

# Daniel G. Aliaga

Sept 22<sup>nd</sup>, 2009

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## 1. Research Interests

- Modeling and Visualization: genuinity detection, appearance editing, digital inspection
- 3D Acquisition Methods: capturing, modeling, and rendering real-world 3D objects
- Urban Modeling: dense 2D and 3D urban models, simulation, and visualization

## 2. Academic Appointments

- Assistant Professor of Computer Science, Purdue, West Lafayette, IN, August 2003-present.
- Research Scientist, Dept. of Computer Science, Princeton, January 2003 - August 2003.
- Ph.D., Computer Science, University of North Carolina at Chapel Hill, May, 1999.  
**Thesis:** “Automatically Reducing and Bounding Geometric Complexity”  
Advisor: Professor Anselmo Lastra
- M.S., Computer Science, University of North Carolina at Chapel Hill, December, 1993.  
**Thesis:** “Virtual and Real Object Collisions in a Merged Environment”  
Advisor: Professor Henry Fuchs
- B.Sc., Computer Science, Magnum Cum Laude, Brown University, May, 1991.  
**Honor’s Thesis:** “Transaction-Based Distributed Computer Graphics Systems”  
Advisor: Professor Andries van Dam

## 3. Industrial Positions

- Member of Technical Staff, November 1998-December 2002, Lucent Technologies Bell Laboratories, Murray Hill, NJ.
- Intern, June 1995 – August 1995, Silicon Graphics Inc., Mountain View, CA.
- Software Developer, June 1994 – August 1994, Division Inc, Chapel Hill, NC.
- Intern, June 1992 – August 1992, Siemens Corporate Research Lab, Munich, Germany.
- Intern, June 1991 – August 1991, IBM, Boca Raton, FL.
- Intern, June 1989 – August 1989, IBM, Boca Raton, FL.
- Intern, June 1988 – August 1988, Siemens USA, Boca Raton, FL.
- Intern, June 1987 – August 1987, Siemens USA, Boca Raton, FL.

## 4. Teaching

### **Purdue University (2003 – present)**

Spring 2009

CS635: Capturing, Modeling, and Rendering 3D Objects

Fall 2008

CS334: Fundamentals of Computer Graphics

Spring 2008

CS334: Fundamentals of Computer Graphics

Fall 2008

CS535: Interactive 3D Computer Graphics

Spring 2007

CS635: Capturing, Modeling, and Rendering 3D Objects

Fall 2006

CS251: Data Structures and Algorithms

Spring 2006

CS490G: Teaching and Learning Tools using Tablet PCs

Fall 2005

CS535: Interactive 3D Computer Graphics

Spring 2005

CS490G: Sketching and Mixed-Reality on Tablet PCs

CS497: Undergraduate Honors Research Projects

Fall 2004

CS590G: Capturing, Modeling, Rendering 3D Objects”, CS590G

CS397/CS497: Undergraduate Honors Research Projects

Spring 2004

CS490T: 3D Sketching on Tablet PCs

CS590M: Model Representations for 3D Objects and Environments

Fall 2003

CS590G: Capturing, Modeling, Rendering 3D Objects

### **University of North Carolina (1991-1999)**

August 2000

ACM SIGGRAPH course “Interactive Walkthroughs of Large Datasets”

August 1999

ACM SIGGRAPH course “Interactive Walkthroughs of Large Datasets”

