

# Pradeep Sen

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## RESEARCH INTERESTS

Algorithms for image synthesis, computational image processing, computational photography, applications of signal processing to computer graphics/imaging, and computer vision.

## EDUCATION

**Stanford University**, Ph.D. Electrical Engineering, June 2006 (Ph.D. adviser: Dr. Pat Hanrahan)

**Stanford University**, M.S. Electrical Engineering, June 1998

**Purdue University**, B.S. Computer and Electrical Engineering, May 1996

## ACADEMIC POSITIONS

### Associate Professor

Dept. of Electrical & Computer Engineering  
Dept. of Computer Science (courtesy)  
Media Arts and Technology (courtesy)  
*University of California, Santa Barbara (UCSB)*

Sep. 2012 – present  
Santa Barbara, California

### Associate Professor

**Assistant Professor**  
Dept. of Electrical & Computer Engineering  
*University of New Mexico (UNM)*

Jul. 2012 – Aug. 2012  
Aug. 2006 – Jun. 2012  
Albuquerque, New Mexico

### Ph.D. Graduate Research Assistant

Stanford Graphics Lab  
*Stanford University*

Sep. 2000 – Jun. 2006  
Palo Alto, California

### M.S. Graduate Research Assistant

Microstructures Group  
*Stanford University*

Jun. 1997 – Jun. 1999  
Palo Alto, California

## HONORS AND AWARDS

- 2012 UNM Dept. of Electrical and Computer Engr. Distinguished Researcher Award
- 2009 NSF CAREER Award
- 2009 UNM Dept. of Electrical and Computer Engr. Lawton-Ellis Award
- 2008 Sony Pictures Imageworks Faculty Fellow
- 2004 NVIDIA Graduate Fellowship
- 2004 SIGGRAPH/Eurographics Graphics Hardware Best Paper Award
- 2002 SIGGRAPH/Eurographics Graphics Hardware Best Paper Award
- 1996 National Science Foundation Graduate Fellowship
- 1996 Purdue University *Magna Cum Laude*
- 1993 Kodak Fellowship
- 1992 High School Valedictorian

# Research

Names with an asterisk (\*) indicate student advisee.

## ACM SIGGRAPH / TRANSACTIONS ON GRAPHICS PUBLICATIONS

The ACM SIGGRAPH and SIGGRAPH Asia conferences are the leading venues for publication of technical research in computer graphics and related fields, and their proceedings are published as special issues of the *ACM Transactions on Graphics*, the leading journal in the field. Since 2008, all *Transactions on Graphics* journal articles are reviewed to the level of SIGGRAPH and are presented at the SIGGRAPH or SIGGRAPH Asia conferences.

1. N. K. Kalantari\*, E. Shechtman, C. Barnes, S. Darabi, D. Goldman, and **P. Sen**, “Patch-Based High Dynamic Range Video,” *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH Asia 2013)*, Vol. 32, No. 6, pp. 202:1 – 202:8, November 2013.
2. **P. Sen**, N. K. Kalantari\*, M. Yaesoubi\*, S. Darabi\*, D. Goldman, and E. Shechtman, “Robust Patch-Based HDR Reconstruction of Dynamic Scenes,” *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH Asia 2012)*, Vol. 31, No. 6, pp. 203:1 – 203:11, November 2012.
3. S. Darabi\*, E. Shechtman, C. Barnes, D. Goldman, and **P. Sen**, “Image Melding: Combining Inconsistent Images using Patch-based Synthesis,” *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH 2012)*, Vol. 31, No. 4, pp. 82:1 – 82:10, July 2012.
4. **P. Sen** and S. Darabi\*, “On Filtering the Noise from the Random Parameters in Monte Carlo Rendering,” accepted to *ACM Transactions on Graphics (Presented at ACM SIGGRAPH 2012)*, Vol. 31, No. 3, pp. 18:1 – 18:15, May 2012.
5. M. Tocci, C. Kiser\*, N. Tocci, and **P. Sen**, “A Versatile HDR Video Production System,” *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH 2011)*, Vol. 30, No. 4, pp. 41:1 – 41:10, August 2011.
6. **P. Sen**, B. Chen, G. Garg, S. Marschner, M. Horowitz, M. Levoy, and H. Lensch, “Dual Photography,” *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH 2005)*, Vol. 24, No. 3, pp. 745 – 755, July 2005.
7. **P. Sen**, M. Cammarano, and P. Hanrahan, “Shadow Silhouette Maps,” *ACM Transactions on Graphics (Proceedings of ACM SIGGRAPH 2003)*, Vol. 22, No. 3, pp. 521 – 526, July 2003.

## PEER-REVIEWED BOOK CHAPTERS

These book chapters have been peer-reviewed by at least three independent reviewers.

