

Curriculum Vitae



BIOGRAPHICAL DATA

- **Name:**
Sumanta N. Pattanaik
- **Education:**
 - B.Sc., 1976, Chemistry, Utkal University, Orissa, India
 - M.Sc. 1978, Chemistry, Utkal University, Orissa, India.
 - Ph.D. 1993, Computer Science, BITS-Pilani, Pilani, India.
- **Professional Positions:**
 - June 2001-Present, Associate Professor, Department of Electrical Engineering and Computer Science, UCF, Orlando, Florida.
 - Spring 2009 (Sabbatical): Visiting Associate Professor, Department of Computer Science, University of Girona, Girona, Spain.
 - Fall 2008 (Sabbatical): Visiting Associate, Department of Computer Science, Yale University, New Haven, Connecticut.
 - Fall 1997-Summer 2001: Research Associate, Program of Computer Graphics, Cornell University, Ithaca, New York.
 - Fall 1995-Summer 1997: Postdoctoral Associate, Program of Computer Graphics, Cornell University, Ithaca, New York.
 - Fall 1993-Summer 1995: INRIA Post-Doctoral Researcher, SIAMES, IRISA-INRIA, Rennes, France
 - Fall 1988-Summer 1995: Senior Staff Scientist, Department of Computer Graphics, National Center for Software Technology (NCST), Bombay, India.
 - Fall 1985-Summer 1988: Staff Scientist, Department of Computer Graphics, National Center for Software Technology (NCST), Bombay, India.
 - Fall 1980-Summer 1985: Scientific Officer-C and D, Bhabha Atomic Research Center (BARC), Bombay, India.
 - Fall 1979-Summer 1980: Scientific Officer Trainee, BARC Training School, Bombay, India

TEACHING

- **Courses Taught: (Last 5 years)**

Course Number	Course Title	Credits	Class	Semester	#of Students	Course Evaluation Summary
CAP 5725	Computer Graphics I	3	Graduate	Fall 2013	21	3.88
CAP 4720	Fundamentals of Computer Graphics	3	Junior/Senior	Fall 2013	52	4.05
CAP 6721	Ray Tracing	3	Graduate	Spring 2013	16	
COP 3503	CS II (Design and Analysis of Algorithms)	4	Junior /Senior	Spring 2012	127	3.65
Independent Study	Recent Advances in Ray Tracing	3	Graduate	Spring 2012	1	
CAP 5725	Computer Graphic I	3	Graduate	Fall 2011	18	4.57
CAP 4720	Fundamentals of	3	Junior	Fall 2011	27	4.85

	Computer Graphics		/Senior			
CAP 3503	CS II (Design and Analysis of Algorithms)	4	Junior /Senior	Spring 2011	108	3.85
CAP 6721	Ray Tracing: Real Time Realistic Rendering	3	Graduate	Spring 2011	14	4.43
Independent Study	Algo and Data Struct for Realistic RT Rendering	3	Graduate	Spring 2011	1	
Independent Study	OpenSceneGraph	3	Graduate	Spring 2011	1	
CAP 5725	Computer Graphic I	3	Graduate	Fall 2010	16	4.75
CAP 4720	Fundamentals of Computer Graphics		Junior /Senior	Fall 2010	35	4.0
CAP 3503	CS II (Design and Analysis of Algorithms)	4	Junior /Senior	Spring 2010	121	3.89
CAP 6701	Computer Graphics II	3	Graduate	Spring 2010	14	4.66
CAP 5725	Computer Graphic I	3	Graduate	Fall 2009	21	4.26
CAP 4720	Fundamentals of Computer Graphics		Junior /Senior	Fall 2009	22	4.36
CAP 6720	Ray Tracing: Real Time Realistic Rendering	3	Graduate	Spring 2008	9	

- Doctoral Student Supervision (Current)**

Student Name	Year Joined	Status	Source of Support
Ajit Hakke-Patil	Spring 2010	Passed Qualifying	Self funded
Ke Chen	Fall 2011	Passed Qualifying	Fulltime RA (NSF funding) in 2012-2013.
Charly Collin	Spring 2012	Passed Qualifying	Fulltime RA (NSF funding) in 2012-2014
Eugene Taranta	Fall 2013		Self funded
International Doctoral Co-Supervisee			
Adrien Grusson	Fall 2011 (Univ of Rennes I)	-	Co-supervising with Kadi Bouatouch, INRIA-Rennes.

- Doctoral Student Supervision (Completed)**

Student Name	Year Graduated	Research Topic	Current Affiliation
LingLing (from M&S department)	Spring 2013	<i>GPU Ray Traced Rendering And Image Fusion Based Visualization Of Urban Terrain For Enhanced Situation Awareness,</i>	Singapore Defense lab
Yugang Min	Spring 2012	4D-CT Lung Registration and its Application for Lung Radiation Therapy	
Yuraj Obert	Summer 2010	<i>User Interface and Tool for global Illumination Computing</i>	ATI-AMD, Orlando
Kevin Boulanger	Summer 2008	<i>Real-time Realistic Nature Rendering</i>	Electronic Art, Orlando
Musawir Ali Shah	Fall 2007	<i>Interactive Computation of Light Transport in Volume.</i>	NVIDIA, Orlando
Anand Santhanam (cosupervisee)	Summer 2006	<i>Modeling, Simulation, and Visualization Of 3D Lung Dynamics</i>	UCLA
Ruifeng Xu	Spring 2005	<i>Realistic Rendering in Mixed and Virtual Environments</i>	Samsung

International Doctoral Co-supervisee			
Pascal Gautron	Fall 2006 (Univ of Rennes I, France)	<i>Interactive High Quality Rendering of Synthetic Environments (Co-supervised with Kadi Bouatouch, INRIA-France)</i>	Technicolor
Jaroslav Krivanek	Dec 2005 (Univ of Rennes I, France)	<i>Realistic Rendering (Co-supervised with Kadi Bouatouch, INRIA-France)</i>	Charles University

