

# CURRICULUM VITAE

## Kiriakos Neoklis Kutulakos

Professor  
Department of Computer Science  
University of Toronto  
Toronto, ON M5S 3H5  
Tel: (416) 946-8045  
Email: kyros@cs.toronto.edu  
Web: <http://www.cs.toronto.edu/~kyros>

### DEGREES

12/1994	Ph.D.	Computer Science	University of Wisconsin–Madison
12/1989	M.S.	Computer Science	University of Wisconsin–Madison
7/1988	B.S.	Computer Science	University of Crete, Greece

### EMPLOYMENT

2009-	Professor Department of Computer Science, University of Toronto
2011-12	Visiting Scholar Visual Computing Group, Microsoft Research Asia, Beijing, China (1/9/11-30/6/12)
2001-09	Associate Professor Department of Computer Science, University of Toronto
2004-05	Visiting Scholar Visual Computing Group, Microsoft Research Asia, Beijing, China (1/9/04-1/6/05)
Fall 2000	Faculty Visitor Pattern Recognition Group, Institute for Computer Science, University of Erlangen, Germany (23/9/00-11/10/00)
Summer 2000	Consultant Machine Learning and Perception Group, Microsoft Research, Cambridge, United Kingdom (3/3/00-15/7/00)
1997-2001	Assistant Professor Departments of Computer Science & Dermatology, University of Rochester
1994-97	Postdoctoral Research Associate Department of Computer Science, University of Rochester
1991-94	Research Assistant Department of Computer Science, University of Wisconsin-Madison
1990	Summer Intern Artificial Intelligence Branch, NASA-Ames Research Center
1988-91	Teaching Assistant Department of Computer Science, University of Wisconsin-Madison

1986-88 Undergraduate Research Assistant  
Computer Science Institute, FORTH, University of Crete, Greece

1985 Summer Intern  
IBM-Athens, Greece

## HONOURS

2017 Best Student Paper Award, Computer Vision and Pattern Recognition Conference  
2017 ACM SIGGRAPH Outstanding Dissertation Honorable Mention awarded to my PhD student Matt O'Toole

2015 Best Demo Award, Computer Vision and Pattern Recognition Conference  
2015 Best Demo Award, International Conference on Computational Photography  
2014 Best Paper Honorable Mention, Computer Vision and Pattern Recognition Conference  
2011 NSERC Discovery Accelerator Supplement  
2006 Best Paper Honorable Mention, European Conference on Computer Vision  
2005 Honorable Mention, David Marr Prize in Computational Vision  
2005 Honorary Guest Professor, Beijing University of Aeronautics and Astronautics  
2003 Premier's Research Excellence Award  
2001 Sloan Research Fellowship, The Alfred P. Sloan Foundation  
1999 David Marr Prize in Computational Vision  
1999 NSF Early Career Development Award (CAREER)  
1998 Career Development Award, The Dermatology Foundation  
1995 Paper invited to *Artificial Intelligence J.* special issue on Computer Vision  
1995 NSF CISE Postdoctoral Research Associateship in Experimental Science  
1994 Siemens Best Student Paper Award, Computer Vision & Pattern Recognition Conference  
1993 NASA Tech Brief Award  
1988 Outstanding Undergraduate Award, University of Crete  
1985-88 IKY National Undergraduate Fellowship, University of Crete

## PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- **Advisory Board Member**

The Computer Vision Foundation  
Algolux, Inc.

- **Editorial Board**

Area Editor, *Encyclopedia of Computer Vision* (2009-2013)  
Associate Editor, *IEEE Transactions on Pattern Analysis and Machine Intelligence* (2005-10)  
Guest Editor, *The International Journal of Computer Vision*, Special Issue on Multi-View Modeling of Visual Scenes (v. 49, no. 2/3, summer 2002)

- **Conference Board Member**

Program Co-Chair, IEEE International Conference on Computer Vision (2013)  
Program Co-Chair, IEEE International Conference on Computational Photography (2010)  
Workshops Chair, European Conference on Computer Vision (2010)  
Program Co-Chair, IEEE Computer Vision and Pattern Recognition Conference (2003)  
Demos Chair, IEEE Computer Vision and Pattern Recognition Conference (2000, 2001)  
Tutorials Chair, IEEE Computer Vision and Pattern Recognition Conference (1999)

- **Workshop Co-Organizer**

- 2012 IEEE Workshop on Computational Cameras and Displays (with G. Wetzstein, D. Lanman, R. Raskar)
- 2011 IEEE Workshop on Color and Photometry in Computer Vision (with T. Gevers, J. van de Weijer, T. Zickler)
- 2009 BIRS Workshop on Computer Vision and the Internet (with S. Seitz)
- IEEE 1999 Workshop on Multi-View Modeling and Analysis of Visual Scenes (with A. Sashua)

- **Award Committees**

- Longuet-Higgins Prize, IEEE Computer Vision and Pattern Recognition Conference (2013)
- Best paper awards, IEEE International Conference on Computational Photography (2011, 2013)
- Best paper awards, IEEE Computer Vision and Pattern Recognition Conference (2011)

- **Conference Area Chair**

- European Conference on Computer Vision (2012, 2014)
- IEEE International Conference on Computer Vision (2005, 2009, 2011, 2017)
- IEEE Computer Vision and Pattern Recognition Conference (2006, 2009, 2016, 2017)