8. **P. Sen**, S. Darabi\*, L. Xiao\*, “Compressive Rendering of Multidimensional Scenes,” in *Lecture Notes in Computer Science (LNCS)*, “Video Processing and Computational Video,” Eds.: D. Cremers, M. Magnor, M. Oswald, L. Zelnik-Manor. Springer, Vol. 7082, pp. 152 – 183, December 2011.

## REFEREED JOURNAL PUBLICATIONS

These papers have been published in peer-reviewed, archival journals. Many of them appear in a special issue of conference proceedings (indicated in parenthesis) but are not listed as conference publications.

9. N. K. Kalantari\* and **P. Sen**, “Removing the Noise in Monte Carlo Rendering with General Image Denoising Algorithms,” *Computer Graphics Forum (Proceedings of Eurographics 2013)*, Vol. 32, No. 2, May 2013.
10. N. K. Kalantari\* and **P. Sen**, “Fast Generation of Approximate Blue Noise Point Sets,” *Computer Graphics Forum (Proceedings of Eurographics Symposium on Rendering 2012)*, Vol. 31, No. 4, pp. 1529 – 1535, June 2012.

11. N. K. Kalantari\* and **P. Sen**, “Efficient Computation of Blue Noise Point Sets through Importance Sampling,” *Computer Graphics Forum (Proceedings of Eurographics Symposium on Rendering 2011)*, Vol. 30, No. 4, pp. 1215 – 1221, June 2011.
12. **P. Sen** and S. Darabi\*, “Compressive Rendering: A Rendering Application of Compressed Sensing,” *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, Vol. 17, No. 4, pp. 487 – 499, April 2011.
13. **P. Sen** and S. Darabi\*, “Compressive Estimation for Signal Integration in Rendering,” *Computer Graphics Forum (Proceedings of Eurographics Symposium on Rendering 2010)*, Vol. 29, No. 4, pp. 1355 – 1363, June 2010.
14. **P. Sen** and S. Darabi\*, “Compressive Dual Photography,” *Computer Graphics Forum (Proceedings of Eurographics 2009)*, Vol. 28, No. 2, pp. 609 – 618, March 2009.
15. J. Kniss, W. Hunt, K. Potter, and **P. Sen**, “IStar: A Raster Representation for Scalable Image and Volume Data,” *IEEE Transactions on Visualization and Computer Graphics (TVCG) (Proceedings of IEEE Visualization 2007)*, Vol. 13, No. 6, pp. 1424 – 1431, November 2007.
16. **P. Sen**, D. Pickard, J. Schneider, M. McCord, R. Pease, A. Baum, and K. Costello, “Lifetime and Reliability Results for a Negative Electron Affinity Photocathode in a Demountable Vacuum System,” *Journal of Vacuum Science & Technology B*, Vol. 16, No. 6, pp. 3380 – 3384, November 1998.
17. J. Schneider, **P. Sen**, D. Pickard, G. Winograd, M. McCord, R. Pease, W. Spicer, A. Baum, K. Costello and G. Davis, “Patterned Negative Electron Affinity Photocathodes for Maskless Electron Beam Lithography,” *Journal of Vacuum Science & Technology B*, Vol. 16, No. 6, pp. 3192 – 3196, November 1998.

#### REFEREED CONFERENCE PUBLICATIONS

18. V. Fragoso, **P. Sen**, S. Rodriguez, and M. Turk, “EVSAC: Accelerating Hypotheses Generation by Modeling Matching Scores with Extreme Value Theory,” *Proceedings of the International Conference on Computer Vision (ICCV)*, December 2013.
19. S. Wenger, S. Darabi\*, **P. Sen**, K.H. Glaßmeier, and M. Magnor, “Compressed Sensing for Aperture Synthesis Imaging,” *Proceedings of the IEEE International Conference on Image Processing (ICIP) 2010*, Hong Kong, China, September 2010.
20. M. Magnor, **P. Sen**, J. Kniss, and E. Angel, “Progress in Rendering and Modeling for Digital Planetariums,” *Proceedings of Eurographics 2010 – Areas Papers*, Norrköping, Sweden, May 2010.
21. **P. Sen** and S. Darabi\*, “A Novel Framework for Imaging Using Compressed Sensing,” *Proceedings of the IEEE International Conference on Image Processing (ICIP) 2009*, Cairo, Egypt, November 2009.
22. **P. Sen** and S. Darabi\*, “Compressive Image Super-resolution,” *Proceedings of the Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, California, November 2009.
23. Y. Mostofi and **P. Sen**, “Compressive Cooperative Sensing and Mapping in Mobile Networks,” *Proceedings of the American Control Conference (ACC) 2009*, St. Louis, Missouri, June 2009.
24. C. Kiser\*, C. Musial, and **P. Sen**, “Accelerating Active Contour Algorithms with the Gradient Diffusion Field,” *Proceedings of International Conference on Pattern Recognition (ICPR) 2008*, Tampa, Florida, December 2008.
25. Y. Mostofi and **P. Sen**, “Compressed Mapping of Communication Signal Strength,” *MILCOM 2008*, San Diego, California, November 2008.
26. B. Chen and **P. Sen**, “Video Carving,” *Proceedings of Eurographics 2008 – Short Papers*, Crete, Greece, April 2008.