Summer 1997

CS114: Introduction to Programming

## Brown University (1987-1991)

Fall 1989

CS011: Introduction to Computer Science, teaching assistant

Spring 1989

CS012: Fundamentals of Computer Science Architecture, teaching assistant

Fall 1988

CS011: Introduction to Computer Science, teaching assistant

## 5. Publications

### Journal Articles

1. C. Vanegas, **D. Aliaga**, B. Benes, P. Waddell. Interactive Design of Urban Spaces using Geometrical and Behavioral Modeling. *ACM Transactions on Graphics (TOG)*, also ACM SIGGRAPH Asia, 28(5): 10 pages, 2009.
2. **D. Aliaga**, Y. Xu. A Self-Calibrating Method for Photogeometric Acquisition of 3D Objects. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, to appear, 8 pages, 2009.
3. **D. Aliaga**, J. Zhang, M. Boutin. A Framework for Pose-Free Modeling of 3D Scenes. *ACM Transactions on Graphics (TOG)*, to appear, 17 pages, 2009.
4. Y. Xu, **D. Aliaga**. Modeling Repetitive Motions using Structured Light. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, to appear, 14 pages, 2009.
5. C. Vanegas, **D. Aliaga**, P. Wonka, P. Müller, P. Waddell, B. Watson. Modeling the Appearance and Behavior of Urban Spaces. *Computer Graphics Forum (CGF)*, to appear, 17 pages, also Eurographics STAR, 2009.
6. **D. Aliaga**, M. Atallah. Genuinity Signatures: Designing Signatures for Verifying 3D Object Genuinity. *Computer Graphics Forum (CGF)*, also Eurographics, 28(2): 437-446, 2009.
7. C. Vanegas, **D. Aliaga**, B. Benes, P. Waddell. Visualization of Simulated Urban Spaces: Inferring Parameterized Generation of Streets, Parcels, and Aerial Imagery. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 15(3): 424-435, 2009.
8. Y. Xu, **D. Aliaga**. An Adaptive Correspondence Algorithm for Modeling Scenes with Strong Inter-reflections. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 15(3): 465-480, 2009.
9. **D. Aliaga**, A. Law, Y. Yeung. Virtual Restoration Stage for Real-World Objects. *ACM Transactions on Graphics (TOG)*, also ACM SIGGRAPH Asia, 27(5): 10 pages, 2008.
10. **D. Aliaga**, C. Vanegas, B. Benes. Interactive Example-based Urban Layout Synthesis. *ACM Transactions on Graphics (TOG)*, also ACM SIGGRAPH Asia, 27(5): 10 pages, 2008.
11. **D. Aliaga**, B. Benes, C. Vanegas, N. Andryscio, "Interactive Reconfiguration of Urban Layouts", *IEEE Computer Graphics & Applications (CG&A)*, 28(3): 38-47, 2008.
12. **D. Aliaga**, P. Rosen, D. Bekins. Style Grammars for Interactive Visualization of Architecture. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 13(4): 786-797, 2007.
13. **D. Aliaga**, Y. Xu, V. Popescu. Occlusion-Compatible Camera Design for Acquisition of Active Environments. *IEEE Computer Graphics & Applications (CG&A)*, 27(5): 68-78, 2007.

14. **D. Aliaga**, Y. Xu, V. Popescu. Lag Camera: A Moving Multi-camera Array for Scene Acquisition. *Journal of Virtual Reality and Broadcasting*, Special Issue GRAPP, 3(10): 9 pages, 2007.
15. **D. Aliaga**, P. Rosen, V. Popescu, I. Carlbom. Image Warping for Compressing and Spatially Organizing a Dense Collection of Images. *Signal Processing - Image Communications: Special Issue on Still and Dynamic Scenes*, 21(9): 755-769, 2006.
16. V. Popescu, P. Rosen, **D. Aliaga**. Three-Dimensional Display Rendering Acceleration Using Occlusion Camera Reference Images. *IEEE/OSA Journal of Display Technology (JDT)*, 2(3): 274-283, 2006.
17. **D. Aliaga**, I. Carlbom. Finding Yourself: Fiducial Planning for Error-Bounded Pose Estimation of a Panoramic Camera in Large Environments. *IEEE Robotics and Automation (RA): Special Issue on Panoramic Robotics*, 11(4): 53-61, 2004.
18. **D. Aliaga**, T. Funkhouser, D. Yanovsky, I. Carlbom. Sea of Images: a Dense Sampling Approach for Rendering Large Indoor Environments. *IEEE Computer Graphics & Applications (CG&A)*, 23(6): 22-30, 2003.
19. **D. Aliaga**, A. Lastra. Smooth Transitions in Texture-based Simplification. *Computer & Graphics (C&G)*, 22(1): 71-81, 1998.
20. M. Rafferty, **D. Aliaga**, V. Popescu, A. Lastra. Images for Accelerating Architectural Walkthroughs. *IEEE Computer Graphics & Applications (CG&A)*, 18(6): 38-45, 1998.
21. **D. Aliaga**. Virtual Objects in the Real World. *Communications of the ACM (CACM)*, 40(3): 49-54, 1997.