- **Conference/Workshop Program Committee Member**

- IEEE International Conference on Computational Photography (2009, 2011-16)
- IEEE Computer Vision and Pattern Recognition Conference (1996, 1998-99, 2001, 2004-05, 2007-08, 2010-11)
- European Conference on Computer Vision – ECCV (2002, 2004, 2006, 2008, 2010)
- IAPR International Conference on Pattern Recognition (2008)
- Third International Symposium on 3D Data Processing, Visualization and Transmission (2007)
- IEEE International Conference on Computer Vision (2001, 2003, 2007)
- IEEE Workshop on Beyond Multiview Geometry (2007)
- IEEE Workshop on Benchmarking Calibration, Orientation and Surface Reconstruction (2005, 2007)
- IEEE Workshop on Photometric Analysis for Computer Vision (2007)
- ECCV Workshop on Vision and Modeling of Dynamic Scenes (2002)
- IEEE Workshop on Model Based 3D Image Analysis (1998)
- International Symposium on 3D Data Processing, Visualization and Transmission (2004, 2008)
- International Symposium on Computer Graphics, Image Processing, and Vision (1998)

- **Journal/Conference Reviewer**

- Nature Scientific Reports; International Journal of Computer Vision; IEEE Transactions on Pattern Analysis and Machine Intelligence; IEEE Transactions on Robotics and Automation; CVGIP: Image Understanding; Image and Vision Computing; Information Processing Letters; ACM Computing Surveys; SIAM Journal of Scientific Computing; ACM SIGGRAPH; Eurographics Workshop on Rendering; IEEE International Conference on Computer Vision; IEEE Computer Vision and Pattern Recognition Conference; IEEE International Conference on Robotics and Automation

- **Grant Proposal Reviewer**

- Natural Sciences and Engineering Research Council of Canada (2003-present)
- US National Science Foundation (2012)
- European ERC Advanced Grants & Starting Grants (2014, 2015)
- Greek Ministry of Education, Learning and Lifelong Affairs (2010-12)
- Hong Kong Research Grants Council (2012, 2017)
- FONDECYT National Research Funding Competition, Chile (2009)
- Israel National Science Foundation (2005, 2010, 2012-13)
- Bi-National US-Israel Science Foundation (2007, 2013)
- Germany-Israel Science Foundation (2014)

- **Grant Review Panel Member**

NSERC RTI Panel (2011)

U.S. National Science Foundation review panel (1997, 1999, 2001-02, 2008)

- **Conference/Workshop Keynote Speaker**

IEEE Workshop on Computational Cameras and Displays, Boston, MA (2015)

Scandinavian Conference on Image Analysis, Ystad, Sweden (2011)

DAGM Conference of the German Association for Pattern Recognition, Jena, Germany (2009)

IAPR Conference on Machine Vision Applications, Yokohama, Japan (2009)

6th International Conference on 3D Imaging and Modeling, Montreal, Quebec (2007)

- **Tutorial Instructor**

Computational Photography Winter School, Lenk, Switzerland (2013)

- **Invited Workshop Speaker**

ICCV Workshop on Inverse Rendering (2015)

Workshop at the intersection of Vision, Graphics, Learning and Sensing (2012)

Dagstuhl Workshop on Computational Video, Dagstuhl, Germany (2010)

International Workshop on Computer Vision, Italy, Panel organizer (2010,2014)

International Workshop on Computer Vision, Italy (2008)

International Workshop on Current Trends in Computer Vision, Lhasa, Tibet (2006)

IEEE and ATR Workshop on Computer Vision for Virtual Reality Based Human Communications, Bombay, India (1998)

## PH.D DISSERTATION

*Exploring Three-Dimensional Objects by Controlling the Point of Observation*, Department of Computer Science, University of Wisconsin-Madison, December 1994. Advisor: Prof. Charles R. Dyer.

## RESEARCH AWARDS

### A. Computer Science

1. *COHESA: Computing Hardware for Intelligent Sensory Applications*, 5/17-4/22, (\$5M, my allocation is \$273K), co-PI, Strategic Partnership Grants for Networks, Natural Sciences and Engineering Research Council of Canada
2. *Masked Shutter Motion Deblurring for Time-of-Flight Sensors*, 1/17-3/17, (\$10K), PI, Globalink Canada-Israel Innovation Initiative, MITACS
3. *Coded Imaging and Artificial Light At Night*, 5/16-8/16, (\$10K), PI, Globalink Canada-Israel Innovation Initiative, MITACS
4. *Transport-Aware Cameras for Computer Vision*, 4/16-3/21, (\$470K), PI, Discovery Grants Program, Natural Sciences and Engineering Research Council of Canada
5. *Energy-Efficient Light Transport Parsing*, 3/16-2/18, (\$999K), co-PI, DARPA
6. *Transport-Aware Cameras for Vein Imaging*, 12/15-5/16, (\$25K), PI, Engage Program, Natural Sciences and Engineering Research Council of Canada (Industrial collaborator: Christie Medical Holdings, Inc.)
7. *Computational and Optical Processing Architectures for Next-Generation Mobile Cameras*, 10/14-10/17, (\$536K), PI, Strategic Grants Program, Natural Sciences and Engineering Research Council of Canada