27. S. Pont, **P. Sen**, and P. Hanrahan, “2- $\frac{1}{2}$ D Texture Mapping: Real-Time Perceptual Surface Roughening,” *Proceedings of the 4<sup>th</sup> Symposium on Applied Perception in Graphics and Visualization*, Tübingen, Germany, pp. 69 – 72, July 2007.
28. **P. Sen**, “Silhouette Maps for Improved Texture Magnification,” *Proceedings of SIGGRAPH / EUROGRAPHICS Graphics Hardware 2004*, Grenoble, France, pp. 65 – 73, August 2004. (**Best paper award**)
29. E. Chan, R. Ng, **P. Sen**, K. Proudfoot, and P. Hanrahan. “Efficient Partitioning of Fragment Shaders for Multipass Rendering on Programmable Graphics Hardware,” *Proceedings of SIGGRAPH / EUROGRAPHICS Graphics Hardware 2002*, Saarbrücken, Germany, pp. 69 – 78, September 2002. (**Best paper award**)

## OTHER PUBLICATIONS

30. **P. Sen**, “On the Relationship Between Dual Photography and Classical Ghost Imaging,” arXiv:1309.3007, Sept. 2013.
31. **P. Sen** and S. Darabi\*, “Implementation of Random Parameter Filtering,” Technical Report EECE-TR-11-0004, *University of New Mexico*, May 2011.
32. **P. Sen** and S. Darabi\*, “Details and Implementation for Compressive Estimation for Signal Integration in Rendering,” Technical Report EECE-TR-10-0003, *University of New Mexico*, May 2010.
33. **P. Sen**, “Adaptive Silhouette Maps,” *Symposium on Interactive 3D Graphics and Games* (poster), Seattle, Washington, April 2007.
34. **P. Sen**, “Analysis and implementation of the silhouette map data structure and its application to computer graphics,” *Ph.D. Dissertation*, Stanford University, June 2006.
35. **P. Sen** and V. DeRoo. “*Implication du Taux de Vide dans les Equations d’Impulsion dans CATHARE 3D*,” Internal report (in French) *Commissariat à l’Énergie Atomique (CEA)*, Grenoble, France, August 1996.

## SPONSORED RESEARCH AWARDED

Total amount awarded as lead PI: \$1,833,833 (\$1,719,652 from NSF)

Total amount awarded as PI or Co-PI: \$2,268,910 (\$2,154,729 from NSF)

1. *An augmented-reality display system for visualization and training (first-year proposal)*, **Principal Investigator: P. Sen**. Funded by Sandia National Laboratories, Albuquerque, NM. Oct. 1, 2007 – Sep. 30, 2008. Amount: \$40,000.
2. *An augmented-reality display system for visualization and training (second-year extension)*, **Principal Investigator: P. Sen**. Funded by Sandia National Laboratories, Albuquerque, NM. Oct. 1, 2008 – Sep. 30, 2009. Amount: \$40,000.
3. *CAREER: A Framework for Sparse Signal Reconstruction for Computer Graphics*, **Principal Investigator: P. Sen**. Funded by the National Science Foundation (NSF). Jun. 1, 2009 – May. 31, 2014. NSF award #IIS-0845396. Amount: \$495,513.
4. *Thinking Outside the Dome*, **Principal Investigator: P. Sen**, Co-PI’s: E. Angel, J. Kniss. Funded by the National Science Foundation (NSF). Aug. 1, 2009 – Oct. 31, 2009. NSF award #IIP-0950275. Amount: \$20,000.
5. *PFI: A Consortium for Fulldome and Immersive Technology Development*, **Principal Investigator: P. Sen**, Co-PI’s: E. Angel, J. Kniss, A. Filemyr, A. Maji. Funded by the National Science Foundation (NSF). Mar. 1, 2010 – Mar. 31, 2012. NSF award #IIP-0917919. Amount: \$597,220.
6. *MRI: Acquisition of a GPU-Accelerated Parallel Supercomputer for Computational Science and Engineering Research at the University of New Mexico*, **Principal Investigator: S. Atlas**, Co-PI’s: **P. Sen**, H. Guo, J. Simpson. Funded by the National Science Foundation (NSF). Sep. 1, 2010 – Aug. 31, 2013. NSF award #OCI-1040530. Amount: \$435,077.