- **MS Supervision (Graduated)**

Student Name	Year Graduated	Research Topic	Current Affiliation
Kris Rivera	Fall 2011	<i>Ray Collection Bounding Volume Hierarchy</i>	Lockheed
Siddharth Borikar	Spring 2004	<i>Fast Algorithms for Fragment Based Completion in Images of Natural Scenes</i>	
Francisco Rival	Spring 2004	<i>GPU Based Interactive Radiosity and Ray Tracing</i>	
Mangesh Nijasure	Fall 2003	<i>GPU Based Real-time Global Illumination</i>	ATI-AMD, Orlando
International MS Co-supervisee			
Adria Fores	Summer 2009 (Univ of Girona, Spain)	<i>A system for interactive display and rendering of BRDF models (Co- supervised with Xavier Pueyo, Univ of Girona)</i>	PhD Student at RIT
Juraj Obert	Summer 2007 (Czech Technical University, Prague)	<i>Realistic Rendering (Co-supervised with Jaroslav Krivanek, Czech Technical University, Prague)</i>	ATI-AMD, Orlando
Kevin Boulanger	Summer 2005 (University of Rennes I, France)	<i>Real-Time Grass rendering. (Co-supervised with Kadi Bouatouch, INRIA-France)</i>	Electronic Art, Orlando
Guillaume Francois	Summer 2005 (University of Rennes I, France)	<i>Subsurface Scattering. (Co-supervised with Kadi Bouatouch, INRIA-France)</i>	Dreamworks, LA

- **Undergrad Thesis Supervision (Completed)**

Sudent Name	Year Graduated	Research Topic	Current Affiliation
Evan Husk (Co- supervisee)	Fall 2012 (supervisor: Avelino Gonzalez)	<i>Imitating Individualized Facial Expressions in a Human-Like Avatar through a Hybrid Particle Swarm Optimization – Tabu Search Algorithm</i>	
Chris Pugh	Summer 2010	<i>Realistic Real-time Rendering of Complex Materials</i>	UCF
Eric Risser	Fall 2006	<i>Interactive Grass Rendering</i>	

- **Other Educational Contribution:**

- Text Book: High Dynamic Range Imaging: Acquisition, Display and Image-Based Lighting, 2nd Edition. Authors: Erik Reinhard, Greg Ward, S. N. Pattanaik, Paul Debevec, Wolfgang Heidrich and Karol Myszkowski, The Morgan Kaufman Series in Computer Graphics, 2010.

- Text Book: High Dynamic Range Imaging: Acquisition, Display and Image-Based Lighting, Authors: Erik Reinhard, Greg Ward, S. N. Pattanaik and Paul Debevec, The Morgan Kaufman Series in Computer Graphics, 2006.

RESEARCH

- **Key Words:** Computer Graphics, Real-time rendering, Realistic rendering, Material Modeling and Rendering, Nature rendering.
- **List of Publications**
 - I. **Refereed books and monographs**
 - 1) Rendering Techniques 2007. Proceedings of Eurographics Symposium on Rendering, Jan 2007, Jan Kautz, S. N. Pattanaik (Editors), Eurographics in Cooperation with ACM SIGGRAPH. 2007.
 - 2) Proceedings of IFIP-ICCG93, S.P. Mudur, S.N. Pattanaik (Editors), North-Holland, 1993.
 - II. **Refereed chapters in edited books**
 - 1) Ruifeng Xu, and S. N. Pattanaik, "Radiosity", in Encyclopedia of Computer Science and Engineering 527.R1, Benjamin Wah (editor), pp 2338-2343, John Wiley & Sons, Inc., Jan 2009.
 - 2) Jaroslav Krivánek, and S. N. Pattanaik, "Lighting", in Encyclopedia of Computer Science and Engineering. Benjamin Wah (editor), pp 1734-1744, John Wiley & Sons, Inc. , Jan 2009.
 - 3) Hector Yee and S. N. Pattanaik, "Attention for Computer Graphics Rendering", in NeuroBiology of Attention, Editors: Laurent Itti, Geraint Rees and John Tsotsos, Academic Press, 2004.
 - 4) S.N. Pattanaik, "A Stylised Model for Animating Bharata Natyam : An Indian Classical Dance Form", *Computer in Art, Design and Animation*, editors J Landsdown and Rae Earnshaw. Springer Verlag, 1989.
 - III. **Refereed journal papers**
 - 1) Daniele Bernabei, Ajit Hakke-Patil, Francesco Banterle, Marco Di Benedetto, Fabio Ganovelli, S. N. Pattanaik, Roberto Scopigno, "A Parallel Architecture for Interactively Rendering Scattering and Refraction Effects", *IEEE Computer Graphics*, vol. 32(2), pp. 34-43, March-April 2012.
 - 2) Kevin Boulanger, Kadi Bouatouch, S. N. Pattanaik, "High-Frequency Shadows for Real-Time Rendering of Trees", *Journal of Graphics, Gpu, and Game Tools*, vol. 25, no. 1, pp. 1-12, 2010.
 - 3) Daniele Bernabei, Fabio Ganovelli, Nico Pietroni, Paolo Cignoni, S. N. Pattanaik, Roberto Scopigno, "Real-time Single Scattering Inside Inhomogeneous Materials", *The Visual Computer Journal*, vol. 26, no. 608, pp. 583-593, 2010.
 - 4) Juraj Obert, Fabio Pelacini, S. N. Pattanaik, "Visibility editing for all frequency shadow design", *Computer Graphics Forum*, vol. 29, no. 4, pp. 1441-1449, 2010.
 - 5) Musawir A. Shah, Jaakko Kontinen, S. N. Pattanaik, "Image-Space Subsurface Scattering for Interactive Rendering of Deformable Translucent Objects", *IEEE Computer Graphics and Applications*, vol. 29, no. 1, pp. 66-78, January/February, 2009.
 - 6) Kevin Boulanger, S. N. Pattanaik, Kadi Bouatouch, "Rendering Grass in Real Time with Dynamic Lighting", *IEEE Computer Graphics and Applications*, vol. 29, no. 1, pp. 32-41, January/February, 2009
 - 7) Guillaume Francois, S. N. Pattanaik, Kadi Bouatouch, Gaspard Breton, " Subsurface Texture Mapping". *IEEE Computer Graphics and Applications*, vol. 28, no 1, pp. 34-42, Jan./Feb. 2008.

