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- **Education**

Degree	Institution	Date	Field
Diplome	University of Athens, Greece	1981	Mathematics
M.S.	University of Rochester, New York	1984	Computer Science
Ph.D.	University of Rochester, New York	1987	Computer Science

- **Professional Experience**

September 1986 to present Institute for Advanced Computer Studies, Department of Computer Science, and Computer Vision Laboratory, Center for Automation Research, University of Maryland, College Park, MD 20742-3275. Assistant Professor, 1987–1992; Associate Professor, August 1992–1997; Professor, 1998–present

September 1990 to present Head, Computer Vision Laboratory, Institute for Advanced Computer Studies, University of Maryland

September 1993 to February 1994 Visiting Professor, Royal Institute of Technology, Stockholm, Sweden

February 1994 to August 1994 Visiting Professor, Department of Computer Science, University of Crete and Institute for Computer Science, FORTH, Crete, Greece

- **Professional Activities**

Editor, Advances in Computer Vision series, Lawrence Erlbaum Publishers
Associate Editor, The Visual Computer
Associate Editor, Computer Vision and Image Understanding Journal
Associate Editor, IEEE Transactions on Pattern Analysis and Machine Intelligence Journal, 1990–1995
Associate Editor, Pattern Recognition Journal
Editorial Advisory Board, Videre, MIT Press
Referee for

- Science
- Nature
- International Journal of Computer Vision
- IEEE Transactions on PAMI
- IEEE Transactions on Image Processing
- IEEE Transactions on Systems, Man and Cybernetics
- IEEE Transactions on Robotics and Automation
- Biological Cybernetics
- International Journal of Robotics Research
- Computer Vision and Image Understanding
- Journal of the Optical Society of America, A
- Image and Vision Computing
- Pattern Recognition Letters
- Pattern Recognition
- Proceedings of the IEEE
- Machine Vision and Applications, Springer-Verlag
- The Visual Computer

Reviewer, National Science Foundation (NSF), 1988–present

Program Committee, IEEE Workshop on Visual Motion, 1989

Program Committee, IEEE Computer Vision and Pattern Recognition Conference (CVPR), 1992, 1994

Program Committee, International Conference on Computer Vision (ICCV), 1988

Program Committee, International Conference on Pattern Recognition (ICPR), 1994

NSF Panelist, Small Business Innovative Research, Directorate of Robotics and Machine Intelligence, 1988

NSF Panelist, Research Initiation Awards, Directorate of Robotics and Machine Intelligence, 1990, 1991, 1993, 1996, 1998, 2000, 2002, 2004, 2006.

Reviewer for the ESPRIT Basic Research Action, European Union, 1992, 1993

Reviewer for European Commission, EC Framework Programme IV, Information Technologies, 1995, 1996

Program Committee, Workshop on Information Technology ESPRIT/NSF/DARPA, National Academy of Sciences, 1992

Program Co-chair, NSF/DARPA Workshop on Machine Learning and Computer Vision, October, 1992

Program Co-chair, IEEE CVPR Conference, New York, New York, 1993

Program Co-chair, IEEE Workshop on Qualitative Vision, 1993

Program Chair, International Conference on Pattern Recognition (ICPR'96), Vienna, 1996

Program Committee, Workshop on Vision and Action, Kiel, Germany, 1997

Program Co-chair, International Conference on Pattern Recognition (ICPR'00), Barcelona, 2000

Reviewer for European Commission, Research Program on Visualization, 1999

Program Co-chair, 2nd International Symposium on 3D Photography, Visualization and Transmission, Sept. 2004, Thessaloniki, Greece.

Reviewer for the European Program on Cognitive Systems, Brussels, Belgium, 2007-- 2011.

Program co-Chair, NSF Workshop on Visual Navigation, May 2007, Pasadena, CA.

Program co-Chair, Workshop on the Active Vision of Humanoids, Int'l Conference on Humanoid Robotics, Pittsburgh, PA, 2007.

