, G.-J. Wang, and M. de Leon, "Changes in brain-functional homogeneity in subjects with Alzheimer's disease," *Journal of Psychiatry Research: Neuroimaging,* 114(1):39-50, 2002.

28. T. Welsh, M. Ashikhmin, and K. Mueller, "Transferring color to greyscale images," *ACM Transactions on Graphics*, 21(3):277-280, 2002.

29. K. Mueller and R. Yagel, "Rapid 3D cone-beam reconstruction with the Algebraic Reconstruction Technique (ART) by using texture mapping hardware," *IEEE Transactions on Medical Imaging,* 19(12):1227-1237, 2000.

30. K. Mueller, R. Yagel, and J. Wheller, "Anti-aliased 3D cone-beam reconstruction of low-contrast objects with algebraic methods," *IEEE Transactions on Medical Imaging*, 18(6):519-537, 1999.

31. K. Mueller, R. Yagel, and J. Wheller, "Fast implementations of algebraic methods for the 3D reconstruction from cone-beam data," *IEEE Transactions on Medical Imaging*, 18(6):538-547, 1999.

32. K. Mueller, N. Shareef, J. Huang, and R. Crawfis, "High-quality splatting on rectilinear grids with efficient culling of occluded voxels," *IEEE Transactions on Visualization and Computer Graphics*, 5(2):116-134, 1999.

33. R. Seidler, K. Mueller, W.R. Kraft, T. Nakajama, and R. Hamlin, "Influence of Sotanol on the time constant of isovolumetric ventricular relaxation in anesthesized dogs," *The American Journal of Veterinary Research*, 60(6):717-721, 1999.

34. K. Mueller, T. Moeller, J.E. Swan, R. Crawfis, N. Shareef, and R. Yagel, "Splatting errors and antialiasing, " *IEEE Transactions on Visualization and Computer Graphics*, 4(2):178-191, 1998. (won Naval Notable Achievement Award)

35. T. Moeller, R. Machiraju, K. Mueller, and R. Yagel, "Evaluation and Design of Filters Using a Taylor Series Expansion," *IEEE Transactions on Visualization and Computer Graphics*, 3(2):184-199, 1997.

36. K. Mueller, R. Yagel, and J.F. Cornhill, "The weighted distance scheme: a globally optimizing projection ordering method for the Algebraic Reconstruction Technique (ART)," *IEEE Transactions on Medical Imaging,* 16(2):223-230, 1997.

37. K. Powell, N. Obuchowski, K. Mueller, C. Hwang, J. Hirsch, S. Nissen, and J.F. Cornhill, "Quantitative detection and classification of single-leg fractures in the outlet struts of Bjork-Shiley convexo-concave heart valves," *Circulation*, 94(12):3251-3265, 1996.

38. K. Mueller, E.L. LaPresto, K.A. Powell, J.L. Hirsch, and J.F. Cornhill, "A medical workstation for the display and analysis of multi-frame digital cineradiographic data," *Computers in Biology and Medicine,* 26(5):385-400, 1996.

◇ **Conferences and Symposia – Oral Presentations**

1. S. Garg, K. Padalkar, K. Mueller, "Magic Marker: A Color Analytics Interface for Image Annotation, (to be presented*), International Symposium on Visual Computing*, Springer Lecture Notes, Las Vegas, NV, September 2011.

2. S. Garg, T. Berg, K. Mueller, "Iconizer: A Framework to Identify and Create Effective Representations for Visual Information Encoding," *International Symposium on Smart Graphics*, Springer Lecture Notes CS 6815, pp. 78-90, Bremen, Germany, July 2011.

3. W. Xu, K. Mueller, "A Reference Image Database Approach for NLM Filter-Regularized CT Reconstruction," *Fully 3D Image Reconstruction in Radiology and Nuclear Medicine*, Potsdam, Germany, pp. 78-90, July, 2011.

4. S. Garg, IV Ramakrishnan, K. Mueller, "A Visual Analytics Approach to Model Learning," *IEEE Conference on Visual Analytics Science and Technology (VAST)*, pp. 67-74, Salt Lake City, October, 2010.

5. W. Xu, K. Mueller, "Learning Effective Parameter Settings for Iterative CT Reconstruction Algorithms," *Fully 3D Image Reconstruction in Radiology and Nuclear Medicine*, pp. 251-255, Beijing, China, September, 2009.

6. W. Xu, K. Mueller, "Accelerating Regularized Iterative CT Reconstruction on Commodity Graphics Hardware (GPU)," *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1287-1290, Boston, MA, July 2009.

7. F. Qiu, B. Zhang, K. Petkov, L. Chong, A. Kaufman, K. Mueller, X. Gu, "The immersive cabin," *International Symposium on Visual Computing*, Springer Lecture Notes CS 5358, pp. 891-900, Las Vegas, NV, December 2008.

8. L. Wang, K. Mueller, "Harmonic Colormaps for Volume Visualization," *Volume Graphics Symposium*, pp. 33-40, Los Angeles, August 2008.

9. S. Garg, E. Nam, IV. Ramakrishnan, K. Mueller, "Model-Driven Visual Analytics*," IEEE Symposium on Visual Analytics Science and Technology (VAST),* pp. 19-26, Columbus, OH, October 2008.

10. S. Li, K. Mueller, M. Jackowski, D. Dione, L. Staib, "Physical-Space Refraction-Corrected Transmission Ultrasound Computed Tomography Made Computationally Practical," *MICCAI*, Springer Lecture Notes CS 5242, pp. 280-288, New York, September 2008.

11. F. Xu and K. Mueller, "Applications of optimal sampling lattices for volume acquisition via 3D computed tomography," *IEEE/EG Volume Graphics Symposium*, pp. 57-63, Prague, Czech Republic, September 2007.

12. E. Nam, Y. Han, K. Mueller, A. Zelenyuk, and D. Imre, "ClusterSculptor: A Visual Analytics tool for high-dimensional data," *IEEE Symposium on Visual Analytics Science and Technology (VAST),* pp. 75-82, Columbus, OH, November 2007.

13. K. McDonnell, N. Neophytou, K. Mueller and H. Qin, "Subdivision Splatting," *Eurographics/ IEEE-VGTC Symposium on Visualization (Eurovis)*, pp. 139-146, Norrkoeping, Sweden, June 2007.

14. K. Mueller, F. Xu, and N. Neophytou, "Why do GPUs work so well for acceleration of CT?" *SPIE Electronic Imaging (Computational Imaging V)*, Proc. SPIE 6498, San Jose, January 2007.

15. H.Wong, H. Qu, U. Wong, Z. Tang, K. Mueller, "A perceptual framework for comparisons of direct volume rendered images," *IEEE Pacific-Rim Symposium on Image and Video Technology,* Springer Lecture Notes CS 4319, pp. 1314-1323, Hsinchu, Taiwan, December 2006.

16. K. Mueller and F. Xu, "Practical considerations for GPU-accelerated CT," *IEEE 2006 International Symposium on Biomedical Imaging (ISBI)*, pp. 1184-1187, Arlington, VA, April 2006.

17. S. Brennan, K. Mueller, G. Zelinsky, IV Ramakrishnan, D. Warren, and A. Kaufman, "Toward a Multi-Analyst, Collaborative Framework for Visual Analytics," *IEEE Symposium on Visual Analytics Science and Technology (VAST),* pp. 129-136, Baltimore, MD, October 2006.