8. *Defocus and aberration modeling for RGB-Infrared Cameras*, PI, MITACS Accelerate, 1/14-5/14, (\$15K), MITACS and Qualcomm Canada
9. *Computational and Optical Light Field Processing*, PI, Research Tools and Instrumentation, 4/13-3/14, (\$148K), Natural Sciences and Engineering Research Council of Canada
10. *Foundations of computational photography and videography*, PI, Discovery Accelerator Supplement, 4/11-3/14, (\$120K), Natural Sciences and Engineering Research Council of Canada
11. *Foundations of computational photography and videography*, PI, Discovery Grants Program, 4/11-3/16, (\$165K), Natural Sciences and Engineering Research Council of Canada
12. *Data capture and processing for computer vision*, co-PI, RTI Grants Program, 4/11-3/12, (\$96K), Natural Sciences and Engineering Research Council of Canada
13. *High-Resolution Computational Photography*, PI, RTI Grants Program, 4/08-3/09, (\$43K), Natural Sciences and Engineering Research Council of Canada
14. *Frontiers of Three-Dimensional Photography*, PI, Research Grants Program, 4/07-3/11, (\$195K), Natural Sciences and Engineering Research Council of Canada
15. *Storage and Analysis of Image and Video Data*, co-PI, RTI Grants Program, 4/07-3/08, (\$87K), Natural Sciences and Engineering Research Council of Canada
16. *Data-Driven Modeling of Shape, Reflection and Interreflection*, co-PI, Computer Vision Program, 2/05-2/08, (\$335K), U.S. National Science Foundation
17. *A Laboratory for Video-Driven Physical Modeling and Simulation*, PI, Equipment Grants Program, 3/04-3/05, (\$150K), Natural Sciences and Engineering Research Council of Canada
18. *Premier's Research Excellence Award*, PI, 3/03-3/07, (\$150K)
19. *Theory and algorithms for practical 3D photography*, PI, Research Grants Program, 3/02-3/07, (\$180K), Natural Sciences and Engineering Research Council of Canada
20. *Sloan Research Fellowship*, PI, 09/01-09/03, (\$60K), The Alfred P. Sloan Foundation
21. *Appearance-Driven Reconstruction of Three-Dimensional Scenes in the Physical World*, PI, Early Career Development Award, 3/99-12/03, U.S. National Science Foundation
22. *Laboratory for large scale high resolution interaction, graphics, and vision research*, co-PI, Research Tools and Instruments Program, 3/01-3/02, Natural Sciences and Engineering Research Council of Canada
23. *Spatial Intelligence for Computer-Enhanced Interaction with a Physical Environment*, co-PI, CISE Research Infrastructure Program, 7/00-6/05, U.S. National Science Foundation
24. *A Unified Image Science and Electronic Imaging Systems Curriculum Development Initiative*, co-PI, Combined Research-Curriculum Development Program, 10/98-9/01, U.S. National Science Foundation
25. *Center for Advanced Technology: Electronic Imaging Systems-Visualization*, co-PI, 7/98-6/00, NYS Science and Technology Foundation
26. *Calibration-Free View Augmentation for Semi-Autonomous VSAMs*, co-PI, Image Understanding Program, 5/97-4/99, U.S. Defence Advanced Research Projects Agency

## **B. Dermatology**

27. *Digital 3D Body Mapping for Early Melanoma Detection*, PI, Career Development Award, 6/98-6/01, The Dermatology Foundation

28. *Digital Image Analysis Agreement—A Phase II/III Randomized, Double-Blind, Placebo-Controlled Trial of Celecoxib on Subjects with Actinic Keratosis*, PI, 8/00-8/02, National Cancer Institute & Searle Corp.
29. *Center for Future Health*, co-PI, 12/99-6/01, The Keck Foundation
30. *Training Program in Dermatology*, Senior Personnel, 5/99-4/04, National Institutes of Health

