

ADITI MAJUMDER

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- Areas Of Interest** Multi-Projector Displays, Visualization, Computer Graphics, Computer Vision, Image Processing, Human Perception, Virtual Reality, Human Computer Interaction, Visualization Tools, Non-Photorealistic Rendering
- Education** University of North Carolina at Chapel Hill
PhD in Computer Science (1996- 2003).
Thesis: *A Practical Framework to Achieve Perceptually Seamless Multi-Projector Displays*
- Jadavpur University, Calcutta, India
B.E in Computer Science and Engineering (1992-1996)
Silver Medalist in the Engineering Faculty for Overall Academic Performance in Senior Years (1994-1996)
Gold Medalist in the Engineering Faculty for Overall Academic Performance in Junior Years (1992-1994)
- Experience** **Assistant Professor** (2003-Present)
Department of Computer Science, UC Irvine
- Student Research Fellow** (2001-2003)
Mathematics and Computer Science Division, Argonne National Laboratory
- Givens Associate** (Summer 2001)
Mathematics and Computer Science Division, Argonne National Laboratory
- Graduate Student Fellow** (Summer 1999)
Bell Laboratories, Holmdel, NJ
- Graduate Student Researcher** (1998-2001)
Department of Computer Science, UNC Chapel Hill
- Courses/Tutorials/
Panels** **Invited Author/Speaker on Large Format Displays**
Projectors for Graphics,
ACM SIGGRAPH, 2008 (Course Organizer: Ramesh Raskar, Oliver Bimber)
- Invited Panelist**
The Future of Projector-Camera Systems
IEEE International Workshop on Projector-Camera Systems (PROCAMS), 2008
- Aditi Majumder and Michael S. Brown,
Camera-Based Vision Techniques to Build Large-Area Multi-Projector Displays
Course Organizer, IEEE International Conference on Computer Vision and Pattern Recognition, June 2005
- Aditi Majumder and Michael S. Brown,
Camera-Based Techniques for Building Large-Area Multi-Projector Displays
Course Organizer, ECCV (European Conference on Computer Vision), May 2004
- Aditi Majumder and Michael S. Brown,
Building Large Area Displays
Course Organizer, Eurographics, September 2003
- Aditi Majumder and Michael S. Brown,
Large-Scale Displays for the Masses: Techniques for Building Affordable and Flexible Multi-Projector Displays
Course Organizer, ACM SIGGRAPH, July 2003
- Publications** **Book**
- B1. Aditi Majumder, Michael S. Brown, " Practical Multi-Projector Display Design", A. K. Peters, August, 2007

Book Chapters

- E1. Aditi Majumder, "Computer Graphics Optique: Optical Superposition of Projected Computer Graphics", *Energy Simulation-Training, Ocean Engineering and Instrumentation, Research Papers of Link Foundation Fellows, Volume 2, Brian J. Thompson (Ed.)*.