- 8) Juraj Obert, Jaroslav Krivanek, Fabio Pellacini, Daniel Sykora, S. N. Pattanaik, "iCheat: A Representation for Artistic Control of Indirect Cinematic Lighting", *Computer Graphics Forum*, vol. 27, no. 4, pages 1217-1223, June 2008.
- 9) Eric Risser, Musawir Ali Shah, S. N. Pattanaik, "Faster Relief Mapping using the Secant Method", *Journal of Graphics Tools*, vol. 12(3), pages 17-24, 2007.
- 10) Musawir A. Shah, Jaakko Konttinen, S. N. Pattanaik, "Caustics Mapping: An Image-space Technique for Real-Time Caustics", *IEEE Transactions on Visualization and Computer Graphics*, March/April 2007, vol. 13(2), pp 272-280.
- 11) Pascal Gautron, Jaroslav Krivanek, Kadi Bouatouch, S. N. Pattanaik, "Temporal Radiance Caching", *IEEE Transactions on Visualization and Computer Graphics*, vol. 13(5), pages 891-901, 2007.
- 12) Mark Colbert, S. N. Pattanaik, Jaroslav Krivanek, "BRDF-Shop: Creating Physically Correct Bidirectional Reflectance Distribution Functions", *IEEE Computer Graphics and Applications*, vol. 26(1), Page(s):30 – 36, Jan.-Feb. 2006.
- 13) Ruifeng Xu, S. N. Pattanaik, Charles Hughes, "High Dynamic Range Still Image Encoding in JPEG 2000", *IEEE Computer Graphics and Applications*, vol. 25(6), Pages:57 – 64, Nov.-Dec. 2005.
- 14) Jaroslav Krivakek, P. Gautron, S. N. Pattanaik, K. Bouatouch. "Radiance Caching for Efficient Global Illumination Computation", *IEEE Transactions on Visualization and Computer Graphics*, vol. 11(5), Page(s):550 – 561, Sept.-Oct. 2005.
- 15) Jaakko Konttinen, Charles Hughes, S. N. Pattanaik, "The Future of Mixed Reality: Issues in Illumination and Shadows, *Journal of Defense Modeling and Simulation*, vol. 2(1), June 2005.
- 16) Mangesh Nijasure, S. N. Pattanaik, Vineet Goel, "Real-time Global Illumination on GPU", *Journal of Graphics Tools*. vol. 10(2), Pages: 55-71, April-June 2005.
- 17) Ruifeng Xu, S. N. Pattanaik, "Non-Iterative, Robust Monte Carlo Noise Reduction", *IEEE Computer Graphics and Applications*. Volume 25(4), March/April 2005, pages: 31-35.
- 18) S. M., Khan, S. N. Pattanaik (2004). "Modeling blue shift in moonlit scenes using rod cone interaction" *Journal of Vision*, 4(8), 316a.
- 19) Hector Yee, S. N. Pattanaik, "Segmentation and Adaptive Assimilation for Detail-Preserving Display of High-Dynamic Range Images", *Visual Computers*. vol. 19(7-8), December 2003.
- 20) Ruifeng Xu, S. N. Pattanaik, "High Dynamic Range Image Display Using Level Set Framework", *Journal of Winter School of Computer Graphics*, vol. 1-3 (11), February 2003.
- 21) Bruce J. Walter, S. N. Pattanaik, Donald. P. Greenberg, "Using Perceptual Texture Masking for Efficient Image Synthesis", *Computer Graphics Forum*, vol. 21(3), pp 393-400, September 2-6, 2002.
- 22) H. Yee, S. N. Pattanaik and D. P. Greenberg, "Spatio-Temporal Sensitivity and Visual Attention in Dynamic Environments", *ACM Transactions on Computer Graphics*. vol. 20(1), pp: 39-64, Jan 2001.
- 23) Kadi Bouatouch, S.N. Pattanaik and Eric Zeghers, "Computation of Higher Order Illumination with a Non Deterministic Approach", *Eurographics'96, Computer Graphics Forum Conference Issue*, vol. 15(3), pp. C327-C337, 1996.
- 24) S.N. Pattanaik and S.P. Mudur, "Adjoint Equations and Random Walks for Illumination Computation", *ACM Transactions on Computer Graphics*, January 1995.
- 25) S.N. Pattanaik and Kadi Bouatouch, "Fast Wavelet Radiosity Method", *Eurographics'94. Computer Graphics Forum Conference Issue*, vol. 13(3), pp. C407-C420, 1994.
- 26) S.N. Pattanaik and S.P. Mudur, "The Potential Equation and Importance in Illumination Computations", *Computer Graphics Forum*, vol. 12(2), pp. 131-136, 1993.