## SCHOLARLY AND PROFESSIONAL WORK

### A. Journal Publications

1. S. Achar, J. Bartels, W. Whittaker, K. N. Kutulakos, and S. Narasimhan, “Epipolar Time of Flight Imaging,” *ACM Trans. on Graphics (Proc. SIGGRAPH 2017)*.
2. T. C. Millar, N. Sarhangnejad, N. Katic, K. N. Kutulakos, and R. Genov, “The Effect of Pinned-Photodiode Shape on Time-of-Flight Demodulation Contrast,” *IEEE Trans. Electron Devices*, v. 64, no. 5, 2017.
3. K. N. Kutulakos, “Technical Perspective: The Dawn of Computational Light Transport,” *Communications of the ACM*, vol. 59, no. 9, pp. 78, 2016.
4. M. O’Toole, J. Mather and K. N. Kutulakos, “3D Shape and Indirect Appearance by Structured Light Transport,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 38, no. 7, 2016. **Special issue of the best papers from CVPR 2014.**
5. M. O’Toole, S. Achar, S.G. Narasimhan and K. N. Kutulakos, “Homogeneous Codes for Energy-Efficient Illumination and Imaging,” *ACM Trans. on Graphics (Proc. SIGGRAPH 2015)*.
6. M. O’Toole, F. Heide, L. Xiao, W. Heidrich and K. N. Kutulakos, “Temporal Frequency Probing for 5D Analysis of Transient Light Transport” *ACM Trans. on Graphics (Proc. SIGGRAPH 2014)*.
7. M. O’Toole, R. Raskar, K. N. Kutulakos, “Primal-Dual Coding to Probe Light Transport,” *ACM Trans. on Graphics (Proc. SIGGRAPH 2012)*.
8. S. Hasinoff and K. N. Kutulakos, “Light-Efficient Photography,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 33, no. 11, 2011.
9. N. Morris and K. N. Kutulakos, “Dynamic Refraction Stereo,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 33, no. 6, 2011.
10. I. Ihrke, K. N. Kutulakos, H. P. A. Lensch, M. Magnor, W. Heidrich, “State of the Art in Transparent and Specular Object Reconstruction,” *Computer Graphics Forum*, vol. 29, no. 8, pp. 2400-2426, 2010.
11. M. O’Toole and K. N. Kutulakos, “Optical Computing for Fast Light Transport Analysis,” *ACM Trans. on Graphics (Proc. SIGGRAPH Asia 2010)*.
12. R. L. Carceroni, F. L. C. Pádua, G. A. M. R. Santos, and K. N. Kutulakos, “Linear Sequence-to-Sequence Alignment,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 32, no. 2, pp.304–320, 2010.
13. A. Levinstein, A. Stere, K. N. Kutulakos, D. J. Fleet, S. J. Dickinson, K. Siddiqi, “TurboPixels: Fast superpixels using geometric flows,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 31, no. 12, pp. 2290–2297, 2009.
14. S. W. Hasinoff and K. N. Kutulakos, “Confocal Stereo,” *Int. J. Computer Vision*, vol. 81, no. 1, pp. 82–104, 2009. Special Issue on Best Papers from ECCV 2006.
15. K. N. Kutulakos and E. Steger, “A Theory of Refractive and Specular 3D Shape by Light-Path Triangulation,” *Int. J. Computer Vision*, vol. 76, no. 1, pp. 13–29, 2007.

16. S. W. Hasinoff and K. N. Kutulakos, "Photo-Consistent Reconstruction of Semi-Transparent Scenes by Density-Sheet Decomposition," *IEEE Trans. Pattern Analysis and Machine Intelligence*, vol. 29, no. 5, pp. 870–885, 2007.
17. K. N. Kutulakos and A. Shashua, "Introduction to the Special Issue on Multi-View Modeling and Rendering of Visual Scenes," *Int. J. Computer Vision*, vol. 49, no. 2, pp. 99-100, 2002.
18. R. L. Carceroni and K. N. Kutulakos, "Multi-View Scene Capture by Surfel Sampling: From Video Streams to Non-rigid 3D Motion, Shape and Reflectance," *Int. J. Computer Vision*, vol. 49, no. 2, pp. 175-214, 2002.
19. S. M. Seitz and K. N. Kutulakos, "Plenoptic Image Editing," *Int. J. Computer Vision*, vol. 48, no. 2, pp. 115-129, 2002.
20. K. N. Kutulakos and S. M. Seitz, "A Theory of Shape by Space Carving," *Int. J. Computer Vision*, vol. 38, no. 3, pp. 197–216, 2000. David Marr Prize Special Issue.
21. K. N. Kutulakos and J. Vallino, "Calibration-free augmented reality," *IEEE Trans. on Visualization and Computer Graphics*, vol. 4, no. 1, pp. 1–20, 1998.
22. K. N. Kutulakos and C. R. Dyer, "Global surface reconstruction by purposive control of observer motion," *Artificial Intelligence Journal*, vol. 78, no. 1-2, pp. 147–177, 1995. Special Issue on Computer Vision.
23. K. N. Kutulakos and C. R. Dyer, "Recovering shape by purposive viewpoint adjustment," *Int. J. Computer Vision*, vol. 12, no. 1, pp. 113–136, 1994. Special Issue on Active Vision II.
24. D. Kulkarni and K. N. Kutulakos, "Probabilistic scale-space filtering program," *NASA Tech Briefs*, vol. 17, no. 7, p. 35, 1993. Acceptance based on receipt of NASA Tech Brief Award.
25. M. N. Kolountzakis and K. N. Kutulakos, "Fast computation of the Euclidean distance map for binary images," *Information Processing Letters*, vol. 43, pp. 181–184, 1992.
26. D. Kulkarni, K. N. Kutulakos, and P. Robinson, "Data analysis using scale-space filtering and Bayesian probabilistic reasoning," *Computers and Chemistry*, vol. 16, no. 1, pp. 15–23, 1992.

## B. Book Chapter

27. J. Vallino and K. N. Kutulakos, "Augmenting Reality Using Affine Object Representations" in *Augmented Reality and Wearable Computers*, W. Barfield and T. Caudell (Eds).