Refereed Journal Articles

- J8. Aditi Majumder, Ezekiel Bhasker, Ray Juang, "Advances towards high-resolution pack-and-go displays: A survey", *Journal for the Society of Information Display (JSID), Special Issue for Selected papers from SID Symposium, 16(3), pp. 481-491, 2007. [7% acceptance]*
- J7. Ray Juang, Ezekiel Bhasker, Aditi Majumder, "Registration Techniques for Using Imperfect and Partially Calibrated Devices in Planar Multi-Projector Displays", *IEEE Transactions on Visualization and Computer Graphics (TVCG), 13(6), pp. 1368-1375, 2007.*
- J6. Aditi Majumder, Sandra Irani, "Perception Based Contrast Enhancement of Images", *ACM Transactions on Applied Perception, Vol. 4, No. 3, Article 17, November 2007.*
- J5. Ezekiel Bhasker, Pinaki Sinha, Aditi Majumder, "Asynchronous Distributed Calibration for Scalable Reconfigurable Multi-Projector Displays", *IEEE Transactions on Visualization and Computer Graphics, 12(5), pp 1101-1108, 2006.*
- J4. Aditi Majumder, M. Gopi, "Modeling Color Properties of Tiled Displays", *Computer Graphics Forum Vol. 24, No. 2, pp 149-163, June, 2005.*
- J3. Michael Brown, Aditi Majumder, Ruigang Yang, "Camera Based Calibration Techniques for Seamless Multi-Projector Displays", *IEEE Transactions on Visualization and Computer Graphics, Vol. 11, No. 2, pp 193-206, March-April, 2005*
- J2. Aditi Majumder, Rick Stevens, "Perceptual Photometric Seamlessness in Tiled Projection-Based Displays", *ACM Transactions on Graphics, Vol. 24, No. 1, pp 118-139, January 2005.*
- J1. Aditi Majumder, Rick Stevens, "Color Non-Uniformity in Projection Based Displays: Analysis and Solutions", *IEEE Transactions on Visualization and Computer Graphics, Vol. 10, No. 2, pp 177-188, March-April, 2004.*

Refereed Conference/Workshop Publications

- C26. Behzad Sajadi, Aditi Majumder, "Maintaining Color Consistency Across Non-Linear Displays and Printers", *SID Symposium Digest of Technical Papers, San Antonio, May 2009.*
- C25. Hamed Pirsiavash, Vivek Singh, Aditi Majumder, Ramesh Jain, "Shared Visualization Spaces for Environment to Environment Communication", *Workshop on Media Arts, Science, and Technology (MAST), Santa Barbara, CA, Jan 2009.*
- C24. Ezekiel Bhasker, Ray Juang, Aditi Majumder, "Advances Towards Next Generation Flexible Multi-Projector Displays", *ACM Siggraph Workshop on Emerging Display Technologies, San Diego, August, 2007.*
- C23. Ray Juang, Ezekiel Bhasker, Aditi Majumder, "Registration Techniques for Using Imperfect and Partially Calibrated Devices in Planar Multi-Projector Displays", *Proceedings of IEEE Visualization, Sacramento, October, 2007, [23% acceptance] (Same as J7).*
- C22. Ezekiel Bhasker, Aditi Majumder, "Geometric Modeling and Calibration of Planar Multi-Projector Displays Using Rational Bezier Patches", *IEEE CVPR Workshop on Projector Camera Systems, Minneapolis, Minnesota, June 2007 [40% acceptance].*
- C21. Ray Juang, Aditi Majumder, "Photometric Self-Calibration of Projector-Camera Systems", *IEEE CVPR Workshop on Projector Camera Systems, Minneapolis, Minnesota, June 2007 [40% acceptance].*
- C20. Ezekiel Bhasker, Aditi Majumder, " Self Calibrating Tiled Displays", *SID Symposium Digest of Technical Papers, Long Beach, May, 2007 [13% acceptance]*
- C19. Ezekiel Bhasker, Pinaki Sinha, Aditi Majumder, "Asynchronous Distributed Calibration for Scalable Reconfigurable Multi-Projector Displays", *Proceedings of IEEE Visualization, pp 1101-1108,*

Baltimore, November 2006 [27% acceptance] (Same as J5)