18. S. Li, Z. Fan, X. Yin, K. Mueller, A. Kaufman, and X. Gu, "Geometry Field for Accurate Real-time Reflection," *Eurographics*, (short paper), pp. 29-32, Vienna, Austria, September 2006.

19. N. Neophytou, K. Mueller, K. McDonnell, W. Hong, X. Guan, H. Qin, and A. Kaufman, "GPU-accelerated volume splatting with elliptical RBFs," *Joint Eurographics - IEEE TCVG Symposium on Visualization (EuroVis)*, pp. 13-20, Lisbon, Portugal, May 2006.

20. L. Wang, Y. Zhao, K. Mueller, and A. Kaufman, "The magic volume lens: An interactive focus+context technique for volume rendering," *IEEE Visualization*, pp. 367-374, Minneapolis, MN, October 2005.

21. S. Pamudurthy, E Guan, K. Mueller, M. Rafailovich, "Dynamic Approach for Face Recognition using Digital Image Skin Correlation," *Audio- and Video-based Biometric Person Authentication Conference*, Springer Lecture Notes CS 2091, pp. 1010-1018, New York, July 2005.

22. S. Li and K. Mueller, "Spline-based gradient filters for high-quality refraction computations in discrete datasets," *Eurographics/IEEE-VGTC Symposium on Visualization*, pp. 217-222, Leeds, England, June 2005.

23. L. Wang and K. Mueller, "Enhancing volumetric datasets with sub-resolution detail using texture synthesis," *IEEE Visualization*, pp. 75-82, Austin, TX, October 2004.

24. F. Qiu, Y. Zhao, Z. Fan, X. Wei, H. Lorenz, J. Wang, S. Yoakum-Stover, A. Kaufman, and K. Mueller, "Accelerated dispersion simulation for urban security," *IEEE Visualization*, pp. 553-560, Austin, TX, October 2004.

25. A. Li and K. Mueller, "Methods for efficient, high quality volume resampling in the frequency domain," *IEEE Visualization*, pp. 3-10, Austin, TX, October 2004

26. H. Qu, R. Shao, N. Zhang, A. Kaufman, and K. Mueller, "Feature preserving distance fields," *IEEE/ACM SIGGRAPH Symposium on Volume Visualization and Graphics*, pp. 39-46, Austin, October 2004.

27. X. Guan and K. Mueller, "Point-based surface rendering with motion blur," *IEEE/Eurographics Symposium on Point-Based Graphics,* pp. 33-40, Zurich, Switzerland, June 2004.

28. F. Xu and K. Mueller, "Ultra-fast filtered backprojection on commodity graphics hardware", *IEEE International Symposium on Biomedical Imaging (ISBI),* Arlington, VA, April 2004.

29. T. Welsh and K. Mueller, "A frequency-sensitive point hierarchy for images and volumes," *IEEE Visualization*, pp. 425-432, Seattle, WA, October 2003.

30. W. Li, K. Mueller, and A. Kaufman, "Empty-space skipping and occlusion clipping for texture-based volume rendering," IEEE *Visualization*, pp. 317-325, Seattle, WA, October 2003.

A. Gosh, P. Prabhu, A. Kaufman, and K. Mueller, "Hardware-assisted multi-channel volume rendering," *Computer Graphics International*, pp. 2-7, Tokyo, Japan, July 2003.

31. V. Srivastava, U. Chebrolu, and K. Mueller, "Interactive transfer function modification for volume rendering using compressed sample runs," *Computer Graphics International*, Tokyo, Japan, pp. 8-13, July 2003.

32. N. Neophytou and K. Mueller, "Post-convolved splatting," *Eurographics/IEEE TCVG Symposium on Visualization*, pp. 223-230, Grenoble, France, May 2003.

33. N. Neophytou and K. Mueller, "Space-time points: 4D Splatting on efficient grids," *Symposium on Volume Visualization and Graphics*, pp. 97-106, Boston, MA, October 2002.

34. X. Wei, W. Li, K . Mueller, and A. Kaufman, "Simulating fire with texture splats," *IEEE Visualization*, pp. 227-234, Boston, MA, October 2002.

35. J. Sweeney and K. Mueller, "Shear-Warp Deluxe: The Shear-Warp algorithm revisited," *Eurographics/IEEE TCVG Symposium on Visualization*, pp. 95-104, Vienna, Austria, May 2002.

36. T. Welsh, K. Mueller, W. Zhu, N. Volkow, J. Meade, "Graphical Strategies to Convey Functional Relationships in the Human Brain: A Case Study", *IEEE Visualization*, pp. 481-485, San Diego, October 2001.

37. M. Meissner, J. Huang, D. Bartz, K. Mueller, R. Crawfis, "A practical comparison of popular volume rendering algorithms," *IEEE Symposium on Volume Visualization*, pp. 81-90, Salt-Lake City, October 2000.

38. F. Dachille, K. Mueller, Ari Kaufman, "Volumetric backprojection," *IEEE Symposium on Volume Visualization*, pp. 109-117, Salt-Lake City, October 2000.

39. J. Huang, K. Mueller, N. Shareef, R. Crawfis, "FastSplats: Optimized Splatting on rectilinear grids," *IEEE Visualization*, pp. 219-227, Salt-Lake City, October 2000.

40. K. Mueller, T. Moeller, and R. Crawfis, "Splatting without the blur," *IEEE Visualization*, pp. 363-371, San Francisco, October 1999.

41. K. Mueller and R. Crawfis, "Eliminating Popping Artifacts in Sheet Buffer-Based Splatting," *IEEE Visualization*, pp. 239-245, Chapel Hill, NC, October 1998.

42. T. Moeller, K. Mueller, Y. Kurzion, R. Machiraju, and R. Yagel, "Design of accurate and smooth filters for function and derivative reconstruction" *IEEE Symposium on Volume Visualization*, pp. 143-151, Chapel Hill, NC, October 1998.

43. T. Moeller, R. Machiraju, K. Mueller, and R. Yagel, "A comparison of normal estimation schemes," *IEEE Visualization*, pp. 19-26, Phoenix, AZ, October 1997.

44. J.E. Swan, K. Mueller, T. Moeller, N. Shareef, R. Crawfis, and R. Yagel, "An anti-aliasing technique for splatting," *IEEE Visualization*, pp. 197-204, Phoenix, AZ, October 1997. (won Best Paper Award)

45. K. Mueller and R. Yagel, "Fast perspective volume rendering with splatting by using a ray-driven approach," *IEEE Visualization*, pp. 65-72, San Francisco, CA, October 1996.

46. T. Moeller, R. Machiraju, K. Mueller, and Roni Yagel, "Classification and local error estimation of interpolation and derivative filters for volume rendering," *IEEE Symposium on Volume Visualization*, pp. 71-78, San Francisco, CA, October 1996.

◇ **Conferences and Symposia – Poster Presentations**

1. Z. Zheng, K. Mueller, "Identifying Sets of Favorable Projections for Few-View Low-Dose Cone-Beam CT Scanning," Fully 3D Image Reconstruction in Radiology and Nuclear Medicine, pp. 314-317, Potsdam, Germany, July 2011.