## C. Refereed Conference Publications

28. M. Sheinin, Y. Y. Schechner, K. N. Kutulakos, "Computational Imaging on the Electric Grid," in *Proc. Computer Vision and Pattern Recognition Conf.*, 2017. *Oral. Acceptance rate: 2.6% (71 orals out of 2680 submissions). Winner, Best Student Paper Award.*
29. C. Y. Tsai, K. N. Kutulakos, S. Narasimhan, A. Sankaranarayanan, "The Geometry of First-Returning Photons for Non-Line-of-Sight Imaging," in *Proc. Computer Vision and Pattern Recognition Conf.*, 2017. *Spotlight. Acceptance rate: 8% (215 spotlights and orals out of 2680 submissions).*
30. H. Tang, S. Cohen, B. Price, S. Schiller, and K. N. Kutulakos, "Depth from Defocus in the Wild," in *Proc. Computer Vision and Pattern Recognition Conf.*, 2017. *Poster. Acceptance rate: 29% (783 papers out of 2680 submissions).*
31. N. Sarhangnejad, H. Lee, N. Katic, M. O'Toole, K. N. Kutulakos, and R. Genov, "CMOS Image Sensor Architecture for Primal-Dual Coding," in *Proc. Int. Image Sensor Workshop*, 2017. *Oral. Acceptance rate unknown.*
32. X. Lei, M. O'Toole, F Heide, K. N. Kutulakos, M. Hullin, and W. Heidrich, "Defocus Deblurring and Superresolution for Time-of-Flight Depth Cameras," in *Proc. Computer Vision and Pattern Recognition Conf.* 2015. *Poster. Acceptance rate: 28.4% (602 papers out of 2123 submissions).*

33. H. Tang, X. Zhang, S. Zhuo, F. Chen, K. N. Kutulakos and L. Shen, “High Resolution Photography with an RGB-Infrared Camera,” in *Proc. Int. Conf. Computational Photography*, 2015. *Oral*. Acceptance rate unknown.
34. M. O’Toole, J. Mather and K. N. Kutulakos, “3D shape and indirect appearance by structured light transport” in *Proc. Computer Vision and Pattern Recognition Conf.*, 2014. *Oral*. Acceptance rate: 5.4% (105 orals out of 1807 submissions). **Winner, Best Paper Honorable Mention.**
35. H. Tang and K. N. Kutulakos, “What does an aberrated photo tell us about the lens and the scene?” in *Proc. Int. Conf. on Computational Photography*, 2013. *Oral*. Acceptance rate unknown.
36. D. Wu, G. Wetzstein, C. Barsi, T. Willwacher, M. O’Toole, N. Naik, Q. Dai, K. N. Kutulakos, R. Raskar, “Frequency Analysis of Transient Light Transport with Applications in Bare Sensor Imaging” in *Proc. European Conf. on Computer Vision*, 2012. *Poster*. Acceptance rate: 25%
37. J. Taylor, A. D. Jepson, K. N. Kutulakos, “Non-Rigid Structure from Locally-Rigid Motion,” in *Computer Vision and Pattern Recognition Conf.*, 2010. *Oral*. Acceptance rate: 4.5% (78 orals out of 1724 submissions).
38. S. W. Hasinoff, K. N. Kutulakos, F. Durand, W. Freeman, “Time-Constrained Photography,” in *12th Int. Conf. on Computer Vision*, 2009. *Oral*. Acceptance rate: 3.8%
39. S. W. Hasinoff and K. N. Kutulakos, “Light-Efficient Photography,” in *Proc. 10th European Conf. on Computer Vision*, 2008. *Oral*. Acceptance rate: 4.6% (40 orals out of 871 submissions).
40. A. Ecker, K. N. Kutulakos and A. D. Jepson, “Semidefinite Programming Heuristics for Surface Reconstruction Ambiguities,” in *Proc. 10th European Conf. on Computer Vision*, 2008. *Poster*. Acceptance rate: 27.9% (243 papers out of 871 submissions).
41. I. Ihrke, K. N. Kutulakos, H. P. A. Lensch, M. Magnor, W. Heidrich, “State of the Art in Transparent and Specular Object Reconstruction,” in *Proc. Eurographics*, 2008. *Oral*. Acceptance rate unknown.
42. N. Morris and K. N. Kutulakos, “Reconstructing the Surface of Inhomogeneous Transparent Scenes by Scatter-Trace Photography,” in *Proc. 11th Int. Conf. on Computer Vision*, 2007. *Oral*. Acceptance rate: 3.9% (44 orals out of 1128 submissions).
43. S. W. Hasinoff and K. N. Kutulakos, “A Layered Restoration Framework for Variable-Aperture Photography,” in *Proc. 11th Int. Conf. on Computer Vision*, 2007. *Poster*. Acceptance rate: 19.5% (220 posters out of 1128 submissions).
44. A. Ecker, K. N. Kutulakos and A. D. Jepson, “Shape from Planar Curves: A Linear Escape from Flatland,” in *Proc. Computer Vision and Pattern Recognition Conf.*, 2007. *Poster*. Acceptance rate: 23.4% (293 posters out of 1252 submissions).
45. S. W. Hasinoff and K. N. Kutulakos, “Confocal Stereo,” in *Proc. 9th European Conf. on Computer Vision*, pp. 620–634, 2006. *Oral*. Acceptance rate: 4.9% (40 orals out of 811 submissions). **Winner, Best Paper Honorable Mention.**
46. K. N. Kutulakos and E. Steger, “A Theory of Specular and Refractive 3D Shape by Light-Path Triangulation,” in *Proc. 10th Int. Conf. on Computer Vision*, pp. 1448–1455, 2005. *Oral*. Acceptance rate: 3.6% (45 orals out of 1230 submissions). **Honorable Mention, David Marr Prize in Computational Vision.**
47. S. Seitz, Y. Matsushita and K. N. Kutulakos, “A Theory of Inverse Light Transport,” in *Proc. 10th Int. Conf. on Computer Vision*, pp. 1440–1447, 2005. *Oral*. Acceptance rate: 3.6% (45 orals out of 1230 submissions).
48. N. Morris and K. N. Kutulakos, “Dynamic Refraction Stereo,” in *Proc. 10th Int. Conf. on Computer Vision*, pp. 1573–1580, 2005. *Poster*. Acceptance rate: 19.8% (244 orals/posters out of 1230 submissions). *Was among the 16 submissions with highest review scores.*
49. R. L. Carceroni, F. L. C. Pádua, G. A. M. R. Santos and K. N. Kutulakos, “Linear Sequence-To-Sequence Alignment,” in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 746–753, 2004. *Poster*. Acceptance Rate: 26.1% (261 orals/posters out of 1000 submissions).