7. *Engineering Research Center (ERC) in Smart Lighting*, Principal Investigator: **P. Sen** (I am only PI for a small portion of this grant; the main grant is over \$12M dollars. Main PI: R. Karlicek, Rensselaer Polytechnic Institute, main PI at UNM: S. Hersee). Funded by the National Science Foundation (NSF). Sep. 1, 2010 – Aug. 31, 2012. Amount: \$107,200.
8. *3D Reconstruction from 2D X-Ray Data*, Principal Investigator: **P. Sen**. Funded by the Sandia National Laboratories, Albuquerque, NM. Sep. 1, 2010 – Sep. 30, 2011. Amount: \$34,181.
9. *RI: CGV: SMALL: A Patch-based Framework for Capturing a World in Motion*, **Principal Investigator: P. Sen**. Funded by the National Science Foundation (NSF). Oct. 1, 2013 – Sep. 30, 2016. NSF award #IIS-1321168. Amount: \$499,719.

## INDUSTRIAL DONATIONS TO SUPPORT RESEARCH PROGRAM

1. *Adobe Systems, Inc.* Amount: \$26,000 (at UNM).
2. *Adobe Systems, Inc.* Amount: \$24,000.
3. *Nokia Corporation*. Amount: \$49,587.

## PATENTS AND INVENTION DISCLOSURES

1. S. Hersee, M. Hayat, and **P. Sen**, “Lens-less Digital Microscope,” US patent #8,624,968. Granted January 7, 2014.
2. **P. Sen** and S. Darabi, “System and Methods of Compressed Sensing as Applied to Computer Graphics and Computer Imaging,” US patent #8,666,180. Granted March 4, 2014.
3. **P. Sen** and S. Darabi, “System and Methods for Random Parameter Filtering,” US patent #8,712,180. Granted April 29, 2014.
4. Y. Mostofi and **P. Sen**, “System and Methods for Obstacle Mapping and Navigation,” US patent #8,712,679. Granted April 29, 2014.

# Teaching

## COURSES TAUGHT AT UNM

1. ECE 595/CS 590, *Real-Time Rendering and Graphics Hardware*, Spring 2007 [grad]
2. ECE/CS 433, *Introduction to Computer Graphics*, Fall 2007 [undergrad]
3. ECE 537, *Foundations of Computing*, Fall 2007 [grad]
4. ECE 516/CS 532, *Computer Vision*, Spring 2008 [grad]
5. ECE/CS 412, *Introduction to Computer Graphics*, Fall 2008 [undergrad]
6. ECE/CS 512, *Advanced Image Synthesis*, Fall 2008 [grad]
7. ECE 516/CS 532, *Computer Vision*, Spring 2009 [grad]
8. ECE/CS 412, *Introduction to Computer Graphics*, Fall 2009 [undergrad]
9. ECE/CS 495, *Special Topics in Mobile Application and Game Development*, Fall 2009 [undergrad]
10. ECE 595, *Advanced Videogame Development*, Fall 2009 [grad]
11. ECE 516/CS 532, *Computer Vision*, Spring 2010 [grad]
12. ECE 495/595, *Advanced Videogame Development*, Spring 2010 [undergrad/grad]
13. ECE/CS 412, *Introduction to Computer Graphics*, Fall 2010 [undergrad]
14. ECE 495/595, *Advanced Videogame Development*, Fall 2010 [undergrad/grad]
15. ECE 516/CS 532, *Computer Vision*, Spring 2011 [grad]
16. ECE 495/595, *Advanced Videogame Development*, Spring 2011 [undergrad/grad]

17. ECE/CS 512, *Advanced Image Synthesis*, Fall 2011 [grad]
18. ECE 495/595, *Advanced Videogame Development*, Fall 2011 [undergrad/grad]
19. ECE 633, *Advanced Image Processing*, Spring 2012 [grad]

#### COURSES CREATED OR REDESIGNED AT UNM

1. ECE 595/CS 590, *Real-Time Rendering and Graphics Hardware* [grad]
2. ECE/CS 433 (later 412), *Introduction to Computer Graphics* [undergrad]
3. ECE 516/CS 532, *Computer Vision* [grad]
4. ECE/CS 512, *Advanced Image Synthesis* [grad]
5. ECE/CS 495, *Special Topics in Mobile Application and Game Development* [undergrad]
6. ECE 495/494, *Advanced Video Game Development* [undergrad/grad]

#### PH.D. THESES SUPERVISED

- Soheil Darabi, Ph.D. Computer Engineering (UNM). “A Robust Patch-Based Synthesis Framework for Combining Inconsistent Images,” defended on August 9, 2012.