#### Articles Refereed In Conference Proceedings

22. C. Vanegas, **D. Aliaga**, B. Benes, P. Waddell. Interactive Design of Urban Spaces using Geometrical and Behavioral Modeling. In *ACM SIGGRAPH Asia* (also ACM Transactions on Graphics, 28(5)), 10 pages, 2009 (acceptance: 23%).
23. **D. Aliaga**, M. Atallah. Genuinity Signatures: Designing Signatures for Verifying 3D Object Genuinity. In *Eurographics* (also Computer Graphics Forum 28:2), 437-446, March 2009 (acceptance: 23%).
24. C. Vanegas, **D. Aliaga**, P. Mueller, P. Waddell, B. Watson, P. Wonka. Modeling the Appearance and Behavior of Urban Spaces. In *Eurographics* (also Computer Graphics Forum, to appear), State of the Art Report (STAR), 1-17, March 2009 (acceptance: 38%).
25. A. Law, **D. Aliaga**, Y. Yeung, A. McKune, R. McCoy, L. Zimmerman. Projecting Restorations in Real-Time for Real-World Objects. In *Museums and the Web (MW)*, Archives & Museum Informatics, 8 page demonstration paper, March, 2009.
26. **D. Aliaga**, A. Law, Y. Yeung. Virtual Restoration Stage for Real-World Objects. In *ACM SIGGRAPH Asia* (also ACM Transactions on Graphics, 27:5), 10 pages, December 2008, (acceptance: 18%).
27. **D. Aliaga**, C. Vanegas, B. Benes. Interactive Example-based Urban Layout Synthesis. In *ACM SIGGRAPH Asia* (also ACM Transactions on Graphics, 27:5), 10 pages, December 2008, (acceptance: 18%).
28. **D. Aliaga**, Y. Xu. Photogeometric Structured Light: A Self-Calibrating and Multi-Viewpoint Framework for Accurate 3D Modeling. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 8 pages, June 2008 (acceptance: 27%).

29. **D. Aliaga**. Digital Inspection: An Interactive Stage of Viewing Surface Details. In *ACM SIGGRAPH Symposium on Interactive 3D Graphics (I3D)*, 53-60, February 2008 (acceptance: 35%).
30. Y. Xu, **D. Aliaga**. Dense Depth and Color Acquisition of Repetitive Motions. In *3D Digital Imaging and Modeling (3DIM)*, 141-148, August 2007 (acceptance: 30%).
31. Y. Xu, **D. Aliaga**. Robust Pixel Classification for 3D Modeling with Structured Light. In *Graphics Interface (GI)*, 233-240, June 2007 (acceptance: 38%).
32. **D. Aliaga**, J. Zhang, M. Boutin, "Simplifying the Reconstruction of 3D Models using Parameter Elimination", In *IEEE International Conference on Computer Vision (ICCV)*, Workshop on Visual Representations and Modeling of Large-scale Environments, pp. 1-8, 2007 (acceptance: 30%).
33. Y. Xu, **D. Aliaga**. Efficient Multi-viewpoint Acquisition of 3D Objects Undergoing Repetitive Motions. In *ACM SIGGRAPH Symposium on Interactive 3D Graphics (I3D)*, 113-120, April 2007 (acceptance: 30%).
34. J. Zhang, M. Boutin, **D. Aliaga**. Variable Elimination for 3D from 2D. In *Visual Communication and Image Processing (VCIP)*, 193-200, January 2007.
35. J. Zhang, M. Boutin, **D. Aliaga**. Robust Bundle Adjustment for Structure from Motion. In *IEEE International Conference on Image Processing (ICIP)*, 2185-2188, September 2006 (acceptance: 30%).
36. J. Zhang, **D. Aliaga**, M. Boutin, R. Insley. Angle-Independent Bundle Adjustment Refinement. In *Third Int'l Symposium on 3D Data Processing, Visualization, and Transmission (3DPVT)*, 108-116, April 2006.
37. V. Popescu, **D. Aliaga**. Depth Discontinuity Occlusion Camera. In *ACM SIGGRAPH Symposium on Interactive 3D Graphics (I3D)*, 139-143, April 2006 (acceptance: 35%).
38. **D. Aliaga**, G. Rodriguez-Rivera, D. Xu, "A Collaborative Undergraduate Course for Pen-based Computing using Tablet PCs", In *Workshop on the Impact of Pen-based Technology on Education (WIPTE)*, 6 pages, April 2006.
39. D. Bekins, S. Yost, M. Garrett, J. Deutsch, W. Htay, D. Xu, **D. Aliaga**. Mixed-Reality Tabletop (MRT): A Low-cost Teleconferencing Framework for Mixed-Reality Applications. In *IEEE Virtual Reality (VR)*, 245-248, March 2006 (acceptance: 29%).
40. **D. Aliaga**, Yi Xu, V. Popescu. Lag Camera: A Moving Multi-Camera Array for Scene Acquisition. In *Int'l Conference on Computer Graphics Theory and Applications (GRAPP)*, 98-107, February 2006 (acceptance: 35%).
41. M. Boutin, J. Zhang, **D. Aliaga**. Improving the Numerical Stability of Structure from Motion by Algebraic Elimination. In *SPIE and IS&T Electronic Imaging*, 178-187, January 2006.
42. D. Bekins, **D. Aliaga**. Build-by-Number: Rearranging the Real World to Visualize Novel Architectural Spaces. In *IEEE Visualization*, 143-150, October 2005 (acceptance: 33%).
43. **D. Aliaga**, I. Carlbom. A Spatial Image Hierarchy for Compression in Image-Based Rendering. In *IEEE International Conference on Image Processing (ICIP)*, 609-612, September 2005 (acceptance: 30%).
44. **D. Aliaga**, D. Yanovsky, T. Funkhouser, I. Carlbom. Interactive Image-Based Rendering using Feature Globalization. In *ACM SIGGRAPH Symposium on Interactive 3D Graphics (I3D)*, 163-170, April, 2003 (acceptance: 26%).