50. S. W. Hasinoff and K. N. Kutulakos, "Photo-Consistent 3D Fire by Flame Sheet Decomposition," in *Proc. 9th Int. Conf. on Computer Vision*, pp. 1184–1191, 2003. *Oral. Acceptance Rate: 4.4% (43 orals out of 966 submissions).*
51. R. Bhotika, D. Fleet and K. Kutulakos, "A Probabilistic Theory of Occupancy and Emptiness," in *Proc. 7th European Conf. on Computer Vision*, pp. 112–131, 2002. *Oral. Acceptance Rate: 7.5% (45 orals out of 600 submissions).*
52. R. L. Carceroni and K. N. Kutulakos, "Multi-View Scene Capture by Surfel Sampling: From Video Streams to Non-Rigid 3D Motion, Shape and Reflectance," in *Proc. 8th Int. Conf. on Computer Vision*, pp. 60–67, 2001. *Oral. Acceptance Rate: 7.5% (45 orals out of 596 submissions).*
53. K. N. Kutulakos, "Approximate N-View Stereo," in *Proc. 6th European Conf. on Computer Vision*, pp. 67–83, 2000. *Oral. Acceptance Rate: 16.5% (44 orals out of 266 submissions).*
54. K. N. Kutulakos and S. M. Seitz, "A Theory of Shape by Space Carving," in *Proc. 7th Int. Conf. on Computer Vision*, pp. 307–314, 1999. *Oral. Acceptance Rate: 8% (46 orals out of 575 submissions).* **Winner, David Marr Prize in Computational Vision.**
55. R. L. Carceroni and K. N. Kutulakos, "Multi-View 3D Shape and Motion Recovery on the Spatio-Temporal Curve Manifold," in *Proc. 7th Int. Conf. on Computer Vision*, pp. 520–527, 1999. *Oral. Acceptance Rate: 8% (46 orals out of 575 submissions).*
56. R. L. Carceroni and K. N. Kutulakos, "Toward Recovering Shape and Motion of 3D Curves from Multi-View Image Sequences," in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 192–197, 1999. *Poster. Acceptance Rate: 38.1% (192 orals/posters out of 503 submissions).*
57. S. M. Seitz and K. N. Kutulakos, "Plenoptic Image Editing," in *Proc. 6th Int. Conf. on Computer Vision*, pp. 17–24, 1998. *Oral. Acceptance Rate: 8.2% (41 orals out of 500 submissions).*
58. K. N. Kutulakos, "Shape from the Light Field Boundary," in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 53–59, 1997. *Poster. Acceptance Rate: 31.8% (173 orals/posters out of 544 submissions).*
59. K. N. Kutulakos and J. Vallino, "Affine object representations for calibration-free augmented reality," in *Proc. IEEE Virtual Reality Annual International Symposium*, pp. 25–36, 1996. *Oral. Acceptance Rate: 35% (submission number unknown).*
60. K. N. Kutulakos and J. Vallino, "Non-Euclidean object representations for calibration-free video overlay," in *ECCV'96 Workshop on Object Representations in Computer Vision*, pp. 381–401, 1996. *Oral. Acceptance rate unknown.*
61. K. N. Kutulakos, "Affine surface reconstruction by purposive viewpoint adjustment," in *Proc. 5th Int. Conf. on Computer Vision*, pp. 894–901, 1995. *Poster. Acceptance Rate: 26.8% (161 orals/posters out of 599 submissions).*
62. K. N. Kutulakos and M. Jägersand, "Exploring objects by invariant-based tangential viewpoint control," in *Proc. Int. Symp. Computer Vision*, pp. 503–508, 1995. *Oral. Acceptance rate unknown.* Extended version appears in *Proc. IROS'95 Workshop on Vision for Robots*.
63. K. N. Kutulakos and C. R. Dyer, "Occluding contour detection using affine invariants and purposive viewpoint control," in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 323–330, 1994. *Oral. Acceptance Rate: 18.4% (87 orals out of 472 submissions).* **Winner, Siemens Best Student Paper Award.**
64. K. N. Kutulakos and C. R. Dyer, "Global surface reconstruction by purposive control of observer motion," in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 331–338, 1994. *Oral. Acceptance Rate: 18.4% (87 orals out of 472 submissions).*
65. K. N. Kutulakos, C. R. Dyer, and V. J. Lumelsky, "Provable strategies for vision-guided exploration in three dimensions," in *Proc. IEEE Robotics and Automation Conf.*, pp. 1365–1372, 1994. *Oral. Acceptance rate unknown.*
66. K. N. Kutulakos, W. B. Seales, and C. R. Dyer, "Building global object models by purposive viewpoint control," in *Proc. Second CAD-Based Vision Workshop*, pp. 169–182, 1994. *Oral. Acceptance rate unknown.*