• **Awards and Honors**

IBM Predoctoral Fellowship, 1985–1986

Marr Prize Honorable Mention Award, 1st International Conference on Computer Vision, June 1987, for his work on Active Vision

Presidential Young Investigator Award, Directorate of Robotics and Machine Intelligence, National Science Foundation, 1990

Member, National Research Council of the National Academy of Sciences, Committee on Vision, 1993–1996

Member, New York Academy of Sciences

1993 Bodossaki Award for Computational Vision and Image Processing (Award with a personal check for $30,000, presented to distinguished scientists of Hellenic origin in technical fields, under the age of 40; other winners include George Efstathiou of Oxford-1993 in Physics and John Tsitsiklis of MIT-1994 in Control Theory)

GRB Summer Research Award, 1999

• **Courses Taught**

For the period 1999-2011, I have taught the Vision courses, graduate and undergraduate.

Fall 1999	CMSC 426	Computer Vision and Robotics
Spring 1999	CMSC 733	Computer Processing of Pictorial Information: Video Manipulation/Sensor Networks
Fall 1998	CMSC 828	3D Video and Photography
Spring 1998	CMSC 426	Computer Vision/Image Processing
Fall 1997	CMSC 733	Computer Processing of Pictorial Information: Video Processing/Gesture Recognition
Spring 1997	CMSC 426	Computer Vision/Image Processing
Fall 1996	CMSC 620	Artificial Intelligence
Spring 1996	CMSC 828	Graduate Seminar on Physical Space and Perceptual Space
Fall 1995	CMSC 733	Computer Processing of Pictorial Information: Recognition
Spring 1995	CMSC 150	Introduction to Discrete Structures
Fall 1994	CMSC 426	Computer Vision/Image Processing
Spring 1993	CMSC 733	Computer Processing of Pictorial Information: Reconstruction
Fall 1992	CMSC 828	Seminar on Sensory Feedback Robotics
Spring 1992	CMSC 150	Introduction to Discrete Structures
Fall 1991	CMSC 150	Introduction to Discrete

		Structures
Fall 1990	CMSC 733	Computer Processing of Pictorial Information: Navigation
Spring 1990	CMSC 150	Introduction to Discrete Structures
Spring 1989	CMSC 620	Artificial Intelligence
Fall 1988	CMSC 828	Graduate Seminar in Photogrammetry and Computer Vision
Spring 1988	CMSC 426	Computer Vision/Image Processing
Fall 1987	CMSC 620	Artificial Intelligence
Spring 1987	CMSC 828	Graduate Seminar in Learning
Fall 1986	CMSC 426	Computer Vision/Image Processing

- **University Service**

September 1986 to present	Member, Graduate Admission Committee
September 1986 to present	Member, Information Processing Field Committee
1990–1991	Chairman, Ph.D. Comprehensive Examination Committee
March 1992	Member, Technology Advancement Program Screening Panel
September 1990 to present	Member, Committee on the Advancement of Undergraduate Education
1990–91 (academic year)	Member, Department Colloquium Committee
1988	Member, Service Course Committee
1989–1990 (academic year)	Organizer of University of Maryland Institute for Advanced Computer Studies Lecture Series on Computer Vision
1991 to present	President, Pegasus Hellenic Undergraduate Society
1994 to 2003	Member, Programs, Courses and Curriculum College Committee
1994 to present	Member, Vision and Geometry Field Committee
1998 to 2000	Member, College APT Appointments and Promotions Committee
2000 to 2002	Chair, APT Committee, Dept. of Computer Science
2006 to present	Academic Honesty Committee
	Teaching Evaluation Committee

- **Publications**
- **Books and Chapters**

1.   J. Aloimonos and C.M. Brown, "Robust computation of intrinsic images from multiple cues," in *Advances in Computer Vision*, Lawrence Erlbaum Associates, 115-163, 1988.

2.   J. Aloimonos and D. Shulman, *Integration of Visual Modules: An Extension of the Marr Paradigm*, Academic Press, Boston, 1989.

3.   J. Aloimonos and A. Rosenfeld, "Visual Recovery," in S. Shapiro (Ed.), *Encyclopedia of Artificial Intelligence*, Wiley, 1992.

4.   Y. Aloimonos (Ed.), *Active Perception*, Vol. I of Advances in Computer Vision series, Lawrence Erlbaum Associates, 1993.

5.   Y. Aloimonos, "Active Vision Revisited," in Y. Aloimonos (Ed.), *Active Perception*, Lawrence Erlbaum Associates, 1993.

6.   Y. Aloimonos and A. Rosenfeld, "Principles of Computer Vision," in T. Young (Ed.), *Handbook of Pattern Recognition and Image Processing*, Vol. 2, Academic Press, 1993.