2. W. Xu, K. Mueller, "Evaluating Popular Non-Linear Image Processing Filters for their Use in Regularized Iterative CT," *IEEE Medical Imaging Conference*, pp. 2864-2865, Knoxville, TN, October, 2010.

3. Z. Zheng, K. Mueller, "A Cache-Aware GPU Memory Scheduling Scheme for CT Reconstruction Back-Projection," *IEEE Medical Imaging Conference,* pp. 2248-2251, Knoxville, TN, October, 2010.

4. S. Ha, Z. Zhang, S. Matej, K. Mueller, "Efficiently GPU-Accelerating Long Kernel Convolutions in 3-D DIRECT TOF PET Reconstruction via a Kernel Decomposition Scheme," *IEEE Medical Imaging Conference*, pp. 2866-2867, Knoxville, TN, October, 2010.

5. Z. Zheng and K. Mueller, "Reconstruction and Visualization of Model-based Volume Representations," *SPIE Medical Imaging,* Proc. SPIE 7625, San Diego, February 2010.

6. W. Xu and K. Mueller, "Parameter Space Visualizer: an Interactive Parameter Selection Interface for Iterative CT Reconstruction Algorithms," *SPIE Medical Imaging*, Proc. SPIE 7625, San Diego, February 2010.

7. F. Xu and K. Mueller, "Optimal Sampling Lattices for High-Fidelity CT Reconstruction," *IEEE Medical Imaging Conference*, pp. 3048-3052, Orlando, FL, October, 2009.

8. N. Neophytou, F. Xu, and K. Mueller, "Hardware acceleration vs. algorithmic acceleration: Can GPU-based processing beat complexity optimization for CT?" *SPIE Medical Imaging Conference*, San Diego, February 2007.

9. F. Xu and K. Mueller, "A comparative study of popular interpolation and integration methods for use in computed tomography," *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1252-1255, Arlington, VA, April 2006.

10. S. Li, K. Mueller, M. Jackowski, D. Dione, L. Staib, "Fast Marching Method to correct for refraction in ultrasound computed tomography," *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 896-899, Arlington, VA, April 2006.

11. F. Xu and K. Mueller, "Towards a Unified Framework for Rapid Computed Tomography on Commodity GPUs", *IEEE Medical Imaging Conference*, pp. 2757-2759, Portland, OR, October 2003.

12. K. Mueller, Z. Liang, T. Li, F. Xu, et al., "Reconstruction for Proton Computed Tomography: A Practical Approach," *IEEE Medical Imaging Conference,* pp. 3223-3225, Portland, OR, October 2003.

13. R. Schulte, V. Bashkirov, T. Li, J. Liang, K. Mueller, et al., "Design of a Proton Computed Tomography System for Applications in Proton Radiation Therapy," *IEEE Medical Imaging Conference*, pp. 866-872 Portland, OR, October 2003.

14. T. Li, Z. Liang, K. Mueller, et al., "Reconstruction for Proton Computed Tomography: A Monte Carlo Study," *IEEE Medical Imaging Conference (MIC)*, Portland, OR, October 2003.

15. V. Srivastava, U. Chebrolu, and K. Mueller, "Interactive transfer function modification for volume rendering using pre-shaded sample runs," *IEEE Pacific Graphic*, pp. 489-490, Beijing, China, October 2002.

16. K. Mueller, J. Chang, H. Amols, C.Ling, "Cone-beam computed tomography (CT) for a Megavoltage Linear Accelerator (LINAC) using an Electronic Portal Imaging Device (EPID) and the Algebraic Reconstruction Technique (ART)," *International Conference of the IEEE Engineering in Medicine and Biology Society*, pp. 2875-2878, Chicago, IL, July 2000.

17. K. Mueller and R. Yagel, "On the use of graphics hardware to accelerate algebraic reconstruction methods," *SPIE Medical Imaging Conference*, Proc. SPIE 3659-62, San Diego, CA, February 1999.

18. K. Mueller and R. Yagel, "Rapid 3D cone-beam reconstruction with ART utilizing texture mapping graphics hardware," *IEEE Medical Imaging Conference*, pp. 1552-1559, Toronto, Canada, November 1998.

19. K. Mueller, R. Yagel, and J.J. Wheller " A fast and accurate projection algorithm for the Algebraic Reconstruction Technique (ART)," SPIE Medical Imaging Conference, Proc. SPIE 3336, pp. 24-732, San Diego, CA, February 1998. (won Honorary Mention Award)

⬦ **Workshops**

1. Z. Zheng, W. Xu, K. Mueller, "Performance Tuning for CUDA-Accelerated Neighborhood Denoising Filters", *Workshop on High Performance Image Reconstruction*, pp. 52-55, Potsdam, Germany, July 2011.

2. E. Papenhausen, Z. Zheng, K. Mueller, "GPU-Accelerated Back-Projection Revisited: Squeezing Performance by Careful Tuning," *Workshop on High Performance Image Reconstruction,* pp. 19-22, Potsdam, Germany, July 2011. (won Best Paper Award)

3. S. Ha, S. Matej, K. Mueller, "Efficiently GPU-Accelerating Long Kernel Projections in 3-D DIRECT TOF PET Reconstruction via a Memory Cache Optimization," *Workshop on High Performance Image Reconstruction*, pp. 31-34, Potsdam, Germany, July 2011.

4. Z. Zhang, A. Mittal, S. Garg, A.Dimitriyadi, IV Ramakrishnan, R. Zhao, A. Viccellio, K. Mueller, "A Visual Analytics Framework for Emergency Room Clinical Encounters," *IEEE Workshop on Visual Analytics in Health Care*, Salt Lake City, October 2010.

5. K. Mueller, S. Das, "REANA: An RFID-Enabled Environment-Aware Navigation System for the Visually Impaired," *IEEE Conference on Emerging Technologies for a Smarter World*, Seoul, Korea, September 2010.

6. S. Garg, J. Nam, K. Padalkar, K. Mueller, M. Chan, H. Qu, S. Laue, W. Saleem, J. Giesen, "KAV-DB: Towards a Framework for the Capture and Retrieval of Visualization Knowledge over the Web," *Schloss Dagstuhl Scientific Visualization Workshop*, 2010.

7. B. Taneva, J. Giesen, P. Zolliker, K. Mueller, "Choice Based Conjoint Analysis: Discrete Choice Models vs. Direct Regression," *ECML/PKDD Workshop on Preference Learning*, Antwerp, Belgium, 2008.

8. W. Xu, K. Mueller, "A Performance-Driven Study of Regularization Methods for GPU-Accelerated Iterative CT," *Workshop on High Performance Image Reconstruction,* pp. 20-23, Beijing, China, September, 2009 (won Best Paper Award).

9. S. Bruckner, E. Groeller, K. Mueller, B. Preim, D. Silver, "Illustrative Focus+Context Approaches in Interactive Volume Visualization," *Dagstuhl Workshop on Scientific Visualization: Challenges for the Future*, Dagstuhl Follow-Ups, H. Hagen, editor, pp. 136-162, Germany, June 2009.

10. A. Kaufman and K. Mueller, "CTC Visualization: Past, Current, and Future," (invited talk), *MICCAI Workshop on Computational and Visualization Challenges in Virtual Colonoscopy,* New York, NY, September 2008.