- 27) S.N. Pattanaik and S.P. Mudur, "Computation of Global Illumination in a Participating Medium by Monte Carlo Simulation", The Journal of Visualisation and Computer Animation, vol. 4(3), pp. 133-152, 1993.
 - 28) S.N. Pattanaik and S.P. Mudur, "Efficient Potential Equation Solutions for Global Illumination Computation", Computers & Graphics, vol. 17(4), pp. 387-396, 1993.
 - 29) S.P. Mudur and S.N. Pattanaik, "Multidimensional Illumination Function for Visualisation of Complex 3D Environments", The Journal of Visualisation and Computer Animation, vol. 1(2), pp. 49-58, 1990.
- IV. **Refereed publications in conference proceedings**
- 1) Ajit Hakke-Patil, Daniele Bernabei, Charly Collin, Ke Chen, S. N. Pattanaik, Fabio Ganovelli, "Parallel MDOM for light transport in participating media", Proceedings of 29th Spring Conference of Computer Graphics, 1-3 May, 2013, Smolenice castle, Slovakia.
 - 2) Charly Collin, Ke Chen, Ajit Hakke-Patil, S. N. Pattanaik, Kadi Bouatouch, "Green's function solution to subsurface light transport for BRDF computation", Proceedings of 29th Spring Conference of Computer Graphics, 1-3 May, 2013, Smolenice castle, Slovakia.
 - 3) Ke Chen, Charly Collin, Ajit Hakke-Patil, S. N. Pattanaik, "A practical model for computing the BRDF of real world materials", Poster, I3D 2013, March 21-23, Orlando, Florida.
 - 4) Evan Husk, Avelino J. Gonzalez and S. N. Pattanaik, "Learning Individualized Facial Expressions in an Avatar with PSO and Tabu Search", Proceedings of the 26th International FLAIRS Conference, May 22 - 24, 2013, Florida.
 - 5) Lingling Sik, S. N. Pattanaik, "Real-Time Fusion of Surveillance Imageries in Urban Scenes", Proceedings of I/ITSEC, Dec 3-6, 2012, Florida.
 - 6) Lingling Sik, S. N. Pattanaik, "Fusing geo-referenced images for urban scene", Proceedings of 15th International Conference on Information Fusion, 9-12 July 2012, Singapore.
 - 7) Adrien Gruson, Ajit Hakke-Patil, Remi Cozot, Kadi Bouatouch, S. N. Pattanaik, "Light Propagation Maps on Parallel Graphics Architecture", Eurographics Symposium on Parallel Graphics Architecture (EGPGV'12), Cagliari, Italy, May 13-14 2012.
 - 8) Lingling Sik, S. N. Pattanaik, "Rendering synthetic large scale urban terrain". I/ITSEC 2011, Dec 3-6, 2011, Orlando.
 - 9) Adria Fores, S. N. Pattanaik, Carles Bosch and Xavier Pueyo. "BRDFLab: A general system for designing BRDFs". CEIG 2009, Spanish Conference on Computer Graphics. San Sebastian, Spain, September 2009.
 - 10) Juraj Obert, Jaroslav Krivanek, Daniel Sykora, S. N. Pattanaik, "Interactive Light Transport Editing for Flexible Global Illumination". SIGGRAPH 2007 Sketches and Posters, Aug 2007, San Diego.
 - 11) Jaakko Kontinen, S. N. Pattanaik, Charles E. Hughes, "Image Based Particle Emission". SIGGRAPH 2007 Sketches and Posters, Aug 2007, San Diego.
 - 12) Jaroslav Krivánek, Kadi Bouatouch, S. N. Pattanaik and Jiri Zara " Making Radiance and Irradiance Caching Practical: Adaptive Caching and Neighbor Clamping", Proceedings of Eurographics Symposium on Rendering (EGSR2006), June 26-30, 2006, Nicosia, Cyprus.
 - 13) Kevin Boulanger, Kadi Bouatouch, S. N. Pattanaik, "Automatic Tour into the Picture", Fourth EG Conference of Theory and Practice of Computer Graphics (TP.CG.2006). 20th - 22nd June 2006.
 - 14) Jaroslav Krivánek, Jaakko Kontinen, S. N. Pattanaik, Kadi Bouatouch, and Jiri Zara " Fast Approximation to Spherical Harmonic Rotation", Proceedings of 22nd Spring Conference on Computer Graphics (SCCG2006).

- 15) Pascal Gautron, Jaroslav Krivanek, Kadi Bouatouch, S. N. Pattanaik, "Temporal Radiance Caching", SIGGRAPH 2006 Sketches and Applications, Aug 2006, Boston.
- 16) Guillaume Francois, S. N. Pattanaik, Kadi Bouatouch, Gaspard Breton, "Subsurface Texture Mapping". SIGGRAPH 2006 Sketches and Applications, Aug 2006, Boston.
- 17) Kevin Boulanger, S. N. Pattanaik, Kadi Bouatouch, "Rendering Grass Terrains in Real-Time with Dynamic Lighting", SIGGRAPH 2006 Sketches and Applications, Aug 2006, Boston.
- 18) Jaroslav Krivánek, Jaakko Kontinen, S. N. Pattanaik, Kadi Bouatouch , and Jiri Zara "Fast Approximation to Spherical Harmonic Rotation", In *Siggraph 2006 Sketches and Applications*, August 2006, Boston.
- 19) Eric Risser, Musawir A. Shah, S. N. Pattanaik, "Interval Mapping", Poster presented at ACM I3D Symposium, March 2006, Washington DC.
- 20) Musawir A. Shah, Jaakko Kontinen, S. N. Pattanaik, "Natural objects: Real-time rendering of realistic-looking grass", Proceedings of the 3rd international conference on Computer graphics and interactive techniques in Australasia and South East Asia GRAPHITE '05, ACM Press, Nov 2005.
- 21) Kanad K.Biswas, S. N. Pattanaik, "Fast Tone Mapping of High Dynamic Range Images". *Proceedings of IS&T/SID's 13th Color Imaging Conference*, CIC 2005, Nov 2005.
- 22) Kanad K.Biswas, Siddharth Borikar, S. N. Pattanaik, "Fast Algorithm for Completion of Digital Photographs with natural Scenes". *Proceedings of IS&T/SID's 13th Color Imaging Conference*, CIC 2005, Nov 2005.
- 23) Pascal Gautron, Jaroslav Krivanek, Kadi Bouatouch, S. N. Pattanaik, "Radiance Cache Splatting: A GPU-Friendly Global Illumination Algorithm", 3rd Eurographics Symposium on Rendering 2005, July 2005.
- 24) Jaroslav Krivánek, Pascal Gautron, S. N. Pattanaik, K. Bouatouch, "Improved Radiance Gradient Computation", Spring Conference of Computer Graphics (SCCG2005), Budmerice, Slovak Republic, May 2005.
- 25) Pascal Gautron, Jaroslav Krivánek, Kadi Bouatouch, and S. N. Pattanaik "Radiance Cache Splatting: A GPU-Friendly Global Illumination Algorithm", In *Siggraph 2005 Sketches and Applications*, August 2005.
- 26) W. Mundt, S. N. Pattanaik, E. Reinhard. "Beyond Triangles: A Simple Framework for Hardware-Accelerated Non-Triangular Primitives". GDC 2005 (Feb 2005)
- 27) Charles E. Hughes, Jaakko Kontinen, S. N. Pattanaik, "The Future of Mixed Reality: Issues in Illumination and Shadows", IITSEC, Nov 2004.
- 28) Pascal Guatron, Jaroslav Krivánek, S. N. Pattanaik, Kadi Bouatouch, "A Novel Hemispherical Basis for Accurate and Efficient Rendering". Proceedings of 2nd Eurographics Symposium on Rendering 2004 (July 2004).
- 29) Ruifeng Xu, S. N. Pattanaik, Charles Hughes, "Real-time rendering of dynamic objects in dynamic, low frequency environments". Proceedings of *Computer Graphics and Social Agents Conference (CASA) 2004*, MIRALab, Switzerland, Accepted in May 2004.
- 30) Jaroslav Krivánek, S. N. Pattanaik, Jiri Zara, "Adaptive Mesh Subdivision for Precomputed Radiance Transfer", *Proceedings of Spring Conference in Computer Graphics (SCCG 2004)*, Slovak Republic, ACM-Press, 2004, p. 106-101.
- 31) Chris Stapleton, Eileen Smith, Scott Malo, Charles Hughes, S. N. Pattanaik, "Sea Creatures – A Cretaceous Journey in Augmented Reality", ISMAR 2004
- 32) Charles E. Hughes, Erik Reinhard, S. N. Pattanaik, "Achieving Interactive-Time Realistic Illumination in Mixed Reality" Army Science Conference, December 2004.
- 33) Oguz Ahmet, Erik Reinhard, S. N. Pattanaik, "Color Appearance in High Dynamic Range Imaging", ACM Symposium on Applied Perception in Computer Graphics and Visualization, August 2004.