45. **D. Aliaga**, T. Funkhouser, D. Yanovsky, I. Carlbom. Sea of Images. In *IEEE Visualization*, 331-338, October 2002 (acceptance: 34%).
46. J. Cohen, **D. Aliaga**, W. Zhang. Hybrid Simplification: Combining Multi-resolution Polygon and Point Rendering. In *IEEE Visualization*, 140-147, October 2001, (acceptance: 34%).
47. **D. Aliaga**, I. Carlbom. Plenoptic Stitching: A Scalable Method for Reconstructing 3D Interactive Walkthroughs. In *ACM SIGGRAPH*, 443-450, August 2001 (acceptance: 22%).
48. **D. Aliaga**. Accurate Catadioptric Calibration for Real-time Pose Estimation in Room-size Environments. In *IEEE International Conference on Computer Vision (ICCV)*, 127-134, July 2001 (acceptance: 25%).
49. **D. Aliaga**, A. Lastra. Automatic Image Placement to Provide a Guaranteed Frame Rate. In *ACM SIGGRAPH*, 307-316, August 1999 (acceptance: 16%).
50. **D. Aliaga**, J. Cohen, A. Wilson, E. Baker, H. Zhang, C. Erikson, K. Hoff, T. Hudson, W. Stuerzlinger, R. Bastos, M. Whitton, F. Brooks, and D. Manocha. MMR: An Interactive Massive Model Rendering System Using Geometric and Image-Based Acceleration. In *ACM SIGGRAPH Symp. on Interactive 3D Graphics (I3D)*, 199-206, 1999 (acceptance: 25%).
51. V. Popescu, A. Lastra, **D. Aliaga**, M. Oliveira Neto. Efficient Warping for Architectural Walkthroughs using Layered Depth Images. In *IEEE Visualization*, 211-215, October 1998 (acceptance: 39%).
52. M. Rafferty, **D. Aliaga**, A. Lastra. 3D Image Warping in Architectural Walkthroughs. In *IEEE Virtual Reality Annual International Symposium (VRAIS)*, 228-233, March 1998, (acceptance: 30%).
53. **D. Aliaga**, A. Lastra. Architectural Walkthroughs Using Portal Textures. In *IEEE Visualization*, 355-362, October 1997 (acceptance: 26%).
54. **D. Aliaga**. Visualization of Complex Models Using Dynamic Texture-based Simplification. In *IEEE Visualization*, 101-106, October 1996 (acceptance: 38%).
55. **D. Aliaga**. Virtual and Real Objects in a Merged Environment. In *ACM Virtual Reality Software and Technology (VRST)*, 287-298, August 1994 (acceptance: 35%).
56. **D. Aliaga**, M. Schneider-Hufschmidt. Prototyping of Graphing Tools Using Direct GUI Composition. In *Requirements Engineering*, 317-334, April 1993.
57. R. Zeleznik, D. Conner, M. Wloka, **D. Aliaga**, N. Huang, P. Hubbard, B. Knep, H. Kaufman, J. Hughes, A. van Dam. An Object-Oriented Framework for the Integration of Interactive Animation Techniques. In *ACM SIGGRAPH*, 105-111, July 1991 (acceptance: 21%).