11. J. Nam, M. Maurer, and K. Mueller, "High-Dimensional Feature Descriptors to Characterize Volumetric Data," *Workshop on Knowledge-Assisted Visualization (KAV)*, Columbus, OH, October, 2008.

12. F. Xu, K. Mueller, M. Jones, B. Keszthelyi, J. Sedat, D. Agard, "On the Efficiency of Iterative Ordered Subset Reconstruction Algorithms for Acceleration on GPUs," *MICCAI Workshop on High-Performance Medical Image Computing & Computer Aided Intervention,* New York, NY, September 2008.

13. E. Nam, M. Maurer, and K. Mueller, "Semantic Visualization Facilitated By Cluster Analysis," *Workshop on Knowledge-Assisted Visualization (KAV)*, Sacramento, CA, October, 2007.

14. F. Xu and K. Mueller, "GPU-Acceleration of Attenuation and Scattering Compensation in Emission Computed Tomography," *Workshop on High Performance Image Reconstruction,* pp. 29-32, Lindau, Germany, July 2007.

15. W. Leung, N. Neophytou, and K. Mueller, "SIMD-aware raycasting," *Eurographics/IEEE VGTC Workshop on Volume Graphics,* pp. 59-62, Boston, MA, August 2006.

16. N. Shareef, T.-Y. Lee, H.-W. Shen, and K. Mueller, "An Image-based Modeling Approach to GPU-based Rendering of Unstructured Grids," *Eurographics/IEEE VGTC Workshop on Volume Graphics*, pp. 31-38, Boston, MA, August 2006.

17. F. Xu and K. Mueller, "GPU-Accelerated D2VR," *Eurographics/IEEE VGTC Workshop on Volume Graphics*, pp. 23-30, Boston, MA, August 2006.

18. S. Li and K. Mueller, "Accelerated, high-quality refraction computations for volume graphics," *Volume Graphics Workshop*, pp. 73-81, June 2005.

19. N. Neophytou and K. Mueller, "GPU accelerated image aligned splatting," *Eurographics/IEEE VGTC Workshop on Volume Graphics*, pp. 197-205, Stony Brook, NY, June 2005.

20. I. Bitter, N. Neophytou, K. Mueller, and A. Kaufman, "Squeeze: Numerical-precision-optimized volume rendering," *Eurographics/SIGGRAPH Workshop on Graphics Hardware*, pp. 25-34, Grenoble, France, August 2004.

21. F. Xu and K. Mueller, "RapidCT: Acceleration of 3D computed tomography on the GPU," *ACM Workshop on General-Purpose Computing on Graphics Processors (GPGPU)*, Los Angeles, August 2004.

22. H. Varadhan and K. Mueller, "Volume ablation rendering," *Eurographics/IEEE VGTC Workshop on Volume Graphics*, pp. 53-60, Tokyo, Japan, July 2003.

23. M. Nulkar and K. Mueller, "Splatting with shadows," *Eurographics/IEEE VGTC Workshop on Volume Graphics,* pp. 35-50, Stony Brook, June 2001.

24. K. Mueller, T. Welsh, W. Zhu, J. Meade, N. Volkow, "BrainMiner: A Visualization Tool for ROI-Based Discovery of Functional Relationships in the Human Brain," *New Paradigms in Information Visualization and Manipulation (NPIVM)*, Washington DC, November, 2000.

25. J. Huang, N. Shareef, R. Crawfis, P. Sadayappan, K. Mueller, "A Parallel Splatting Algorithm with Occlusion Culling", *Eurographics Workshop on Parallel Graphics and Visualization*, Girona (Spain), September 2000.

26. J. Huang, K. Mueller, N. Shareef, and R. Crawfis, "VOXBLT: an efficient and high-quality splat primitive," *Late Breaking Hot Topics of Visualization*, October 1999.

27. K. Mueller, N. Shareef, J. Huang, and R. Crawfis, "IBR-assisted volume rendering," *Late Breaking Hot Topics of Visualization*, San Francisco, October 1999. (won Best Hot Topic award)

◇ **Extended Abstracts**

1. C. Rojo, W. Xu, K. Mueller, "Street Light View: Enriching Navigable Panoramic Street View Maps with Informative Illumination Thumbnails," (poster) IEEE Visualization, Salt Lake City, October, 2010.

2. S. Garg, T. Berg, K. Mueller, "Iconizer: A Framework to Identify and Create Effective Representations for Visual Information Encoding," (poster) *IEEE Visualization*, Atlantic City, NJ, 2009.

3. X. Guan, S. Lai, J. Lackey, J. Shi, U. Techavipoo, K. Mueller, A. Flanders, D. Andrews, "MediCAD: An Integrated Visualization System for DTI and fMRI Fusion with Anatomical MRI for Presurgical Planning," *14th Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM),* Seattle, WA, May, 2006.

4. N. Neophytou and K. Mueller, "Color space CAD," *SIGGRAPH Sketches*, Boston, August 2006.

5. M. Steinberg, K. Mueller, R. Kelly, "Engine room: A comparitive environment of volume rendering engines," (poster) *Computer Graphics International*, Stony Brook, NY June 2005.

6. R. Su, A. Pandit, L. Zhu, W. Weng, K. Mueller, "A case study: Web-based informatics system for mouse knockout production," *ISMB: Annual Meeting of the International Society for Computational Biology*, June 2005.

7. P. Imrich, K. Mueller, D. Imre, A. Zelenyuk, W. Zhu, "Interactive Poster: 3D ThemeRiver", *IEEE Information Visualization Symposium*, Seattle, WA, October 2003.

8. P. Imrich, K. Mueller, D. Imre, A. Zelenyuk, W. Zhu, "Interactive Poster: A hardware-accelerated rubbersheet focus+context technique for radial dendrograms", *IEEE Information Visualization Symposium*, Seattle, WA, October 2003.

9. P. Imrich, K. Mueller, D. Imre, A. Zelenyuk, and W. Zhu, "Interactive poster: Visual datamining with the interactive dendogram,"*IEEE Information Visualization Symposium*, Poster Session, Boston, MA, October 2002.

10. K. Mueller and R. Yagel, "The use of dodecahedral grids to improve the efficiency of the Algebraic Reconstruction Technique (ART)," *Annals of Biomedical Engineering, Special issue, Annual Conference of the Biomedical Engineering Society*, p. S-66, 1996.

11. K. Mueller, E. Herderick, and J. Cornhill, "Classification of multi-planar images using Bayes decision theory," *Annals of Biomedical Engineering, Special issue, Annual Conference of the Biomedical Engineering Society*, p. S-67, 1995.

12. K. Mueller, R. Yagel, and J. Cornhill, "Improving the accuracy of the Algebraic Reconstruction Technique (ART) by efficient pixel supersampling", *Radiology*, *Special Issue RSNA*, 197, p. 325, Chicago, November 1995.

13. K. Mueller, E. LaPresto, K. Powell, J. Hirsch, and J. Cornhill, "An efficient graphical user interface for display and analysis of multi-frame digital cineangiographic data," *Computer Assisted Radiology*, Berlin, Germany, 1995.

14. K. Mueller, R. Yagel, K. Powell, and J. Cornhill, "A fast and accurate implementation of the Algebraic Reconstruction Technique (ART),"*World Congress on Medical Physics and Biomedical Engineering*, Rio de Janeiro, Brazil, 1995.