- C18. Pinaki Sinha, Ezekiel Bhasker, Aditi Majumder, "Mobile High-Resolution Displays Via Distributed Networked Projector-Camera Systems", *IEEE CVPR Workshop on Projector Camera Systems*, New York, June 2006 [30% acceptance].
- C17. Aditi Majumder, Sandra Irani "Contrast Enhancement of Images Using Human Contrast Sensitivity" *ACM Symposium on Applied Perception in Graphics and Visualization*, pp 69-76, Boston, July 2006 [35% acceptance].
- C16. Aditi Majumder, "Luminance Management for Seamless Multi-Projector Displays", *SID Symposium Digest of Technical Papers, Volume 36, Issue 1, pages 1506-1509, Boston, May 2005* [10% acceptance].
- C15. Kartic Subr, Sandra Irani, Aditi Majumder, "A Greedy Algorithm for Local Contrast Enhancement of Images", *International Conference on Image Analysis and Processing (ICIAP)*, pp 171-179, Cagliari, Italy, September, 2005 [15% acceptance].
- C14. Aditi Majumder, "Contrast Enhancement of Multi-Displays Using Human Contrast Sensitivity", *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, pp 377-382, San Diego, June, 2005. [16% acceptance]
- C13. Aditi Majumder, "Is Spatial Super-Resolution Possible with Multiple Overlapping Projectors?", *Proceedings of IEEE International Conference on Audio, Speech and Signal Processing (ICASSP)*, Vol. 4 pp 209-212, Philadelphia, 2005. [27% acceptance]
- C12. Aditi Majumder, "Camera Based Evaluation of Photometric Compensation Methods on Multi-Projector Displays ", *Proceedings of IEEE International Conference on Image Processing*, pp 3527-3530, Singapore, 2004 [25% acceptance].
- C11. Ruigang Yang, Aditi Majumder, Michael S. Brown, "Camera Based Calibration Techniques for Seamless Flexible Multi-Projector Displays ", *Applications of Computer Vision Workshop, Proceedings of European Conference of Computer Vision, 2004*. [40% acceptance]
- C10. Aditi Majumder, David Jones, Matthew McCrory, Michael E Papka, Rick Stevens, "Using a Camera to Capture and Correct Spatial Photometric Variation in Multi-Projector Displays", *IEEE International Workshop on Projector-Camera Systems*, 2003 [33% acceptance].
- C9. Andrew Raij, Gennette Gill, Aditi Majumder, Herman Towles, Henry Fuchs, "PixelFlex2: A Comprehensive, Automatic, Casually-Aligned Multi-Projector Display" *IEEE International Workshop on Projector-Camera Systems*, 2003 [33% acceptance].
- C8. Aditi Majumder and Rick Stevens, "Photometrically Continuous Imagery in Reconfigurable Large Area Displays", *3rd Annual High Information Content Display System Symposium*, 2003 [25% acceptance].
- C7. Aditi Majumder and Rick Stevens, "LAM: Luminance Attenuation Map for Photometric Uniformity Across Projection Based Displays", *ACM Virtual Reality Software and Technology*, pp 147-154, 2002 [25% acceptance]
- C6. Justin Binns, Gennette Gill, Mark Hereld, David Jones, Ivan Judson, Ti Leggett, Aditi Majumder, Matthew McCroy, Michael E. Papka, and Rick Stevens, "Applying Geometry and Color Correction to Tiled Display Walls" (Poster), *IEEE Visualization*, 2002 [40% acceptance].
- C5. Aditi Majumder, "Properties of Color Variation Across Multi-Projector Display", *SID Eurodisplay Digest*, pp 807-810, Nice, France, July, 2002 [30% acceptance].
- C4. Aditi Majumder and M. Gopi, "Real Time Charcoal Rendering Using Contrast Enhancement Operators", *Symposium of Non Photorealistic Animation and Rendering*, pp 59-66, Annecy, France, June, 2002 [45% acceptance].
- C3. Aditi Majumder and Greg Welch, "Computer Graphics Optique: Optical Superposition of Projected Computer Graphics", *Eurographics Workshop on Virtual Environments/ Immersive Projection Technology Stuttgart, Germany, May 2001*. [40% acceptance]
- C2. Aditi Majumder, Zhu He, Herman Towles and Greg Welch, "Achieving Color Uniformity Across Multi-Projector Displays", *IEEE Visualization*, pp 117-124, Salt Lake City, October, 2000. [34% acceptance]

- C1. Aditi Majumder, M. Gopi, Brent W. Seales and Henry Fuchs, "Geometric Stitching for Real-Time Panoramic Image Generation Using Texture Maps", *ACM Multimedia*, pp 169-178, Orlando, October, 1999 [18% acceptance].