- 34) Mangesh Nijasure, S. N. Pattanaik, Vineet Goel, "Interactive Global Illumination in Dynamic Environments using Commodity Graphics Hardware". *Proceedings of Pacific Graphics* 2003. 11: 450-454, 8 Oct 2003.
- 35) Anand Santhanam, S. N. Pattanaik, Jannick Rolland, Celina Imielinska, Jack Norfleet. "Physiologically-Based modeling and visualization of deformable lungs". *Proceedings of Pacific Graphics* 2003. 11: 507-511, 8 Oct 2003.
- 36) Rafal Mantiuk, Karol Myszkowski, S. N. Pattanaik, "Attention Guided MPEG Compression for Computer Animations" *Proceedings of Spring Conference in Computer Graphics (SCCG2003)*, April 2003, ACM-Press, pp 262-267, Budmerice, Slovak Republic.
- 37) Hector Yee, S. N. Pattanaik, "Local Adaptation Luminance via Segmentation and Assimilation", *SIGGRAPH 2003 Sketch*, San Diego, September 2003. (Refereed Short paper.)
- 38) Rafal Mantiuk, Karol Myszkowski, S. N. Pattanaik, "Cube-Map Data Structure for Interactive Global Illumination Computation in Dynamic Diffuse Environments", *Proceedings of International Conference on Compute Vision and Graphics (ICCVG-2002)*, pp-530-538, Zakopane, September 2002.
- 39) S. N. Pattanaik, Hector Yee, "Adaptive Gain Control for High Dynamic Range Image Display", *Proceedings of Spring Conference in Computer Graphics (SCCG2002)*, April 24-27, 2002, Budmerice, Slovak Republic.
- 40) Hector Yee, Philip Dutre, S. N. Pattanaik, "Fundamentals of Lighting and Perception: The Rendering of Physically Accurate Images", *16th Game Developer's Conference (GDC2002)*, San Jose, March 4-8, 2002.
- 41) S. N. Pattanaik, Mangesh Nijasure, "Real-Time Realistic Rendering", Poster presentation, *23rd Army Science Conference* 2002, Orlando, December 2002.
- 42) S. N. Pattanaik, Jack E. Tumblin, Hector Yee, Donald P. Greenberg, "Time-Dependent Visual Adaptation for Realistic Real-Time Image Display", *Proceedings of SIGGRAPH 2000*, pp. 47-54, New Orleans, 23-28 July, 2000.
- 43) Mahesh Ramasubramanian, S. N. Pattanaik, Donald P. Greenberg, "A Perceptually Based Physical Error Metric for Realistic Image Synthesis", *Proceedings of SIGGRAPH'99*, pp. 73-82, Los Angeles, 8-13 August 1999.
- 44) S. N. Pattanaik, James A. Ferwerda, Mark D. Fairchild, and Donald P. Greenberg, "A Multiscale Model of Adaptation and Spatial Vision for Realistic Image Display", *Proceedings of SIGGRAPH'98*, pp. 287-298, Orlando, July 1998.
- 45) S. N. Pattanaik, Mark D. Fairchild, James A. Ferwerda and Donald P. Greenberg, "Multiscale model of Adaptation, Spatial Vision and Color Appearance", *Proceedings of IS&T/SID's 6th Color Conference*, Arizona, November 1998.
- 46) James Ferwerda, S.N. Pattanaik, Peter Shirley and Donald P. Greenberg, "A Model of Visual Masking for Computer Graphics", *Proceedings of SIGGRAPH'97*, pp. 143-152, Los Angeles, 3-8 August, 1997.
- 47) Donald. P. Greenberg, Kenneth E. Torrance, Peter Shirley, James Arvo, James A. Ferwerda, S.N. Pattanaik, Eric Lafortune, Bruce Walter, Sing-Choong Foo and Ben Trumbore, "A Framework for Realistic Image Synthesis", *Proceedings of SIGGRAPH'97*, pp. 477-494, Los Angeles, 3-8 August, 1997.
- 48) S.N. Pattanaik, James Ferwerda, Kenneth E. Torrance and Donald P. Greenberg, "Validation of Global Illumination Simulations through CCD Camera Measurements", *Proceedings of IS&T/SID's 5th Color Conference*, Arizona, 17-21 November, 1997.
- 49) James Ferwerda, S.N. Pattanaik, Peter Shirley and Donald P. Greenberg, "A Model of Visual Adaptation for Realistic Image Synthesis", *Proceedings of SIGGRAPH'96*, pp. 249-258, New Orleans, 4-9 August, 1996.