15. K. Powell, S. Ganobcik, E. Herderick, K. Mueller, J. Chandler, S. Nissen, and J. Cornhill, "Quantitative detection and classification of single-leg separations in the outlet struts of Björk-Shiley convexo-concave heart valves," *World Congress on Medical Physics and Biomedical Engineering*, Rio de Janeiro, Brazil, 1995.

16. K. Powell, J. Cornhill, S. Nissen, J. Chandler, A. Abolfathi, E. LaPresto, E. Herderick, K. Mueller, E. Cesmeli, and S. Chandra, "Digital radiographic analysis of single-leg separations (SLS) in the outlet struts of Bjork-Shiley convexo-concave valves," *Computer Assisted Radiology*, Berlin, Germany, 1993.

TEACHING

◊ **CSE 302 Ethics in Computer Science**, Fall 2008 (undergraduate course)
http://www.cs.sunysb.edu/~mueller/teaching/cse302
Educates computer science students on the ethical issues related to the use and design of information technology. Teaches strategies for appropriate decisions making when faced with difficult situations, to make a positive impact in the field of information technology.

◊ **CSE 332 Introduction to Visualization**, Fall 1999-2005, Spring 2009 (undergraduate course)
http://www.cs.sunysb.edu/~mueller/teaching/cse332
Presents an introduction to techniques used for the visualization of scientific, medical, engineering and business data sets. Discusses the visualization process, visual perception, image processing, computer graphics, information visualization, and visual analytics.

◊ **CSE 377 Introduction to Medical Imaging**, Fall 2006-2011 (undergraduate course)
http://www.cs.sunysb.edu/~mueller/teaching/cse377
Presents an introduction to the mathematical, physical and computational principles underlying modern medical imaging systems, such as X-ray radiography, X-ray computed tomography, ultrasonic imaging, nuclear imaging, MRI, and functional MRI.

◊ **CSE 564 Visualization**, Spring 2000-2011 (graduate course)
http://www.cs.sunysb.edu/~mueller/teaching/cse564
Discusses fundamentals, more advanced topics, and applications in scientific, medical, and information visualization, and visual analytics. Also discusses issues in the visualization process, visual perception, image processing, and computer graphics.

- **CSE 591 Special Topics: GPU Programming**, Fall 2010 (graduate course)
  http://www.cs.sunysb.edu/~mueller/teaching/cse591_GPU
  Explains how to program massively parallel commodity processors (GPUs). Presents basic and advanced concepts of parallel programming and the GPU architecture. Uses NVIDIA CUDA as a programming model and API.

- **CSE 591 Special Topics: Visual Analytics**, Spring 2007 (graduate course)
  http://www.cs.sunysb.edu/~mueller/teaching/cse591_visAnalytics
  Discusses and combines principles from cognitive science, information visualization, machine-based reasoning and learning, and data mining. Presents examples of Visual Analytics in finance, business, medical/health care, homeland security, and others.

- **CSE 591 Special Topics: Medical Imaging**, Spring 2006, Fall 2007, 2011 (graduate course)
  http://www.cs.sunysb.edu/~mueller/teaching/cse377
  In-depth version of CSE 377. Presents an introduction but also advanced concepts on the mathematical, physical and computational principles underlying modern medical imaging systems, such as X-ray radiography and CT, ultrasound, nuclear imaging, MRI, and fMRI

- **CSE 612 Advanced Visualization**, Fall 2002, 2003 (graduate course)
  http://www.cs.sunysb.edu/~mueller/teaching/cse612
  Discusses advanced concepts in the field of visualization. The course strives to provide a snapshot on the current state of the art and will be supported mostly by recent research papers. Students have the opportunity to expand on a topic of their choice by completing an individual project.

- **CSE 690 GPGPU: General Purpose Computing on Programmable Graphics Hardware**, Spring 2005
  http://www.cs.sunysb.edu/~mueller/teaching/cse690
  Precursor course to CSE 591 Special Topics: GPU Programming.

- **ITS 102 Topics in Information Technology Studies: Visualize This!**, Spring 2006-2011
  http://www.cs.sunysb.edu/~mueller/teaching/its102
  Weekly university-wide seminar course for freshman students. Gives an overview of the effective use of visualization in medicine, science, engineering, business, and others. Explains in simple terms the graphics algorithmic techniques and concepts in use, as well as human visual perception, computer vision, and the physics of image generation.

ADVISING

- **Current Ph.D. Students**
  - Wei Xu (G5)
  - Ziyi Zheng (G5)
  - Zhiyuan Zhang (G5)
  - Hyunjung Lee (G5)
  - Nafees Ahmed (G5)
  - Sungsoo Ha (G4)
  - Bing Wang (G4)
  - Puripant Ruchikachorn (G4, Fulbright Scholar)

- **Current M.S. Students**
  - M.S. project (CSE 523/524): Arun Shyam, Cong Lin, Sichong Dai, Gurleen Kaur Sohal
  - Special M.S. project (CSE 522): Yuyang Wang

- **Current Undergraduate Students**
  - Honors students: Anton Kanevsky

- **Current Student Interns**

- Lars Kühne (University of Jena, Germany)

◇ **Ph.D. Students Graduated**

- Julia EunJu Nam (2011), "Exploratory Visual Analytics in High-Dimensional Space," now at Microsoft
- Supriya Garg (2010), "Tools to Enrich the User Experience for Visual Analysis," now at General Sentiment
- Shengying Li (2008), "Refraction in Graphics and Medical Imaging," now at Barclays Bank
- Lujin Wang (2007), "Feature-Driven Illustrative Visualization and Graphics," now at NVIDIA Corp.
- Fang Xu (2007), "Accelerating Computed Tomography on Commodity Graphics Hardware," now at Siemens Corporate Research
- Neophytos Neophytou (2006), "A Generalized Framework for Interactive Volumetric Point-Based Rendering," now at Neuromatters, LLC
- Sarang Lakare (2004), "Techniques for Exploration of Volumetric Data", co-advised with Arie Kaufman, now at Siemens Corporate Research
- Wei Li (2004), "Accelerating Simulation and Visualization on Graphics Hardware," co-advised with Arie Kaufman, now at Siemens Corporate Research
- Ingmar Bitter (2001), "Volume Visualization of Object Interiors," co-advised with Arie Kaufman, now at Claron Technology, Inc.