### Submitted

58. J. Zhang, M. Boutin, **D. Aliaga**. Pose-Free Structure from Motion using Depth from Motion Constraints. *IEEE Transactions on Image Processing (TIP)*, 28 pages, March 2009.

### Refereed Editorials, Posters, and Documents

59. **D. Aliaga**, J. Zhang, M. Boutin. 3D Scene Modeling using Pose-free Reconstruction. *Technical Sketch* in *ACM SIGGRAPH*, August 2007 (refereed).
60. Y. Xu, **D. Aliaga**. Modeling Repetitive Motions in Real-World 3D Scenes. *Technical Sketch* in *ACM SIGGRAPH*, August 2007 (refereed).
61. **D. Aliaga**, Y. Xu, V. Popescu. Lag Camera. *Poster* in *ACM SIGGRAPH Symposium on Interactive 3D Graphics (I3D)*, 2006 (refereed).

62. **D. Aliaga**, A. Lastra. Virtual Backdrops. *Technical Sketch* in ACM SIGGRAPH, August 1997 (refereed).

## 6. Invited Talks and Lectures (not including conference talks)

- “Restoring the Past: A Virtual Restoration Stage for Real-world Objects”, Department of Computer Science, *University of Washington*, Seattle WA, June 2009.
- “Modeling the Appearance and Behavior of Urban Spaces”, Department of Urban Planning and Public Affairs, *University of Washington*, Seattle WA, June 2009.
- “Genuinity Signatures: Designing Signatures for Verifying 3D Object Genuinity”, Department of Computer Science, *ETH*, Zurich, Switzerland, March 2009.
- “Changing the Past: Virtual Restoration of Real-World Objects”, Computer Science and Artificial Intelligence Laboratory, *Massachusetts Institute of Technology*, Boston MA, March 2009.
- “Changing the Past: Virtual Restoration of Real-World Objects”, School of Engineering and Applied Sciences, *Harvard University*, Boston MA, March 2009.
- “Plenoptic Stitching”, Department of Computer Science, *University of North Carolina*, Chapel Hill NC, May 2001.
- “Images for Rendering Acceleration”, Department of Computer Science, *Johns Hopkins University*, Baltimore MD, March 2000.
- “Image-based Rendering for Interactive Walkthroughs”, Department of Computer Science, *Princeton University*, Princeton NJ, March 2000.
- “Image-based Rendering for Acceleration”, Department of Computer Science, *University of Virginia*, Charlottesville VA, November 1999.

### Other Presentations

- “Modeling the Appearance and Behavior of Urban Spaces”, *Eurographics State of the Art Report*, Munich, Germany, March 2009.
- “3D Scene Modeling using Pose-free Reconstruction”, *ACM SIGGRAPH Sketch*, August 2007.
- “Modeling Repetitive Motions in Real-World 3D Scenes”, *ACM SIGGRAPH Sketch*, August 2007.
- “Interactive Walkthroughs of Large Geometric Datasets”, *ACM SIGGRAPH Course*, July 2000.
- “Interactive Walkthroughs of Large Geometric Datasets”, *ACM SIGGRAPH Course*, August 1999.
- “Virtual Backdrops”, *ACM SIGGRAPH Sketch*, August, 1997.