#### MASTERS THESES SUPERVISED

- Mauricio Gómez, M.S. Computer Engineering (UNM). “Novel Haptic Interface for Viewing 3D Images,” defended on July 11, 2012.
- Lei Xiao, M.S. Computer Engineering (UNM). “Edge-Aware Filters for Separable Irradiance in Global Illumination Rendering,” defended on July 2, 2012.
- Mark Waligora, M.S. Computer Science (UNM). “Virtual Windows: Designing and implementing a system for ad-hoc positional based rendering,” defended on April 11, 2008.

#### CURRENT PH.D. STUDENTS

- Nima Khademi Kalantari

#### PREVIOUS THESIS AND DISSERTATION COMMITTEES FOR OTHER GRADUATE STUDENTS

- Paul Ng, M.S. Electrical Engineering (UNM). “A Framework for the Development of Virtual Robotic Games,” defended on April 14, 2010. Main adviser: Rafael Fierro
- Srikanth Narravula, M.S. Electrical Engineering (UNM). “Information theoretic view of photon-counting integral imaging,” defended on December 8, 2009. Principal adviser: Majeed Hayat
- Guanyu Wang, M.S. Computer Science (UNM). “Supervised Manifold Distance Segmentation,” defended on November 5, 2009. Principal adviser: Joe Kniss
- Shan Xia, Ph.D. Computer Engineering (UNM). “A Conceptual Framework for Visual Data Mining, with Continuous Semantic Zooming,” defended on July 31, 2009. Principal adviser: Tom Caudell
- Anthony Campisi, M.S. Computer Science (UNM). “An Emotion Model for Non Player Characters in Computer Games,” defended on March 25, 2009. Principal adviser: Tom Caudell
- Warren Hunt, M.S. Computer Science (UNM), “Scale-invariant Raster Image Representation Through Dual Encoding,” defense on November 9, 2007. Principal adviser: Joe Kniss

#### STUDENT ADVISEE AWARDS

- Soheil Darabi – Outstanding UNM ECE Graduate Student (2012)



# Service

## PROFESSIONAL SERVICE

- Editorial Board, Elsevier *Computers & Graphics* Journal, 2009 - present
- Publicity Co-chair, 3DPVT 2010
- National Science Foundation Panelist 2008, 2009, 2010, 2011, Washington D.C.
- Reviewer for: SIGGRAPH, SIGGRAPH Asia, ACM Transactions on Graphics, Eurographics Symposium on Rendering (EGSR), Eurographics, IEEE Computer Graphics & Applications, Optics Express, IEEE Transactions on Image Processing

## CONFERENCE PROGRAM COMMITTEES

- Eurographics Symposium on Rendering (EGSR) 2014, Lyon, France
- Eurographics Symposium on Rendering (EGSR) 2013, Zaragoza, Spain
- IEEE International Workshop on Computational Cameras and Displays (CCD) 2013, Portland, Oregon
- IEEE Workshop on 3D Image/Video Technologies and Applications (IVMSP) 2013, Seoul, Korea
- ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D) 2013, Orlando, FL
- Second joint conference between the International Conference on 3D Digital Imaging and Modeling (3DIM) and the International Symposium on 3D Data Processing Visualization Transmission (3DPVT), (3DIMPVT) 2012, Zurich, Switzerland
- Eurographics Symposium on Rendering (EGSR) 2012, Paris, France
- ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D) 2012, Orange County, CA
- IEEE International Workshop on Projector-Camera Systems (PROCAMS) 2011, Colorado Springs, CO
- Joint conference between the International Conference on 3D Digital Imaging and Modeling (3DIM) and the International Symposium on 3D Data Processing Visualization Transmission (3DPVT), (3DIMPVT) 2011, Hangzhou, China
- IEEE International Workshop on Projector-Camera Systems (PROCAMS) 2010, San Francisco, CA
- International Symposium on 3D Data Processing Visualization Transmission (3DPVT) 2010, Paris, France
- Eurographics 2009 Short Papers Committee

## PROFESSIONAL MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE)
- Association for Computing Machinery (ACM)
- ACM Special Interest Group Graphics (SIGGRAPH)
- Society of Hispanic Professional Engineers (SHPE)