◇ **Ph.D. Dissertation Committees**

- Shekhar Sastry (2011), "Computationally Efficient Methods for Shift-variant Image Restoration in Two and Three Dimensions," advised by Murali Subbarao (Electrical Engineering)
- Zhijia Yuan (2010), "Enhanced Spectral Domain Optical Coherence Tomography for Pathological and Functional Studies," advised by Yingtian Pan (Biomedical Engineering)
- Santosh Kulkarni (2009), "Image Quality in MAP SPECT Reconstructions," advised by Gene Gindi (Electrical Engineering)
- Junichi Terao (2009), "Learning-based Intelligence for Socially Assistive Robots," advised by Goldie Nejat (Mechanical Engineering)
- Susan Frank (2008), "Massive Data Management for Distributed Volume Visualization," advised by Arie Kaufman
- Avishay Traeger (2008), "Analyzing Root Causes of Latency Distributions", advised by Erez Zadok
- Zhe Fan (2008), "Flow Simulation and Visualization on GPU Clusters," advised by Arie Kaufman
- Xin Li (2008), "Shape Mapping Framework for Graphics and Visual Computing," advised by Hong Qin
- Wei Zhang (2008), "Feature Representation for Generic Object Detection and Recognition: Computer Vision and Human Vision," advised by Dimitris Samaras
- Lili Zhou (2007), "Low-Contrast Lesion Detection in Tomosynthetic Breast Imaging", advised by Gene Gindi (Electrical Engineering)
- Lei Zhang (2006), "Analysis and Visualization of Facial Expression Subtlety Using Dynamic High Resolution Data", advised by Dimitris Samaras
- Haitao Zhang (2006), "Point-based Modeling for Effective Rendering", advised by Arie Kaufman
- Ye Zhao (2006), "Modeling Natural Phenomena with Lattice Boltzmann Method," advised by Arie Kaufman
- Sudeepti Southekal (2006), "Image Processing Strategies for Quantitative Imaging with the RatCAP (PET) and PET/MR Scanners," advised by Paul Vaska (Biomedical Engineering)

- Song Zhang (2005), "High-resolution, Real-time 3-D Shape Measurement," advised by Peisen Huang (Mechanical Engineering)
- Prior to 2005: Ricardo Farias, Frank Dachille, Kevin Kreeger, Anindya Neogi, Chuan-Kai Wang, Ye Duan, Kevin O'Donnell, Huamin Xu, Xiaoming Wei, Xie Hui, Nan Zhang, Jutta Ebeling, Heike Jänicke (both University of Leipzig, Germany)

◇ **M.S. Theses**
- Markus Lacay (2010), "Visual Game Tuning: Integrating Interactive Visualizations into Games and Simulation Development"
- Mauricio Rafael Maurer (2008), "A High-Dimensional Feature Clustering Approach to Support Search and Classification in Volumetric Data"
- Oleg Mishchenko (2006), "Cache-Coherent Volume Rendering with Space-Filling Curves"
- Haik Lorenz (2005), "Facadlet: A Facade-Generating Primitive For Urban Architecture"
- Michael Steinberg (2003), "Engine room: A comparative environment of volume rendering engines"

◇ **M.S. Projects and Independent Studies**
- M.S. projects (CSE 523/524): Manjushree Nulkar (2001), Jon Sweeney (2002), Vivek Srivastava, Hari Varadhan, Uday Chebrolu (2003), Jee Hyun Hwang (2005), Vinayak Shekhar, Irem Incekoy, Warren Leung (2006), Taj Mahmud, Kshitij Padalkar (2008), Charles Rojo (2009)
- Independent Studies (CSE 593): Xiyang Li, Yue Ou (2005), Krupa Jakkula (2006), Yogesh Srihari, Ambuj Thacker, Eric Papenhausen, JaeWoo Pi (2010)

◇ **Past Undergraduate Students (since 2005)**
- Honors students: Arunesh Mittal (2010)
- Other: Timothy Wynn (2005)

UNIVERSITY AND DEPARTMENTAL SERVICE

◇ **Department**
- Web Committee Chair, 2010-present
- Public Relations Committee, 2010-present
- Coordinator for Alumni Relations, 2008-present
- Graduate Student Faculty Liaison/Advisor, 2004-present
- Graduate Admissions Committee, 2000-2006
- Undergraduate Curriculum Committee, 2000-2002
- Undergraduate Student Recruiting Committee, 2002-2009
- PhD Qualifying Examination Committee, 2000, 2002, 2005
- Graduate Student Orientation Day Committee, 2000, 2005-2009

◇ **College/University**
- SUNY Korea (Songdo) Taskforce Committee, 2010-present
- Undergraduate College of Information Technology Studies faculty, 2005-present
- PI, NSF IGERT (Integrative Graduate Education and Research Traineeship Program) grant proposal, 2008
- Contributor, NIH CTSA (Clinical and Translational Science Awards) proposal, 2008, 2010
- Contributor, NIH TREC (Trans-Disciplinary Research on Energetics and Cancer) Coordination Center, 2004
- Associate Dean of Engineering Search Committee, 2001-2003

PROFESSIONAL ACTIVITIES

- ⬦ **National Committees**
    - ▪ Steering Committee, Eurographics/IEEE-VGTC Volume Graphics Workshop, 2005-present
    - ▪ Panelist, NSF Graphics & Visualization CAREER review board, 2011

- ⬦ **Editorial Boards**
    - ▪ Guest editor, Special Issue International Journal of Biomedical Imaging, April, 2012.
    - ▪ Associate Editor, IEEE Transactions on Visualization and Computer Graphics, 2009-present
    - ▪ Guest editor, Special Issue The Visual Computer 22(8), 2006
    - ▪ Guest editor, Special Section IEEE Transactions on Visualization and Computer Graphics 11(5), 2005

- ⬦ **Conference Committees**
    - ▪ Papers co-chair, IEEE Visualization, 2011, 2012
    - ▪ General Chair, IEEE Visualization (VisWeek) Conference, 2009
    - ▪ Workshop co-chair, IEEE Workshop on High Performance Medical Imaging, 2009
    - ▪ Workshop co-chair, Workshop on High Performance Image Reconstruction (HPIR), 2007, 2009, 2011
    - ▪ Tutorials co-chair, IEEE Visualization, 2005, 2006
    - ▪ Applications track co-chair, IEEE Visualization 2003, 2004
    - ▪ Program co-chair, Eurographics/IEEE-VGTC Volume Graphics Workshop 2001, 2003
    - ▪ Workshop co-chair, Eurographics/IEEE-VGTC Volume Graphics Workshop 2005
    - ▪ Program co-chair, Symposium on Volume Visualization and Graphics 2002
    - ▪ Organization chair, ACM/IEEE Symposium on Point-Based Graphics 2005

- ⬦ **International Program Committees**
    - ▪ International Conference on Information Visualization Theory and Applications 2011, 2012
    - ▪ International Symposium on Visual Computing 2006-present
    - ▪ IEEE Medical Imaging Conference 2003-present
    - ▪ IEEE Visualization 2004-2006, 2008, 2010
    - ▪ Eurographics/IEEE-VGTC Volume Graphics Symposium 2007, 2010
    - ▪ EuroVis (formerly IEEE-VGTC/Eurographics Visualization Symposium) 2004, 2006-2009
    - ▪ International Symposium on Computational Aesthetics, 2008, 2009
    - ▪ IEEE Pacific Visualization 2007-2009
    - ▪ Workshop on Knowledge-Assisted Visualization 2007, 2008
    - ▪ International Symposium on 3D Data Processing, Visualization and Transmission 2006
    - ▪ International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision 2005, 2006
    - ▪ ACM/IEEE/Eurographics Symposium on Point-Based Graphics 2004-2006.
    - ▪ International Conference on Computer Graphics, Visualization and Computer Vision 2004-2006
    - ▪ International Workshop on Visualization for Computer Security 2005
    - ▪ IEEE/ACM SIGGRAPH Volume Visualization and Graphics Symposium 2004
    - ▪ Web3D Symposium 2003