## 7. Students

### Current Students

- Yi Xu, Ph.D. Student in Computer Science, Research Assistant. Dissertation topic: Efficient and Robust Image-based Modeling of Dynamic and Optically-Challenging Scenes (prelim passed April 2008; graduating in May 2010).

- Alvin Law, Ph.D. Student in Computer Science, Research Assistant. Dissertation topic: Compensation-Compliant Appearance Editing of Physical Objects (qual II exam passed December 2007; prelim planned for this academic year; estimated graduation is May 2011).
- Carlos Vanegas, Ph.D. Student in Computer Science, Research Assistant. Dissertation topic: Urban Modeling (qual II exam passed March 2009; estimated graduation in May 2012).
- Yu Hong Yeung, Ph.D. Student in Computer Science, Research Assistant. Dissertation topic: Fast and High-Resolution Appearance Editing (qual II exam passed April 2009; estimated graduation in May 2012).
- Yi-Liu Chao, Ph.D. Candidate in Computer Science, Teaching Assistant. Dissertation topic: Ensuring the Genuinity of Physical Objects (qual I in progress; estimated graduation in 2013).

## Past Graduate Students

### Advisee's

- Abhinav Jain (C.S., M.S. 2006): "Robotic Image Acquisition", now at Rockwell Collins.
- Daniel Bekins (C.S., M.S., 2005): M.S. Thesis "Build-by-Numbers", now at Electronic Arts.
- Scott Yost (C.S., M.S., 2004): "Mixed-Reality Tabletop", now works at Microsoft Corporation.

### Committee Member

- Mihai Mudure (C.S., Ph.D., 2008): completed Ph.D. thesis "Efficient and Versatile 3D Scene Modeling by Sparse-Depth Dense-Viewpoint Acquisition", Purdue University, at *Google Inc.*
- Huiying Xu (C.S., Ph.D., 2007): completed Ph.D. thesis "Physically-based model of surface and subsurface scattering", Purdue University, at *CISCO Systems Inc.*
- David Gotz (C.S., Ph.D., 2005): completed Ph.D. thesis "Scalable and Adaptive Streaming for Non-linear Media", University of North Carolina at Chapel Hill, at *IBM T.J. Watson Research Center.*

## Past Undergraduate Student Researchers

- Aaron Link (C.S., 2010), Honor's project "Procedural Modeling for Coherent Urban Spaces"
- Robert Insley (Math/C.S., 2008), Honor's project "Angle-Independent Bundle Adjustment Refinement"
- Dat Nyugen, Nitin Nalreja, Nimesh Amin (C.S., 2006): "Portable Mixed Reality"
- Jamie Gennis (Math/C.S., 2005), worked for 1.5 years on 3D Acquisition Methods
- Paul Ardis (Math/C.S., 2005), "Mobile Mixed Reality"
- Jonathan Deutsch (C.S., 2004): "Mixed-Reality Tabletop"
- Darin Rajan (C.S., 2005): "Mobile Image Acquisition"

## 8. Grants and Gifts

1. NSF CNS, "A Computational Framework for Marking Physical Objects against Counterfeiting and Tampering"
 

Duration of Funding:	09/01/2009 - 08/31/2012
Total Amount of Award:	\$499,883
Your Role:	PI