- 50) S.N. Pattanaik and Kadi Bouatouch, "Interactive Walk-Through Using Particle Tracing", CG International 1995, Leeds, UK, 25-30 June, 1995.
 - 51) S.N. Pattanaik and Kadi Bouatouch, "Linear Radiosity with Error Estimation", Eurographics Rendering Workshop'95, Dublin, 12-14 June, 1995.
 - 52) Kadi Bouatouch and S.N. Pattanaik, "Discontinuity Meshing and Hierarchical MultiWavelet Radiosity", Graphics Interface'95, May 15-19, 1995, Quebec City.
 - 53) S.N. Pattanaik and Kadi Bouatouch, "Haar Wavelet : A Solution to Global Illumination With General Surface Properties", 5th Eurographics Workshop on Rendering, Darmstadt, Germany, June 1994.
 - 54) A.G. Chalmers, S.P. Mudur, A. Tongaonkar, S.K.F. Stoddart and S.N. Pattanaik, "Antardrishti: Photo-realistic visualisation of Indian Heritage Sites". The 3rd World Archaeology Congress, Delhi, December 1994.
 - 55) S.N. Pattanaik and S.P. Mudur, "The Mathematical Framework of Adjoint Equations for Illumination Computation", Proceedings of the International Conference on Computer Graphics (IFIP-ICCG93), Bombay, India, 1993.
 - 56) A.G. Chalmers, S.N. Pattanaik and S.P. Mudur, "Parallel Particle Tracing for Photo-Realistic Image Synthesis", International Computer Graphics Conference, pp. 101-105, St. Petersburg, September, 1993.
 - 57) S.N. Pattanaik and S.P. Mudur, "Computation of Global Illumination by Monte Carlo Simulation of the Particle Model of Light", Proceedings of 3rd Eurographics Rendering Workshop, Bristol, 1992.
 - 58) S.J. Nath, S.N. Pattanaik and S.P. Mudur, "VIDURA : An Interactive Multilingual Publishing System", Proceedings of the International Conference on Electronic Publishing, Document Manipulation and Typography (EP88), France, 1988.
 - 59) S. N. Pattanaik, S.J. Nath, S.P. Mudur, "Computer Processing of Indian Scripts - A Pure Consonant Approach", Proceedings of the National Seminar on Computer Aided Language Processing, Delhi, India, 1987.
- V. Non-refereed publication (Technical Reports)**
- 1) Ruifeng Xu, S. N. Pattanaik, Charles E. Hughes, "High Dynamic Range Image and Video Data Compression", Technical Report, School of Engineering and Computer Science, University of Central Florida, CS-TR-05-13.
 - 2) Ruifeng Xu, S. N. Pattanaik, "A Level set based detail extraction method", Technical Report, School of Engineering and Computer Science, University of Central Florida, CS-TR-05-14.
 - 3) Ruifeng Xu, S. N. Pattanaik, "A Practical Sampling of 3D Space for Realistic Rendering of Complex Scenes", Technical Report, School of Engineering and Computer Science, University of Central Florida, CS-TR-05-15.
 - 4) Musawir A. Shah, S. N. Pattanaik. "Caustics Mapping: An Image-space Technique for Real-time Caustics." Technical Report, School of Engineering and Computer Science, University of Central Florida, CS-TR-05-07, 07/29/2005
 - 5) Jaroslav Křivánek, Jaakko Konttinen, S. N. Pattanaik, and Kadi Bouatouch, "Fast Approximation to Spherical Harmonic Rotation", Technical report no. 1728. IRISA, Rennes, France. July 2005.
 - 6) Jaroslav Krivánek, Pascal Gautron, S. N. Pattanaik, K. Bouatouch. "Radiance Caching for Efficient Global Illumination Computation". Technical Report no. 1623, IRISA, Rennes, France, 2004.
 - 7) Neeharika Adabala, C. E. Hughes, S. N. Pattanaik, "A Model for Flicker in Fire", *Computer Science Technical Report #CS-0404*, University of Central Florida, April 2004.
 - 8) S. N. Pattanaik, Donald P. Greenberg, "A Computational Model for Simulating Dynamics of Visual Adaptation", *Technical Report # PCG-99-3*.

- 9) S.N. Pattanaik and K.E. Torrance, "Light Measurement using the Photometrics PXL1300L CCD Camera", *Technical Report # PCG-98-1*.
- 10) S.S-F. Chen, J.W-C. Li, K.E. Torrance and S.N. Pattanaik, "Preliminary Calibration of the Photometrics PXL1300L CCD Camera", *Technical Report # PCG-96-1*.
- 11) S.N. Pattanaik and Kadi Bouatouch, "Adjoint Equations and Particle Tracing for Global Illumination", *Technical Report IRISA-903*.

VI. Non-refereed publication (Conference Tutorials)

- 1) S. N. Pattanaik, Erik Reinhard, "Tone Reproduction in Real Time Environments", *Tutorial notes*, Game Developers Conference 2004, San Jose, Feb 2004.
- 2) Paul Debevec, Greg Ward, Erik Reinhard, S. N. Pattanaik, "High Dynamic Range Imaging", *Tutorial notes*, ACM-SIGGRAPH 2004, Los Angeles, Aug 2004, ACM-SIGGRAPH 2005, Los Angeles, Aug 2005.
- 3) S.N. Pattanaik and Kadi Bouatouch, "Global Illumination: Theory and Practice", Tutorial notes, *Computer Graphics International (CGI'95)*, Leeds, UK, 24-30 June 1995.
- 4) S.N. Pattanaik, Kadi Bouatouch and Pierre Tellier, "Global Illumination and Image Synthesis", Tutorial notes, International Conference on Computer Graphics (IFIP-ICCG93), Bombay, India, 1993

VII. Non-refereed publication (Invited Presentations)

- 1) Banterle F., Debattista K., Artusi A., Pattanaik S., Myskowski K., Ledda P., Bloj M., Chalmers A.G. "High dynamic range imaging and LDR expansion for generating HDR content", Eurographics State-of-the-Art Report (STAR), Eurographics'09, pp 17-44, March, 2009.
- 2) S.P. Mudur and S.N. Pattanaik, "Monte Carlo Methods for Computer Graphics", State of the Art Report (STAR) series, *Eurographics'93*, Barcelona, September 1993.

• **Grants and Contracts**

Investigators	Title	Funding Source	Amount	Period of support	Status
Avelino Gonzalez (PI), S. Pattanaik (co-PI)	<i>SCH: EXP: Enhancing Telemedicine: An Intelligent Virtual Human Interface to Facilitate Follow-up Care</i>	NSF	\$694,703		Pending (applied on May 09, 2013)
Avelino Gonzalez (PI), S. Pattanaik (co-PI)	<i>HCC: Small: Learning Human Facial Expressions and Body Language from Automated Observation</i>	NSF	\$499,955		Pending (applied Dec 17, 2012)
S. Pattanaik (PI)	<i>A Unified Approach to Material Appearance modeling</i>	NSF: G&V: Medium	\$298,088	June 2011 to May 2015	Current
S. Pattanaik (PI)	<i>Innovative Application of Urban IST Imagery for High Fidelity Training Devices</i>	Navy SBIR /STTR Phase II	\$162,000	May 2011 - Aug 2013	Current
Greg Welch (PI), S. Pattanaik (Senior	<i>3D Display and Capture of Humans for Live-Virtual Training</i>	ONR		Summer 2012 - Spring 2013	Expired