Technical Reports

- T3. Ray Juang, Maxim Lazarov, Aditi Majumder, "Efficient Estimation and Device-Independent Representation of Photometric Properties of a Projector-Camera Pair", *Technical Report UCI, 08-11, 2008*
- T2. Behzad Sajadi, Aditi Majumder, "Smoothing Spatial Chrominance Variation Across Tiled Displays", *Technical Report UCI, 08-04, 2008*
- T1. Aditi Majumder, Robert Brown, Hussein El Ghoroury "Display Gamut Reshaping for Color Emulation and Balancing", *Technical Report UCI 08-04, 2008*

System Demonstration

- S1. Jakub Segen, Aditi Majumder, Senthil Kumar and Joshua Gluckman, "Virtual Music and Dance Controlled by the Gestures of a Human Conductor", *Emerging Technologies, ACM SIGGRAPH 1999*.

Patents/Artifacts

- P4. Aditi Majumder, Gopi Meenakshisundaram, "Apparatus and Method for Wide Gamut Camera" US Patent Pending (UC Case No. 2008-810-1).
- P3. Aditi Majumder, Ezekiel Bhasker and Pinaki Sinha, "Apparatus and Method for Self Calibrating Multi-Projector Displays Via Plug and Play Projectors", US Patent Pending (UC Case No. 2007-238-1).
- P2. Aditi Majumder and Rick Stevens, "Method to Smooth Photometric Variation Across Multi-Projector Displays", United States Patent 7,038,727.
- P1. Aditi Majumder and Rick Stevens, "Optimal Luminance Smoothing to Achieve Color Seamlessness in Tiled Displays", Software artifact, Copyright June 10, 2005 (ANL software report ANL-SF-02-053)

Awards

- A4. *Young Scientist of the Year*, 2002, Argonne National Laboratory.
- A3. *Wallace Givens Fellow*, Summer 2001, Argonne National Laboratory.
- A2. *Link Fellow*, 2000 – 2001.
- A1. *Jagadish Bose National Science Talent Scholar (JBNSTS)*, India, 1992 – 1996.

Publicity Releases

Coming Together At The Seams: Picture Perfect Projection, Calit2 Interface Magazine, Winter 2007.

Invited Talks

University of California – Los Angeles, Department of Computer Science, Oct 2008
Rochester Institute of Technology, Munsell Color Science Laboratory, Center for Imaging Science, Sep 2008
Yale University, Computer Science Department, Sep 2008
University of Utah, Scientific Computing and Imaging Institute, Sep 2008
University of California, Davis, SciDAC Institute for Ultrascale Visualization, Jun 2008
Northwestern University, EECS Department, May 2008
University of Maryland at College Park, Computer Science Dept, May 2008
Purdue University, Computer Science Dept, May, 2008
Jadavpur University, Kolkata, India, Dec 27, 2007.
MIT Media Labs, Cambridge, May 27, 2005.
Mitsubishi Electric Research Laboratory (MERL), Cambridge, May 27, 2005.
MICS Seminar at Department of Energy (DOE), Washington DC, Feb 25, 2004
University of Maryland at College Park, Computer Science Dept, October 2003.
Surgical Simulation Center, Washington DC, October 2003.
Indian Institute of Technology (IIT), Kharagpur, India, October, 2003.

Research Grants

- G5. **Sole Primary Investigator**, NSF CAREER AWARD: Ubiquitous Displays Via a Distributed Framework, 2009-2013, \$542,000.
- G4. **Sole Primary Investigator**, NSF SGER: Analysis of Solution Space for Achieving Ubiquitous Pixels, 2007-2008, \$70,000.
- G3. **Sole Primary Investigator**, UCI COLCLR Travel Grant, 2006-2007, \$3000.
- G2. **Sole Primary Investigator**, UCI COLCLR Travel Grant, 2005-2006, \$3000.
- G1. **Senior Investigator**, "An IT Infrastructure for Responding to the Unexpected",

NSF 446617-21857, 2004-2009, \$1,801,590.