2. NSF INTEROP, “A Community-based Drought Information Network for Multidisciplinary Applications”
  - Duration of Funding: 09/01/2008 - 08/31/2011
  - Total Amount of Award: \$750,000
  - Your Role: Co-PI
3. NSF CCF, “3D Scene Digitization - A Novel Invariant Approach for Large-Scale Environment Capture”
  - Duration of Funding: 08/15/2004 - 07/31/2008
  - Total Amount of Award: \$500,000
  - Your Role: PI
4. Adobe Inc., “Vector Pattern Modeling and Editing (Continuance)”
  - Duration of Funding: 08/15/2009 – present
  - Total Amount of Award: \$10,000 (unrestricted gift funds)
  - Your Role: Co-PI
5. Adobe Inc., “Vector Pattern Modeling and Editing”
  - Duration of Funding: 08/01/2008 – present
  - Total Amount of Award: \$45,000 (unrestricted gift funds)
  - Your Role: Co-PI
6. PACE/Hewlett-Packard Hardware Grant, “Genuinity Signatures”
  - Duration of Funding: 04/01/2008 – present
  - Total Amount of Award: \$5,000 (given as equipment)
  - Your Role: PI
7. Purdue-IUPUI Research Grant, “Digital Inspection and Virtual Restoration of 3D Objects”
  - Duration of Funding: 02/01/2008 – 05/01/2009
  - Total Amount of Award: \$50,000
  - Your Role: PI
8. NSF REU, “3D Scene Digitization - A Novel Invariant Approach for Large-Scale Environment Capture”
  - Duration of Funding: 08/15/2006 – 07/31/2008
  - Total Amount of Award: \$6,000
  - Your Role: PI
9. Microsoft Research, “Tablet PC-Based Teaching Platform for Portable Mixed-Reality Concept”
  - Duration of Funding: 01/01/2005 – present
  - Total Amount of Award: \$50,000 (unrestricted gift funds)
  - Your Role: PI
10. Microsoft Research, “Immersive Mentoring Using Mixed-Reality Tabletop”
  - Duration of Funding: 01/01/2004 – present

Total Amount of Award: \$40,000 (unrestricted gift funds)

Your Role: PI

### **Funding Received for Student Support:**

11. Purdue Special Incentive Research Grant, Computing Research Institute, “Modeling the Appearance and Behavior of Peta-scale Urban Spaces”, 1 year graduate student support, August 2009-July 2010.
12. Purdue Summer Research Grant, “Genuinity Signatures”, 1 summer graduate student support, June-August 2009.
13. Bilsland Fellowship, “Efficient and Robust Image-based Modeling of Dynamic Scenes”, 6 months graduate student support, June 2009-March 2010.
14. Purdue Research Foundation, “Designing Tomorrow’s Cities: Simulation and Creation of Urban Environments”, 1 year graduate student support, August 2008-May 2009.
15. Purdue Research Foundation, “Acquiring Active Environments”, 1 year graduate student support, August 2006-May 2007.

## **9. Patents**

- U.S. Patent No. 7,362,969, D. Aliaga, I. Carlbom. “Camera Model and Calibration Procedure for Omnidirectional Paraboloidal Catadioptric Cameras”, April, 2008.
- U.S. Patent No. 7,356,164, D. Aliaga, T. Funkhouser, I. Carlbom, D. Yanosvky. “Method and Apparatus for Finding Feature Correspondences Between Images Captured in Real-World Environments”, April, 2008.
- U.S. Patent No. 7,313,285, D. Aliaga, T. Funkhouser, I. Carlbom, D. Yanosvky. “Method and Apparatus for Compressing and Decompressing Images Captured From Viewpoints Throughout N-Dimensional Space”, December, 2007.
- U.S. Patent No. 7,126,603, D. Aliaga, T. Funkhouser, I. Carlbom, D. Yanosvky. “Method and System for Creating Interactive Walkthroughs of Real-World Environments From Set of Densely Captured Images”, October 2006.
- U.S. Patent No. 7,027,049, D. Aliaga, I. Carlbom. “Method and System for Reconstructing 3D Interactive Walkthroughs of Real-World Environments”, April 2006.

## **10. Engagement**

### **Department and University**

- Member of the *Graduate Committee*, August 2008-present, Purdue University.
- Member of the *Graduate Admissions Committee*, August 2005-May 2008, Purdue University.
- Member of *Undergraduate Committee*, August 2005-May 2007, Purdue University.
- Founder of AMIGOS (Association of Minorities in Graphics and Other Sciences): Aliaga is a Hispanic minority who formed this association (<http://www.cs.purdue.edu/amigos>) using initial funds sponsored by IBM Research and to recruit Hispanics, Latinos, and other minorities interested in computer graphics, computer science, and other sciences. During its first year of inception (academic year 2008-2009), exposed computer graphics and summer employment opportunities to undergraduates (in coalition with USB – Undergraduate Student Board), to

Latino Scholars (in cooperation with LaFASA – Latino Faculty and Staff Association at Purdue), to high-school students (as part of SACNAS, Society for the Advancement of Chicanos and Native Americans in Science).