Personnel)					
S. Pattanaik (PI)	<i>Innovative Application of Urban IST Imagery for High Fidelity Training Devices</i>	Navy SBIR /STTR Phase I Options	\$10,000	Dec 2010 - March 2011	Expired
S. Pattanaik (PI)	<i>Innovative Application of Urban ISR Imagery for High Fidelity Training Devices</i>	Navy SBIR /STTR Phase I	\$23, 000	2010	Expired
S. Pattanaik (PI)	<i>Real-Time Realistic Rendering of Huge Urban Landscape with Large Building Structures</i>	ATI/AMD	\$30,000	2010 to 2011	Expired
S. Pattanaik (PI) UCF, Marc Stamminger (PI) Univ of Erlangen, Germany	<i>Collaborative research between the graphics groups of University of Erlangen ,Germany, and UCF</i>	BACATE C, Germany	500 Euro (managed by Univ of Erlangen)	2010	Expired
Charles Hughes (PI), S. Pattanaik (Senior Personnel),	<i>Cognition in Natural Environments</i>	NSF		April 2006 to March 2010	Expired
S. Pattanaik (Senior Personnel) UCF, Victor Vianu (PI) UCSD, CA	<i>International Research Experiences for U.S. Students at INRIA</i>	NSF-IRES	managed by UCSD	2006-2009	Expired
S. Pattanaik (PI) UCF, Kadi Bouatouch (PI) Univ of Rennes I, France	<u>Rendering and Global Illumination in Real Time</u>	INRIA, Equip _e Associe Funding	12,800 Euro (managed by Univ of Rennes I, France)	2004 to 2009	Expired Note: Charles Hansen (PI, Joined in 2009) Univ of Utah
S. Pattanaik (PI)	<i>Higher Order Representation and Real-time Rendering of Complex Natural Terrains</i>	I-4 FHTC_F Y07_Annual.	\$13,400	June 2007 to June 2008	Expired
S. Pattanaik (PI)	<i>Realistic Real-time Rendering of Uneven Natural Terrain</i>	Electronic Art (EA)	\$20,000	April 2006 to December 2007	Expired
S. Pattanaik (PI)	<i>Realistic Real-time Rendering of Uneven Natural Terrain</i>	Electronic Art (EA)	\$20,000	October 2004 to December 2006	Expired
Charles Hughes(PI),	<i>Mixed Reality: Anytime Anywhere</i>	DOD-DURIP	\$351,000	May 2004 to April	Expired

S. Pattanaik (co-PI)				2005	
Jannick Rolland (PI), S. Pattanaik (co-PI),	<i>3D Display for Medical and Engineering Visualization</i>	ADASTR A Labs LLC	\$10,000	March 2004 to Feb 2005	Expired
S. Pattanaik (PI)	<i>Research in Augmented and Virtual Environment Systems: Rendering.</i>	ONR	\$196,445	Aug 2003 to Feb 2005	Expired
S. Pattanaik (PI)	<i>Towards Hardware Driven Real-time Realistic Rendering.</i>	ATI Research	\$80,000	Aug 2002 to April 2003	Expired
S. Pattanaik (PI)	<i>Perception Based Algorithms for Efficient Rendering of Dynamic Synthetic Environments</i>	Army-STRICO M	\$95,000	May 2002 to April 2003	Expired
S. Pattanaik (PI)	<i>Towards Hardware Driven Real-time Realistic Rendering: A Feasibility Study</i>	ATI Research	\$20,000	May 2002 to July 2003	Expired
Michael Moshell (PI), S. Pattanaik (co-PI)	<i>Virtual Object Rendering and Registration for Mixed Reality</i>	Army STRICO M	\$96,000	May 2002 to April 2003	Expired

PROFESSIONAL ACTIVITIES

- **Service to the Department, College and University:**
 1. UCF Faculty Senate Member, since Fall 2011.
 2. UCF Graduate Council Appeals Committee Member, since Fall 2011.
 3. Member, CECS Sabbatical Committee, 2010-13.
 4. Member, CS Annual Evaluation Standards and Procedures (AESP) Committee, 2010-13.
 5. Member, CECS TIP Selection Committee, 2002-2003 (chair: Ahmed Elshennawy), 2012-13 (Chair: Alain Kassab).
 6. Member, UCF Graduate Research Forum Judging, March 2011, March 2012, April 2013.
 7. Undergraduate student advising, 2002-2008, 2011-13.
 8. Chair, Doctoral Thesis Committee for
 - Lingling Sik (M&S), in Spring 2013
 - Yugang Min (CS), in Spring 2012
 - Juraj Obert (CS), in Summer 2010
 - Kevin Boulanger (CS), in Summer 2008
 - Musawir Ali Shah (CS), Fall 2007
 - Anand Santhanum (Co-chair with Dr. Rolland), Summer 2006
 - Ruifeng Xu (CS), Spring 2005.
 9. Chair, MS Thesis Committee for
 - Kris Rivera, in Fall 2011
 - Francisco Rivas, Spring 2004
 - Siddharth Borikar, Spring 2004
 - Mangesh Nijasure, Fall 2003.
 10. 2010-11 Member, EECS Faculty Excellence Awards Committee. (Chair: Dan Marinescu)
 11. Member, EECS MS Thesis Committee for Tad Litwiller in Fall 2010 (Chair: Joe LaViola).
 12. Graduate Coordinator CS Program: 2007-2008