## UNIVERSITY AND DEPARTMENTAL SERVICE

- UCSB ECE Undergraduate Advisor, (Sep. 2013 – present)
- UCSB ECE Affirmative Action & Diversity Advisory Committee, (Sep. 2013 – present)
- UCSB ECE Graduate Admissions Committee, (Sep. 2012 – present)
- UNM ECE Strategic Planning Committee, (Jan. 2010 – May 2012)
- UNM ECE Publicity Committee, (Jan. 2010 – May 2012)
- UNM Computer Engineering Faculty Search Committee (Spring 2007, Spring 2008)
- UNM ECE Computer Usage Committee, (Aug. 2006 – Jan. 2012, Chair Aug. 2007 – Jan. 2012)
- UNM IF&DM and ARTS Lab Search Committee (Spring 2008)
- UNM ECE Expand Your Engineering Skills (EYES) Committee (Aug. 2006 – May 2008)
- UNM IF&DM Admissions Committee (Spring 2007, Spring 2008)
- UNM IF&DM Governance Committee (Jan. 2007 – May 2010)
- UNM ECE Undergraduate Committee (Aug. 2006 – May 2007)

## CONSULTING

Tau Technologies, Albuquerque, NM. “GPU-based robust pose estimation,” 2008.

Sandia National Laboratories, Albuquerque, NM. “Efficient visibility calculation and visualization on the GPU for sensor applications,” 2007.

## COMPANY ADVISORY ROLES

- *3D Icon*, startup company building novel 3D display systems, member of the Technical Advisory Board (2011 - 2013)
- *SK Infrared*, startup company developing cost-effective portable medical infrared imaging systems for early cancer detection, member of the Technical Advisory Board

## TALKS GIVEN

- “Dealing with the Noise in Monte Carlo Rendering,” **DreamWorks Animation**, Glendale, California. June 27, 2013
- “Computing Realistic Imagery of the World Around Us,” **University of California, Irvine**, Irvine, California. May 31, 2013
- “Light Transport Acquisition: Helping Make Smart Lighting Smarter,” **Rensselaer Polytechnic Institute** (ERC Annual Review), Troy, New York. March 22, 2011
- “Applications of Compressed Sensing in Computer Graphics and Imaging,” **Honeywell Technology Showcase**, Albuquerque, New Mexico. October 21, 2010
- “Exploiting the Sparsity of Video Sequences to Efficiently Capture Them,” **Dagstuhl Workshop on Computational Video**, Dagstuhl, Germany. October 14, 2010
- “New Developments in Light Transport Acquisition,” **Rensselaer Polytechnic Institute**, Troy, New York. July 20, 2010
- “Applications of Compressed Sensing in Computer Graphics and Imaging,” **Air Force Research Labs**, Albuquerque, New Mexico. July 12, 2010
- “Data-driven Models in Computer Graphics,” **AFRL/RD Scatterometry Workshop**, Albuquerque, New Mexico. October 17, 2007
- “Dual Photography,” **Sigma Xi Distinguished Public Talks**, Albuquerque, New Mexico. February 15, 2007
- “Dual Photography,” **University of California Riverside**, Riverside, California. May 3, 2006



- “Dual Photography,” **University of New Mexico**, Albuquerque, New Mexico. April 25, 2006
- “Dual Photography,” **Purdue University**, West Lafayette, Indiana. April 5, 2006
- “Dual Photography,” **Texas A&M University**, College Station, Texas. March 8, 2006
- “Dual Photography,” **University of Virginia**, Charlottesville, Virginia. March 2, 2006
- “Dual Photography,” **University of Wisconsin**, Madison, Wisconsin. October 30, 2005
- “Dual Photography,” **University of Michigan**, Ann Arbor, Michigan. October 27, 2005
- “Dual Photography,” **Pixar Animation Studios**, Emeryville, California. August 30, 2005
- “Dual Photography,” **Hewlett Packard Research Labs**, Palo Alto, California. July 6, 2005
- “Dual Photography,” **Oregon State University**, Corvallis, Oregon. May 27, 2005
- “Dual Photography,” **University of California San Diego**, La Jolla, California. May 13, 2005