- ⬦ **Journal Reviewing**
    - ▪ IEEE Transactions on Medical Imaging

- IEEE Transactions on Nuclear Science
- Physics in Medicine and Biology
- Medical Physics
- International Journal of Biomedical Imaging
- Computer Methods and Programs in Biomedicine
- IEEE Transactions on Image Processing
- Image and Vision Computing
- IEEE Transactions on Visualization and Computer Graphics
- IEEE Computer Graphics & Applications
- IEEE Computer
- Journal of Graphics Tools
- Computers & Graphics
- Computer Graphics Forum
- ACM Transactions on Graphics
- Journal of Microscopy & Microanalysis
- IEEE Concurrency
- IEEE Transactions on Parallel and Distributed Systems
- SIAM Journal on Scientific Computing

◇ **Book Reviewing**
- Morgan Kaufman, *Visual Computing in Medicine*, by B. Preim, 2010
- CRC Press, *Introduction to Computing in 3D Medical Imaging*, by A. Sitek, 2010
- Morgan Kaufman, *In Silico: Cell Biology Science and Animation with Maya*, by Sharpe et al., 2007
- Thomson Course Technology, *Computer Graphics Through Open GL*, by S. Guha, 2006
- Morgan Kaufman, *Visualization in Medicine*, B. Preim and D. Bartz, authors, 2005
- Morgan Kaufman, *Point-Based Computer Graphics*, M. Gross, H. Pfister, editors, 2005

◇ **Associations**
- Senior member of the IEEE and IEEE Computer Society
- Member of ACM, ACM SIGGRAPH, and the Eurographics Association.

LECTURES AND TUTORIALS

◇ **Invited Keynote Presentations**
- International Symposium on Visual Computing (keynote), "Can Computers Master the Art of Communication? A Focus on Visual Analytics," Boston, MA, 2011.
- SPIE Electronic Imaging (Keynote, Computational Imaging V), "Why Do Commodity Graphics Hardware Boards (GPUs) Work So Well for the Acceleration of Computed Tomography" San Jose, CA, 2007.

◇ **Courses and Tutorials**
1. MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU) (with F. Xu), *SPIE Medical Imaging*, San Diego, FL, 2011.
2. MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU) (with F. Xu, W. Xu, Z. Zheng), *SPIE Medical Imaging*, San Diego, FL, 2010.
3. Programming and Medical Applications Using Graphics Hardware (with A. Sitek, M. Kachelriess), *IEEE Medical Imaging*, Orlando, FL, 2009.

4. MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU) (with F. Xu, W. Xu, Z. Zheng), *SPIE Medical Imaging*, Orlando, FL, 2009.

5. Perception-Driven Techniques for Effective Visualization of Large Volume Data (with C. Wang, H.-W. Shen, H. Qu), *IEEE Visualization*, Columbus, OH, 2008.

6. Interactive Lattice-Based Flow Simulation and Visualization (with Y. Zhao, A. Kaufman, N. Thuerey, U. Rüde), *IEEE Visualization*, Columbus, OH, 2008.

7. MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU), *SPIE Medical Imaging*, San Diego, CA, 2008.

8. Visual Medicine - Techniques, Applications, and Software (with D. Bartz, B. Preim, F. Ritter, K. Zuiderfeld), *IEEE Visualization*, Sacramento, CA, 2007.

9. MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU) (with F. Xu and N. Neophytou), *SPIE Medical Imaging*, San Diego, CA, 2007.

10. Visual Medicine - Techniques, Applications, and Software (with D. Bartz, G. Kindlmann, B. Preim, S. Oeltze, and F. Link), *IEEE Visualization*, Baltimore, MD, 2006.

11. Visual Medicine Part 1 – Medical Imaging Techniques (with D. Bartz and G. Kindlmann), *IEEE Visualization*, Minneapolis, MN, 2005.

12. Visual Medicine Part 2 – Advanced Applications of Medical Imaging (with D. Bartz, G. Kindlmann, B. Preim, and M. Wacker), *IEEE Visualization*, Minneapolis, MN, 2005.

13. Point Lattices in Computer Graphics and Visualization (with T. Möller, R. Entezari, J. Morey, V. Ostromoukhov, and D. Van De Ville), *IEEE Visualization*, Minneapolis, MN, 2005.

14. Advanced Virtual Medicine: Techniques and Applications for Medicine-Oriented Visualization (with D. Bartz, M. Wacker, Y. Wu and J. Hardenbergh), *IEEE Visualization*, Austin, TX, 2004.

15. Advanced Virtual Medicine: Techniques and Applications for Medicine-Oriented Computer Graphics (with D. Bartz, M. Hauth, A. Linney, H. Delingette, N. Magnenat-Thalmann, and Y. Wu), *Eurographics,* Grenoble, France, 2004.

16. Advanced Virtual Medicine: Techniques and Applications for Virtual Endoscopy and Soft-Tissue-Simulation (with D. Bartz and M. Hauth), *IEEE Visualization*, Seattle, WA, 2003.

17. Advanced Virtual Medicine: Techniques and Applications for Virtual Endoscopy and Soft-Tissue-Simulation (with D. Bartz and M. Hauth), *MICCAI,* Montreal, Canada, 2003.

18. State of the Art in Data Representation in Visualization, (with B. Chen, A. Varshney, and A. Kaufman), *IEEE Visualization*, Boston, MA, 2002.

◊ **Invited Talks**

1. Dagstuhl Research Center, Germany, "Can Computers Master the Art of Communication? A Focus on Visual Analytics," 2011.

2. University of Bremen, Germany: "Illustrative Design Inspired Multivariate Data Visualization," 2011.

3. DIMACS, Rutgers University, NJ: "Interactive Model Learning from High-Dimensional Data: A Visual Analytics Approach," 2010.

4. Pacific Northwest Lab, Washington: "Model-Driven Visual Analytics" 2010 .

5. Brookhaven National Lab, New York: "High-Dimensional Data Exploration in a Visual Analytics Framework," 2010.

6. Zhejiang University, China: " Visual Information Capture and Encoding," 2009.

7. Beijing University, China: "Visualization and Visual Aesthetics," 2009.

8. Dagstuhl Research Center, Germany: "KAV-DB: Capture (and Retrieval) of Visualization Knowledge Over the Web," 2009.

9. University of Pennsylvania: "Why Do Commodity Graphics Hardware Boards (GPUs) Work So Well for the Acceleration of Computed Tomography," 2009.

10. CUNY Graduate Center, New York: "Visualization and Visual Aesthetics," 2008.

11. Anatomical Sciences Department, Stony Brook: "Visualization in Science and Medicine," 2007.

12. Yale University, Connecticut: "Real-time 3D computed tomographic reconstruction using commodity graphics hardware," 2007.

13. University of Florida: "Real-time 3D computed tomographic reconstruction using commodity graphics hardware," 2007.

14. Dagstuhl Research Center, Germany: "Modeling the User," 2007.

15. Hong Kong University of Science and Technology: "Let's Talk About Volumetric Data," 2007.

16. Vienna Institute of Technology, Austria: "Scattered Points, Organized Rays, with a Touch of 3D Color," 2006.

17. IBM, Yorktown Heights, New York: "Visualization for Science and Medicine," 2006

18. Thomas Jefferson University Hospital, Department of Neurosurgery, "Illustrative Rendering for Surgical Planning," 2006.