67. K. N. Kutulakos, V. J. Lumelsky, and C. R. Dyer, "Vision-guided exploration: A step toward general motion planning in three dimensions," in *Proc. IEEE Robotics and Automation Conf.*, pp. 289–296, 1993. *Oral. Acceptance Rate: 55% (submission number unknown).*
68. K. N. Kutulakos and C. R. Dyer, "Toward global surface reconstruction by purposive viewpoint adjustment," in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 726-727, 1993. *Poster. Acceptance Rate: 43% (176 orals/posters out of 431 submissions).*
69. K. N. Kutulakos and C. R. Dyer, "Recovering shape by purposive viewpoint adjustment," in *Proc. Computer Vision and Pattern Recognition Conf.*, pp. 16–22, 1992. *Oral. Acceptance Rate: 24% (89 orals out of 357 submissions). Was among the five highest-ranked submissions to the conference.*

## **E. Invited Conference Publications**

70. K. N. Kutulakos and S. W. Hasinoff, "Focal Stack Photography: High-Performance Photography with a Conventional Camera," in *Proc. IAPR Conf. on Machine Vision Applications*, 2009.
71. K. N. Kutulakos, "Light Transport Analysis for 3D Photography," in *Proc. 6th Int. Conf. on 3D Imaging and Modeling*, p. 337, 2007.
72. K. N. Kutulakos, "Refractive and Specular 3D Shape by Light-Path Triangulation," in *Proc. Int. Symp. for the CREST Digital Archiving Project*, pp. 86–93, 2005.
73. K. N. Kutulakos, "Altering Reality Through Interactive Image and Video Manipulation," in *Proc. ICCV Workshop on Computer Vision, Virtual Reality, and Human Communication*, pp. 72-77, 1998.

## **F. Other Non-Refereed Conference Publications**

74. C. Harman, K. N. Kutulakos, and B. C. Madden, "Digital Photography for Time-Lapse Monitoring of Skin Lesions," in *Abstracts of the 61st Annual Meeting of the Society for Investigative Dermatology*, May 2000.
75. R. L. Carceroni and K. N. Kutulakos, "Shape and Motion of 3D Curves from Multi-View Image Sequences," in *1998 Image Understanding Workshop*.
76. K. N. Kutulakos and J. R. Vallino, "Affine object representations for calibration-free augmented reality," in *1996 Image Understanding Workshop*, pp. 825–830, 1996.

## **G. Technical Reports**

77. K. N. Kutulakos and S. M. Seitz, "A Theory of Shape by Space Carving," Technical Report #692, Department of Computer Science, University of Rochester, May 1998.
78. K. N. Kutulakos and S. M. Seitz, "What Do N Photographs Tell Us about 3D Shape?" Technical Report #680, Department of Computer Science, University of Rochester, January 1998.
79. S. M. Seitz and K. N. Kutulakos, "Plenoptic Image Editing," Technical Report #647, Department of Computer Science, University of Rochester, January 1997.
80. K. N. Kutulakos, "Affine Surface Reconstruction by Purposive Viewpoint Control," Technical Report #581, Department of Computer Science, University of Rochester, January 1996.
81. K. N. Kutulakos, "Exploring Three-Dimensional Objects by Controlling the Point of Observation," Ph.D. Dissertation, Technical Report #1251, Department of Computer Science, University of Wisconsin–Madison, October 1994.
82. K. N. Kutulakos and C. R. Dyer, "Global Surface Reconstruction By Purposive Control of Observer Motion," Technical Report #1141, Department of Computer Science, University of Wisconsin–Madison, April 1993.

83. K. N. Kutulakos, C. R. Dyer and V. J. Lumelsky, "Object Exploration By Purposive, Dynamic Viewpoint Adjustment," Technical Report #1124, Department of Computer Science, University of Wisconsin–Madison, November 1992.
84. K. N. Kutulakos, C. R. Dyer and V. J. Lumelsky, "Motion Planning in Three-Dimensions," Technical Report #1111, Department of Computer Science, University of Wisconsin–Madison, September 1992.
85. K. N. Kutulakos and C. R. Dyer, "Recovering Shape By Purposive Viewpoint Adjustment," Technical Report #1035, Department of Computer Science, University of Wisconsin–Madison, August 1991.
86. K. N. Kutulakos and C. R. Dyer, "Using the Interference Graph for the Dynamic Ordering of Vision Processing Tasks," Technical Report #977, Department of Computer Science, University of Wisconsin–Madison, October 1990.