### TRADITIONAL MEDIA COVERAGE OF RESEARCH AND EDUCATIONAL PROGRAM

1. *UNM Daily Lobo*, “Career Profile: Video Game Developer,” article on my experience developing videogames and leading the top-10 videogame program at UNM. Vol. 116, No. 125, pp. 2, March 28, 2012.
2. *UNM Today*, “Researchers find faster, lower cost way to render computer generated films,” story on our development of the Random Parameter Filtering algorithm, which enables the rendering of complex scenes using Monte Carlo algorithms but without noise. Vol. 47, No. 8, pg. 5, March 5, 2012.
3. *UNM Engineering Magazine*, “Meeting of the minds,” feature on interdisciplinary work. Vol. 7, No. 1, pg. 2 – 5, Winter 2011.
4. *UNM Engineering Magazine*, cover featuring videogame artwork for one of our AGL projects. Vol. 7, No. 1, Winter 2011.
5. *UNM Today*, “NVIDIA selects UNM computing as CUDA Research Center,” story on our selection as one of NVIDIA’s CUDA Research Centers. Vol. 46, No. 7, pg. 5, February 21, 2011.
6. *UNM Today*, “AGL Named in Game Design Top 50,” brief story on our videogame program. Vol. 45, No. 8, pg. 6, March 22, 2010.
7. *New Mexico Business Weekly*, “Techies take immersive dome experience to new frontiers,” story on our immersive dome research project which is sponsored by the the National Science Foundation. Vol. 17, No. 2, March 12-18, 2010.
8. *UNM Today*, “Student-created game available online for Xbox,” brief story on our videogame program. Vol. 45, No. 6, pg. 3, January 19, 2010.
9. *KASA Fox 2 News* (ABQ channel 2), feature on *Magnetic Defender*, one of the videogames released through the AGL game development program, December 22, 2009.
10. *Noticias Univision* (ABQ channel 41), interview for the AGL videogame showcase, December 11, 2009 (in Spanish)
11. *Albuquerque Journal*, “Mixing Work and Play,” article on the videogame development program. Vol. 129, No. 345, pp. C1 – C2, December 11, 2009.
12. *UNM Engineering Magazine*, “Bright Careers: SOE Researchers receive NSF CAREER awards,” feature on NSF CAREER Award. Vol. 6, No. 2, pg. 13, Fall 2009.
13. *KRQE News* (ABQ channel 13), feature on AGL videogame showcase (with a segment on the robotics competition for ECE 131), December 10, 2009
14. *UNM Engineering Magazine*, “Transforming Graphics For All,” feature on research and game development program. Vol. 6, No. 2, pp. 5 – 7, Fall 2009.
15. *UNM Today*, “Engineering professor, students work to sell games to Xbox,” brief story on our videogame program. Vol. 44, No. 9, pg. 4, April 20, 2009.

16. *KRQE News* (channel 13), interview for the game development program. April 17, 2009.
17. *UNM Daily Lobo*, “Lobo game developers get chance to sell work,” article on our process of releasing videogames developed as part of our program to the public through Xbox LIVE. Vol. 113, No. 129, pp. 1 – 2, March 31, 2009.
18. *UNM Daily Lobo*, “Students delve into game development,” article on our use of XNA to develop videogames as part of our program. Vol. 113, No. 75, pp. 12 – 13, December 11, 2008.
19. *UNM Daily Lobo*, “Students take exams to Xbox,” article on our videogame development program. Vol. 112, No. 75, pp. 1 – 2, December 6, 2007.
20. *KRQE News* (ABQ channel 13), feature on the 2007 AGL videogame showcase at UNM. December 6, 2007.
21. *New Mexico Business Weekly*, “Gaming Pool: Schools develop training for booming industry,” article on our videogame development program as well as others around the state of New Mexico. Vol. 14, No. 35, pp. 2, 48, November 16 – 22, 2007.
22. *Numb3rs* television show, reference to dual photography algorithm to extract information from an image. Episode title: “In Plain Sight,” Season 2, Episode 8. Original air date November 18, 2005.
23. *CPU Computer Power User Magazine*, “Lights, Camera, Re-Camera,” article on dual photography work. Vol. 5, No. 8, August 2005.
24. *Computerworld.ch Magazine*, “Kamera schaut um die Ecke,” article on dual photography work (in Swiss German). July 22, 2005.

#### ONLINE MEDIA COVERAGE OF RESEARCH AND EDUCATIONAL PROGRAM

1. *HDR Labs News*, “New HDR video camera: AMP HDR,” article on the new HDR camera presented in our SIGGRAPH 2011 technical paper. June 17, 2011.
2. *UNM Today*, “NVIDIA Selects UNM Computing as a CUDA Research Center,” January 26, 2011.
3. *GlobeNewswire*, “3D Imaging Pioneer, 3DIcon Corporation, Adds Dr. Pradeep Sen to Its Technical Advisory Board,” June 1, 2011.
4. *HPC Wire*, “NVIDIA Names 20 New CUDA Research and Training Centers,” December 23, 2010.
5. *Vizworld*, “NVIDIA Names 20 New CUDA Research Centers,” December 22, 2010.
6. *UNM Today*, “Students Create Video Games As Final Project,” December 13, 2010.
7. *UNM School of Engineering Homepage*, “Public Invited to Test and Play Video Games Thursday, 12/9/10,” December 8, 2010.
8. *UNM Dept. of Electrical & Computer Engineering Homepage*, “UNM Named an Official NVIDIA CUDA Research Center,” November 22, 2010.
9. *UNM Today*, “New Mexico Innovators Join Forces on Fulldome Research,” article on our National Science Foundation grant to explore immersive fulldome media. March 12, 2010.
10. *UNM Dept. of Electrical & Computer Engineering Homepage*, “UNM Advanced Graphics Lab Named Top 50 Game Design Program,” March 1, 2010.
11. *UNM School of Engineering Homepage*, “NSF Funds Prof. Sen’s Work on Immersive Dome Environments,” March 3, 2010
12. *USA Today*, “The Princeton Review’s Top 50 Undergraduate Video Game Design Programs,” February 28, 2010
13. *UNM Today*, “UNM Student-Created Game Now Available for Download on Xbox,” December 22, 2009.
14. *UNM Dept. of Electrical & Computer Engineering Homepage*, “Microsoft Releases Game Developed in ECE’s Advanced Graphics Lab,” December 17, 2009.
15. *UNM Today*, “UNM ECE – We’ve Got Game,” December 10, 2009.