Equipment Grants

- D1. **Epson Projector Donation**, 2008, \$20,000
- D2. **Canon Camera Donation**, 2008, \$2000

Industrial Collaborations

- I1. **Advisory Board Member**, Ostendo Technologies, Carlsbad, 2005 - Present
- I2. **Consultant**, Ostendo Technologies, Carlsbad, 2005 - 2007
Development of first multi-projector curved screen desktop, coming to market in 2009
<http://www.youtube.com/watch?v=3ndH8yPHopI>

Professional Activities

- Program Chair**
IEEE/ACM Workshop on Projector Camera Systems (PROCAMS), June 2009.
- General Co-Chair**
ACM Virtual Reality Software and Technology (VRST), Irvine, November 2007.
- Program Co-Chair**
IEEE CVPR Workshop on Projector Camera Systems (PROCAMS), June, 2005.
- Session Chair**
IEEE CVPR Workshop on Projector Camera Systems (PROCAMS), June, 2007.
IEEE CVPR Workshop on Projector Camera Systems (PROCAMS), June, 2006.

Program Committe

- ACM SIGGRAPH Workshop on Projector Camera Systems (PROCAMS), August, 2008
- ACM Virtual Reality Software and Technology, Irvine, November 2007
- IEEE CVPR Workshop on Projector Camera Systems (PROCAMS), June, 2007
- IEEE CVPR Workshop on Projector Camera Systems (PROCAMS), June, 2006
- IEEE CVPR Workshop on Projector Camera Systems (PROCAMS), June, 2005

Reviewer

- ACM Transactions on Graphics (TOG)
- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- IEEE Computer Graphics and Application
- IEEE Computer Vision and Pattern Recognition (CVPR)
- Journal of Electronic Imaging
- International Journal of Image and Graphics
- Eurographics
- Computer Graphics Forum
- Eurographics Symposium on Rendering
- ACM Siggraph
- IEEE Visualization
- ACM Symposium on User Interface Software and Technology
- International Journal of Computer Vision
- Computer Aided Geometric Design
- IEEE and ACM International Symposium on Mixed and Augmented Reality

Service to School/Dept

- Member** of Faculty Recruitment Committee, 2007
- Member** of Graduate Admissions Committee, 2006 – 2008
- Demos and Presentations of the Multi-Projector Display**
 - Candidates Day 2006
 - Video Presentation during Dedication Day of Bren Hall, 2007
 - Faculty Candidates, 2007
 - Several academic/industry visitors hosted by Calit2

New Course Development

- Undergraduate Course on Digital Image Processing (CS 111)
- Graduate Course on Visual Computing (CS 211A)
- Graduate Course on Visual Perception (CS 213)

Advisory Activities

- Graduated Students**
Ray Juang (M.S. - Summer 2007)
- Graduate Student Advisee**

Maxim Lazarov (2008 - Present)
Uddipan Mukherjee (2008 - Present)
Ankit Gupta (2008 - Present)
Behzad Sajadi (2007 - Present)
Anna Diez (2008 - Present)
Julian Yarkony (2008 - Present)
Mitsunubo Sugimoto (2008 - Present)
Ezekiel Bhasker (2006 - 2007)
Pinaki Sinha (2005 - 2006)

Undergraduate Student Advisee

Jason Kim (2004 - 2005)
Christopher Larson (SURF-IT fellowship for summer 2006)
Maxim Lazarov (SURP Fellowship for summer 2007, 2007- 2008)

PhD Candidacy Committee

Vidya Balasubramanian
Gautam Chaudhary (EECS)
Koel Das (EECS)
Pablo Diaz-Gutierrez (ICS)
Kartic Subr (ICS)