13. Member, I2Lab Steering, UCF, 2004-2007 (Chair: Dan Marinescu)
 14. Member, Ph.D. Candidate Approval Committee, School of Computer Science, UCF
 Lisa Spencer (Advisor: Dr. Guha), Spring 2005
 Weifung Sun (Advisor: Dr. Mukherjee), Spring 2005
 Vivek Singh, Fall 2003 and Spring 2004
 Jiangjian Xiao, Fall 2003
 Zeeshan Rasheed, Fall 2001
 15. Member, Ph.D. Thesis Evaluation Committee, School Computer Science, UCF
 Jiangian Xiao (Advisor: Dr. Shah), Fall 2004
 Zeeshan Rasheed (Advisor: Dr. Shah), Fall 2003
 16. Member, CS Faculty Search Committee, UCF, 2002-2003 (chair: Ratan Guha), 2004-1005
 (chair, Narasingh Deo), 2005-2006 (Chair: Mark Heinrich).
 17. Member, Undergraduate Curriculum Standardization Committee, School of Computer
 Science, UCF, 2005 (Chair: Ratan Guha)
 18. Member, Interim Director for the School of Computer Science Search Committee, UCF, 2005
 (Chair: Dean Gallagher)
 19. Member, Director for the School of Computer Science Search Committee, UCF, 2003-2005
 (Chair: M. J. Soileau)
 20. Member, CS Graduate Committee, UCF, 2001-2003 (chairs: Kien Hua, Fernando Gomez).
 21. Alternate Member, CS Budget Committee (YACC), UCF, 2003-2004.
 22. Member, EECS Course Review Committee (Signal Processing And Image Processing), 2002-
 2003.
 23. Member, MS Thesis Evaluation Committee, School of Computer Science, UCF
 Varunyu Vorachart (Advisor: Dr. Guha), Fall 2003
 24. Representative, CS Program in UCF Graduate Student Fair, Oct 2003.
 25. Coordinator, Ph.D. Qualifying Exam, Spring 2002.
- **Service to the Profession:**
 1. Member, Program Committee, ACM I3D conference, 2011, 2012, 2013.
 2. Member, Program Committee, Eurographics conference 2012.
 3. Member, Program Committee, Foundations of Digital Games (FDG2012) conference, 2012.
 4. Member, Program Committee, Eurographics Symposia on Rendering 2011.
 5. Member, Program Committee, Eurographics, 2010
 6. Member, program Committee, ACM I3D Conference, 2010
 7. Member, ACM Multimedia 2010 Workshop - Electronic Heritage and Digital Art
 Preservation, 2010
 8. Member, Program Committee, Eurographics, 2009.
 9. Member, Program Committee, ACM I3D Conference, 2009.
 10. Member, Program Committee, Eurographics Symposium on Rendering, 2009
 11. Member, Program Committee, SIGGRAPH, Aug 2008, Los Angeles, US
 12. Member, Program Committee, Eurographics Symposium on Rendering, June 2008, Sarajevo,
 Bosnia.
 13. Co-chair, Program Committee, Eurographics Symposium on Rendering, June 2007,
 Grenoble, France
 14. Member, Program Committee, AFRIGRAPH, October 2007. Grahamstown, South Africa.
 15. Member, Program Committee, Eurographics Symposium on Rendering, June 2006, Nicosia,
 Cyprus.
 16. Member, Program Committee, Eurographics Conference, Vienna, September 2006.
 17. Member, Program Committee, International Conference on Computer Graphics Theory and
 Application, 25-28 February, 2006, Portugal.

18. Member, Program Committee, International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG 2004, 2005, 2006), University of West Bohemia, Plzen, Check Republic.
 19. Member, Program Committee, Spring Conference on Computer Graphics (SCCG 2004, 2005, 2006), Budmerice, Slovak Republic, Conference is organized in cooperation with ACM SIGGRAPH and EUROGRAPHICS.
 20. Member, Program Committee, International Conference on Virtual Reality, Computer Graphics, Visualization and Interaction in Africa (AFRIGRAPH 2004, 2005, 2006), South Africa. Conference sponsored by ACM SIGGRAPH and organized in cooperation with EUROGRAPHICS.
 21. Member, CIE TC8-08 Committee, 2004, *Spatial Appearance Models*, Chair: Dr. Garrett Johnson, Commission Internationale de l'Eclairage (CIE).
 22. Member, Program Committee, VAST2004 and the 2nd Eurographics Symposium on Graphics and Cultural Heritage (EGSGH 2004), Oodenarde, Belgium (December 2004), Conference organized in co-operation with EPOCH, Eurographics and ACM-SIGGRAPH.
 23. Member, Program Committee, Vision, Video and Graphics (VVG 2003), Sponsored by Institute of Mathematics, University of Bath, UK, 10-11 July 2003.
 24. Member, Program Committee, 1st International Workshop on Architectural and urban Ambient Environment, Nantes, France, 6-8 February 2002.
 25. Member, Program Committee, Eurographics Workshop on Rendering (EGRW 1993-1996, 2000-2001).
 26. Member, Program Committee, International Conference on Visual Computing (IFIP-ICVC 99), Goa, India, 23-26 February, 1999. Conference sponsored by IFIP.
 27. Member, Program Committee, International Conference on Computer Graphics (IFIP-ICCG93), Bombay, India, February, 1993. Conference sponsored by IFIP.
- **Service as editor, associate editor, or member of editorial board of professional Journals**
 1. Editor, ACM Computing Reviews: Computer Graphics Category, Published by ACM, February 2003 to April 2009.
 - **External professional service activities**
 1. Member, Agence De La Recherche (ANR) Equipment of excellence Evaluation Committee, L'équipe Equipex 2011, France.
 2. Review Member, NSF Graphics/Visualization CAREER Panelist, Sept 2011, Program Officer: Lawrence Rosenblum.
 3. Member, NSF Proposal Review Committees/panels, 2007, Program Officer: Lawrence Rosenblum; 2003, Program Officer: William Bainbridge; 2003, Program Officer: Bhavani Thuraisighan; 2002, Program Director: Kamal Abdali; 1999, Program Officer: Kamal Abdali; 1998, Program Officer: Kamal Abdali.
 4. Member, NIH/NIEHS Review Committee, SBIR – E-learning for Hazmat and Emergency Response. Program Officer: Sally Eckert-Tilotta (Nov 2004)
 5. Member, Austrian Science Foundation (FWF) proposal review committee, May 2004, Program Officer: Lucas Zinner.
 - **Other activities: (Conference Participation)**
 - ACM I3D, Costa Mesa, March 2012
 - Eurographics Symposium on Rendering, Girona, July 2009
 - SIGGRAPH 2008, Los Angeles, August 2008
 - SIGGRAPH 2007, San Diego, August 2007
 - Eurographics Symposium on Rendering, Grenoble, June 2007
 - Eurographics Symposium on Rendering, June 2006
 - Aiya Nappa Rendering Seminar, July 2006,
 - SIGGRAPH, August 2005

Game Developer Conference, Feb 2005
ACM-SIGGRAPH, July/August 1996-2004
Eurographics Conference (2002);
Game Developer Conference (2002);
Vision Science Meeting (2002);
Eurographics Workshop on Rendering (1992, 1994-95);
Graphics Interface (1995);
Computer Graphics International (1995);
International Conference on Computer Graphics (1993).

RECOGNITIONS AND AWARDS

1. 2010-2011 TIP award