- Representative to Purdue Undergraduate Research Day, November 2005.
- Co-planned the “Live Virtual Tour into the Future” computer graphics demonstration during the inauguration of the Lawson Computer Science Building, October 2003, Purdue University.
- College of Science Grievance Committee, August 2005-May 2008.
- Faculty Co-Advisor for Purdue Tango Milonguera Club, August 2005-present.
- Guest Lecturer for numerous freshman and honor’s level undergraduate courses (2003-present)

## **Professional**

### *Conference Organization and Participation*

- Papers Co-Chair, ACM SIGGRAPH Symposium on Interactive 3D Graphics 2010
- General Co-Chair, ACM SIGGRAPH Symposium on Interactive 3D Graphics 2009
- Invited Panel Member, IEEE International Workshop on Projector-Camera Systems 2009
- Student Stipend Chair, ACM SIGGRAPH Symposium on Interactive 3D Graphics 2008

### *Journal Editor*

- Editorial Board, Elsevier Graphical Models, 2006-present

### *Program Committees*

- 3D Digital Imaging and Modeling, 2009
- ACM/IEEE International Workshop on Projector-Camera Systems, 2009
- Brazilian Symposium on Computer Graphics and Image Processing, 2009
- Pacific Graphics, 2008
- ACM SIGGRAPH Symposium on Interactive 3D Graphics, 2008
- Brazilian Symposium on Computer Graphics and Image Processing, 2008
- ACM HyperText, 2008
- IEEE International Conference on Computer Vision, Workshop on Visual Representations and Modeling of Large-scale Environments, 2007
- ACM Int’l Symposium on Mixed and Augmented Reality, 2007
- Pacific Graphics, 2007
- Symposium on Point-based Graphics, 2007
- Brazilian Symposium on Computer Graphics and Image Processing, 2007
- ACM SIGGRAPH Symposium on Interactive 3D Graphics, 2007
- EG/CPCG Int’l Conference on Computer Graphics Theory and Applications, 2007
- Symposium on Point-based Graphics, 2006
- ACM International Symposium on Mixed and Augmented Reality, 2006
- ACM Symposium on Virtual Reality Software and Technology, 2006
- Pacific Graphics, 2006
- ACM SIGGRAPH Symposium on Interactive 3D Graphics, 2006
- EG/CPCG Int’l Conference on Computer Graphics Theory and Applications, 2006
- Brazilian Symposium on Computer Graphics and Image Processing, 2006

- Symposium on Point-based Graphics, 2005
- ACM International Symposium on Mixed and Augmented Reality, 2005
- ACM SIGGRAPH Symposium on Interactive 3D Graphics, 2005
- Symposium on Point-based Graphics, 2004

#### *Panels*

- NSF Computer Graphics Panel 2002
- NSF Numeric, Symbolic, and Graphic Computation Panels 2002
- NSF Computer Graphics Panel 2001

#### *Reviewer (above and beyond the program committees/journal editorial boards served on)*

- ACM SIGGRAPH/ACM Transaction on Graphics, ACM SIGGRAPH courses, ACM Computational Geometry
- IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Computer Graphics and Applications, IEEE Visualization, IEEE Transactions on Image Processing, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Multimedia Systems
- Elsevier Image Communication
- Eurographics, Eurographics Rendering Workshop
- International Symposium on 3D Data Processing, Visualization and Transmission

## **11. Awards and Miscellaneous**

- Purdue University Undergraduate Advising Award (2009)
- Purdue University Engagement Award (2008)
- Purdue University Computer Science Camp Member (2005)
- Lucent Technologies Global Sciences Scholarship Program Lab Coordinator (2002)
- Lucent Technologies Summer Internship Program Lab Coordinator (2000)
- NSF Science and Technology Center Student Conference Organizer (1992-1993)
- Brown University Computer Science Faculty-Student Liaison (1991)
- ACM Programming Competitions Team Member and International Team Leader (1991)
- ACM Programming Competitions Team Member (1989-1990)

## **12. Personal**

- Hobbies: vintage computers, astronomy, model trains, martial arts, soccer, mountain biking
- Languages: speak English and Spanish fluently, some ability in German