## H. Conference Demonstrations

87. S. Achar, J. Bartels, W. Whittaker, K. N. Kutulakos, and S. Narasimhan, "Epipolar Time of Flight Imaging," *Int. Conf. on Computational Photography*, 2017.
88. S. Achar, M. O'Toole, K. N. Kutulakos and S. G. Narasimhan, "Energy-Efficient Structured Light Imaging," *Computer Vision and Pattern Recognition Conf.*, 2015. **Winner, Best Demo Award.**
89. S. Achar, M. O'Toole, K. N. Kutulakos and S. G. Narasimhan, "Energy-Efficient Structured Light Imaging," *Int. Conf. on Computational Photography*, 2015. **Winner, Best Demo Award.**
90. M. O'Toole and K. N. Kutulakos, "Visualizing Light Transport Phenomena with a Primal-Dual Coding Video Camera," Emerging Technologies Program, *ACM Siggraph*, 2014
91. M. O'Toole and K. N. Kutulakos, "Visualizing Light Transport Phenomena with a Primal-Dual Coding Video Camera," Demonstation Program, *Int. Conf. on Computational Photography*, 2013
92. M. O'Toole and K. N. Kutulakos, "Visualizing Light Transport Phenomena with a Primal-Dual Coding Video Camera," Demonstation Program, *Computer Vision and Pattern Recognition Conf.*, 2013

## LIST OF COURSES

Note: Was primary instructor for all courses listed below. Detailed information and course materials are available on the web at <http://www.cs.toronto.edu/~kyros/courses/courses.html>

- **Undergraduate Courses (University of Toronto)**

- CSC 418H Computer Graphics (Fall 2008, Fall 2009, Fall 2010)
- CSC 320H Introduction to Visual Computing (Fall 2002, Winters 2004, 2006-11, 2013, 2016-17).
- CSC 384H Introduction to Artificial Intelligence (Winter 2002).

- **Undergraduate Courses (University of Rochester)**

- CSC 290B Visual Computing (Fall 1999 and Spring 2001). Open to freshman through senior levels.
- ECE 102 Introduction to Electronic Imaging Systems. Six-lecture segment on Visual Computing (Spring 1999-2001). Open to freshmen only.
- CSC 242 Artificial Intelligence (Spring 1999). Open to juniors and seniors.
- Guest lecturer in introductory courses offered by the Biomedical Engineering Department.

- **Graduate Courses (University of Toronto)**

- CSC 2503H Foundations of Computational Vision (Fall 2013-16)

- CSC 2530H Computer Vision for Advanced Digital Photography (Winters 2007-11, Fall 2012).
- CSC 2530H Visual Modeling (Fall 2001, Fall 2002, Winter 2004, Winter 2006).
- **Graduate Courses (Beijing University of Aeronautics and Astronautics)**
  - Visual Modeling (Spring 2005).
- **Graduate Courses (University of Rochester)**
  - CSC-577 3D Photography (Spring 1998).
  - CSC-449 Sensory-Motor Systems (Fall 1997).
  - CSC-577 Geometric Methods in Computer Vision (Spring 1995).

## SUPERVISION

- **Masters Students Supervised**
  - Sam Hasinoff
  - Nigel Morris
  - Eron Steger
  - Matthew Patrick O’ Toole
  - Sofia Karygianni
  - Huixuan Tang
  - Xavier Snelgrove
  - Liviu Calin
- **Masters Students In Progress**
  - Pan Zhang, primary supervisor, Fall 2014-
  - Sayed Mirdehghan, primary supervisor, Spring 2015-
  - Zhaowei Liu, primary supervisor, Fall 2016-
  - Yawen Ma, primary supervisor, Fall 2016-
- **Ph.D. Students Supervised**
  - Huixuan Tang  
Thesis title: *Modeling and Analysis of Optical Blur for Everyday Photography*
  - Matt O’Toole  
Thesis title: *Optical linear algebra for light transport analysis*
  - Jonathan Taylor  
Thesis title: *Non-rigid structure from locally-rigid motion*
  - Nigel Morris  
Thesis title: *Shape estimation under general reflectance and opacity*
  - Ady Ecker  
Thesis title: *Single-view reconstruction*

- Sam Hasinoff  
Ph.D. Thesis: *Variable-aperture photography*
- Rahul Bhotika  
Thesis title: *Scene-space methods for bayesian inference of 3D shape and motion*
- Rodrigo L. Carceroni  
Thesis title: *Recovering non-rigid 3D motion, shape and reflectance from multi-view image sequences: a differential-geometric approach*
- James R. Vallino  
Thesis title: *Interactive augmented reality*

- **Ph.D. Students In Progress**

- Robin Swanson, primary supervisor, Fall 2016-
- Mian Wei, primary supervisor, Spring 2017-

- **Ph.D. Thesis External Reader**

- Supreeth Achar, Robotics Institute, Carnegie Mellon University (August 2017)
- Xida Chen, Department of Computer Science, U. of Alberta (Sept 2015)
- Yuandong Tian, Robotics Institute, Carnegie Mellon University (Sept 2013)
- Vishes Chari, Mathematics and Computer Science, Université de Grenoble (Nov 2012)
- Cheng Lei, Department of Computer Science, U. of Alberta (Aug 2009)
- Todd R. Zickler, Department of Computer Science, Yale University (June 2004)