16. *UNM Dept. of Electrical & Computer Engineering Homepage*, “Public Invited to Test Video Games, See Robots Compete Thursday,” December 8, 2009.
17. *UNM Dept. of Electrical & Computer Engineering Homepage*, “Profs, Students Recognized for Patents, Copyrights,” April 17, 2009.
18. *UNM Dept. of Electrical & Computer Engineering Homepage*, “Dr. Pradeep Sen Wins 2009 NSF CAREER Award,” March 31, 2009.
19. *UNM Today*, “UNM Engineering Professor, Students Working to Sell Games to Xbox,” March 20, 2009.
20. *UNM Dept. of Electrical & Computer Engineering Homepage*, “Game On! Test Drive New Video Games Thursday,” December 9, 2008.
21. *UNM Live*, “A Video Game for a Final Project?,” video on our videogame showcase, posted January 10, 2008.
22. *UNM Live*, “UNM Talks Computer Graphics with Assistant Professor Pradeep Sen,” podcast interview on videogame development, November 27, 2007.
23. *UNM Today*, “UNM Advanced Graphics Lab Hosts ‘GFX Café’ Every Friday,” September 13, 2007.
24. *Technology Research News*, “Camera sees behind objects,” article on dual photography work. June 1 – 8, 2005.
25. *New Scientist*, “Card trick holds promise for movie effects,” article on dual photography work. June 1, 2005.
26. *Slashdot*, “Seeing Around Corners With Dual Photography,” May 5, 2005.

#### SELECTED SYNERGISTIC ACTIVITIES

- Founded and directed videogame development program at UNM which was named one of the top 10 undergraduate programs for videogame design in North America by the *Princeton Review* (rank #9), March 2012.
- Mentorship activities included “at-risk” kids through the Albuquerque Truman Middle School Gifted Seminar Mentor program (Fall 2010 – Spring 2012), and high school students from local Albuquerque area high schools (Fall 2008 – Spring 2012).
- Taught videogame development seminar at Manzano High School, Albuquerque, NM, Mar. 2008.
- Taught short course in intermediate computer graphics at *Universidad de Concepción* in Concepción, Chile (in Spanish), Jan. 2008.
- Volunteer teacher at Fair Oaks Elementary School in Redwood City, California to teach a 5<sup>th</sup> grade class Math and Science (in Spanish), Sep. 1998 – Jun. 2000.

# Miscellaneous

## NON-ACADEMIC WORK EXPERIENCE

### Founder

*Thinkstakes, Inc.*

Jun. 1998 – Sep. 2000  
Palo Alto, California

### Software Engineer

*Commissariat à l'Énergie Atomique (CEA)*

Summer 1996  
Grenoble, France

### Software Engineer

*Space Telescope Science Institute (STScI)*

Summer 1995  
Baltimore, Maryland

### Manufacturing Engineer

Office Imaging Division, *Eastman Kodak*

Summer 1994  
Rochester, New York

### Software Engineer

Land Mobile Products Sector, *Motorola*

Summer 1993  
Schaumburg, Illinois

## INTERNATIONAL TRAVEL

Austria, Bahamas, Belgium, Bulgaria, Canada, Chile, China, Czech Republic, Denmark, Egypt, England, France, Germany, Greece, Hungary, India, Iran, Italy, Japan, Luxembourg, México, Monaco, Netherlands, Poland, Romania, Singapore, South Korea, Spain, Sweden, Switzerland, Turkey

## LANGUAGES SPOKEN

Fluent: English, Spanish (*Castellano*)

Conversational: French

Basic conversational: Farsi (Persian)

## PERSONAL

Birthplace: Reynosa, México

Ethnicity: Mexican American

Citizenship: American