19. Varian Medical Systems, "GPU Acceleration of Filtered Backprojection Algorithms", 2006

20. Rutgers University, New Jersey: "Semantics-Aware Visualization," 2005.

21. University of California at Davis: "The Magic Volume Lens," 2005 .

22. Dagstuhl Research Center, Germany: "The Magic Volume Lens," 2005.

23. Stevens Institute of Technology, New Jersey: "Facadlet: A Facade-Generating Primitive for Urban Architecture," 2005.

24. Simon Fraser University, British Columbia: "Enhancing volumetric datasets with sub-resolution detail using texture synthesis," 2005.

25. UC San Francisco, Radiology Department, "GPU-Accelerated Computed Tomography", 2005.

26. GE Corporate Research, Schenectady, NY, "GPU-Accelerated Computed Tomography", 2005.

27. Stevens Institute of Technology, "Simulation and Visualization for Urban Security", 2005.

28. Dagstuhl (Germany) Invitational Workshop on Scientific Visualization: Extracting Information and Knowledge from Scientific Data Sets, "Volume exploration made easy using feature maps," 2003.

29. Vanderbilt University, Department of Radiology, " Visualization for brain functional imaging," 2002.

30. DOE Visualization Workshop, Montauk, NY, "Space-time points: 4D splatting on efficient grids," 2002.

31. Ochanomizu University, Tokyo, Japan, "Point-based volume rendering and modeling," 2001

32. ATT Research Labs, "Point-based volume rendering and modeling," 2001.

33. Sloan-Kettering Cancer Research Center, "Cone-beam CT: Theory and Practice," 2000.

34. Visualization Technologies, Inc., Boston, MA, "Cone-beam CT: methods and applications," 2000.

35. Brookhaven National Laboratory, Center for Data-Intensive Computing, "A unified framework for data generation and visualization," 2000.

36. University of Pennsylvania, "Cone-beam CT with algebraic methods," 2000.

37. Sloan-Kettering Cancer Research Center, "Megavoltage computed tomography (MV CT) from cone-beam projections," 1999.

38. Brookhaven National Laboratory, Medical Department, "A unified framework for data generation and visualization," 1999.

39. Georgia Tech, College of Computing, "Splatting 2.0: high quality volume rendering without the wait," 1999.

40. University of California, Irvine, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

41. University of Kentucky at Lexington, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

42. Simon Fraser University, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

43. Stony Brook University, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

44. University of Wisconsin at Milwaukee, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

45. Clemson University, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

46. Washington University in St. Louis, Department of Computer Science and Engineering, "Splatting 2.0: high quality volume rendering without the wait," 1999.

47. University of Florida, Department of Computer and Information Science and Engineering, "Splatting 2.0: high quality volume rendering without the wait," 1999.

48. Case Western Reserve University, Electrical Engineering and Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

49. Georgetown University, Department of Computer Science, "Splatting 2.0: high quality volume rendering without the wait," 1999.

PATENTS

◇ **Filed**

1. Illumination Information Icon Enriching Navigable Panoramic Street View Maps (application filed 9/2010)

2. Selection of Optimal Views for Computed Tomography Reconstruction (application filed 7/2010)

GRANTS

◇ **Awarded**

Total research funding awarded while at Stony Brook University: $8.2M (40%, $3.2M my share):

1. PI (single), "Illustration-Inspired Visualization: A Gateway to Interacting with High-Dimensional Data," NSF, $500k (100%), 2011-2014.

2. Co-PI (with LIPA, SUNY Farmingdale, and various Stony Brook collaborators), "Smart Energy Use Demonstration Project," DOE, $2.8M total ($350k my share), 2010-2015.

3. PI (single), "Visualization Support Infrastructure for Global Climate Modeling with a Focus on the BNL FASTER Project," Brookhaven National Lab, $115k (100%), 2010-2012.

4. PI (single), "EAGER: TripAdvisorN-D: A Tourism Inspired High Dimensional Space Exploration Tool," NSF, $103k (100%), 2010-2012.

5. PI (single), "Support for GPU-Accelerated Cone-Beam CT", Medtronic (industry grant), $53k (100%), 2011.

6. Co-PI (with Ari Kaufman, PI, multiple co-PI), "MRI-R2: Development of an Immersive Giga-pixel Display," $1.4M ($100k my student support, shared equipment), 2010-2013.

7. PI (single), "VisWeek 2009 Doctoral Colloquium," $20k (provided to VisWeek 2009), 2009.

8. Co-PI (with Arie Kaufman, PI), "Lattice Lighting", NSF, $375k (50%, $187k), 2007-2010.

9. Co-PI (with Erez Zadok, PI, one further co-PI), "File System Tracing, Replaying, Profiling, and Analysis on HEC Systems," NSF, $760k (33%, $253k), 2006-2008.

10. PI (single), "A Unified Framework for Rapid CT on Commodity GPUs," NIH, $405k (100%), 2005-2007.

11. Co-PI (with Arie Kaufman, PI), "Simulating and Visualizing Contaminant Propagation in Pervasive Sensor / Computer Environments", equipment grant, $100k, 2005.

12. PI (single), "Acceleration of 3D Reconstruction for Electron Microscopy using Commodity Graphics Hardware," Keck Foundation, Keck Center for Advanced Microscopy, UC San Francisco, $60k (100%), 2005-2006.

13. PI (single) "Data Mining and Classification Software for Mass Spectrum Data," Batelle Memorial Institute, $97k (100%), 2009-2011.

14. PI (single) "Data Mining and Classification Software for Mass Spectrum Data," Pacific Northwest National Laboratory, $200k (100%), 2004-2008.

15. Co-PI (with Miriam Rafailovich, PI), "An Algorithm for Dynamic Facial Recognition," Center for Biotechnology, $40k (50%, $20k), 2004-2006.

16. PI (single), "Acceleration of the Feldkamp CT Algorithm Using Commodity Graphics Hardware," Breakaway Imaging, LLC, Boston, MA (industry grant), $32k (100%), 2004.

17. PI (single), "Point-Based and Image-Based Volume Rendering and Detail Modeling for Volume Graphics," NSF CAREER award, $373k (100%), 2001-2006.

18. Co-PI (with Ira Rampil, PI, one further co-PI), "Imaging the Awake Animal Brain," DOE, $421k (33%, $140k), 2001-2007.

19. PI (single), "Visualization of Atmospheric Data," Brookhaven National Lab. $100k (100%), 2001-2003.

20. PI (single), "Registration of Supine and Prone using Volumetric Homotopy for Virtual Endoscopy," SPIR/Viatronix, $20k (100%), 2001-2002.

21. PI (single), "Registration of Supine and Prone using Volumetric Homotopy for Virtual Endoscopy," SPIR/Viatronix, $20k (100%), 2001-2002.

22. PI (single), "Accelerated Visualization for virtual endoscopy," SPIR/Viatronix $210k (100%), 2000-2002.

23. PI (single), "Visualization of ROI-Based Statistical Analysis and Representation of Human Brain Functions, Brookhaven National Lab, $24k (100%), 2000-02.

24. Co-PI (with Joe Mitchell, PI), "Virtual Reality System for Manufacturing with Haptic Feedback," Northrop Grumman (industry grant), $30k (50%, $15k), 1999-2000.

25. Co-PI (with R. Yagel and J.J. Wheller), "Three-Dimensional Reconstruction of Pediatric Cardiac Chambers Using C-Arm CT Scanners," General Electric Medical (industry grant), $150k (100%), 1996-1998.