7.   T. Dean, J. Allen and Y. Aloimonos, *Artificial Intelligence: Theory and Practice* (textbook), The Benjamin Cummings Publishing Co., Menlo Park, 1994.

8.   Y. Aloimonos (Ed.), *Visual Navigation: From Biological Systems to Unmanned Ground Vehicles*, Vol. II of Advances in Computer Vision series, Lawrence Erlbaum Associates, 1997.

9.   Y. Aloimonos (Ed.), *Visual Recognition for Robotic Agents*, Vol. III of Advances in Computer Vision series, Lawrence Erlbaum Associates, 1997, to appear.

10.   C. Fermüller and Y. Aloimonos, "The Synthesis of Vision and Action," in M. Landy (Ed.), *Exploratory Vision: The Active Eye*, Springer-Verlag, 1995.

11.   C. Fermüller and Y. Aloimonos, "Primates, Bees and UGV's in Motion," in S. Srinivasan and V. Venkatesh (Eds.), *From Living Eyes to Seeing Machines*, Cambridge University Press, 1996.

12.   C. Fermüller and Y. Aloimonos, "Direct Motion Perception," in *Visual Navigation: From Biological Systems to Unmanned Ground Vehicles*, Vol. II of Advances in Computer Vision, Lawrence Erlbaum Associates, 1997.

13.   Y. Aloimonos, "Visual Navigation: Flies, Bees and UGV's," in *Visual Navigation: From Biological Systems to Unmanned Ground Vehicles*, Vol. II of Advances in Computer Vision, Lawrence Erlbaum Associates, 1997.

14.   R. Bolle, Y. Aloimonos, and C. Fermüller, "Video Representations," invited paper in ACCV'95, in S.Z. Li (Ed.), *Future Directions in Computer Vision*, Lecture Notes in Computer Science, Springer-Verlag, in press.

15.   C. Fermüller, L. Cheong and Y. Aloimonos, "Geometry of Visual Space Distortion," in J.J. Koenderink and G. Sommer (Eds.), *Algebraic Frames for the Perception-Action Cycle*, Springer-Verlag, 1997.

16.   C. Fermüller and Y. Aloimonos, "Active Perception," in *Encyclopedia of Electrical and Electronics Engineering*, Wiley, in press.

17.   C. Fermuller and Y. Aloimonos, "Geometry of Eye Design: Biology and Technology," in Multi Image Search and Analysis, Lecture Notes in Computer Science, R. Klette, T. Huang and G. Gimelfarb, (Eds.), Springer Verlag, Heidelberg, 2000.

18.   J. Neumann, C. Fermuller and Y. Aloimonos, "Animated Heads: From 3D Motion Fields to Action Descriptions," in Deformable Avatars, N. and D. Thalmann (Eds.), Kluwer, pg. 1–12, 2001.

19.   B. Stuart, P. Baker and Y. Aloimonos, "Towards the Ultimate Motion Capture

Technology," in Deformable Avatars, N. and D. Thalmann (Eds.), Kluwer, 2001.

20. C. Fermuller and Y. Aloimonos, "Statistics Explains Geometrical Optical Illusions," in L. S. Davis (Ed.), Foundations of Image Understanding, Kluwer, 2001.

21. A. S. Ogale, C. Fermüller, and Y. Aloimonos, *Detecting independent 3D movement* in Handbook of Geometric Computing Applications in Pattern Recognition, Computer Vision, Neural computing, and Robotics, E. Bayro-Corrochano, Ed., Springer Verlag, March 2005

22. Y. Aloimonos, "Multicamera networks: new eyes", in H. Aghahan and A Cavallaro (Eds.), Multi-Camera Networks: Concepts and Applications, Elsevier, in press

• **Articles in Refereed Journals**

1. C.M. Brown, J. Aloimonos, A. Basu, "Contour, texture, shape and motion," *Pattern Recognition Letters* 5, 151-168, North Holland, 1987.

2. J. Aloimonos, "Shape from texture," *Biological Cybernetics* 58, 345-360, 1988.

3. J. Aloimonos and M. Swain, "Shape from patterns: Regularization," *International Journal of Computer Vision* 2, 171-187, 1988.

4. J. Aloimonos, I. Weiss and A. Bandyopadhyay, "Active vision," *International Journal of Computer Vision* 1, 333-356, 1988.

5. J. Aloimonos, "Visual shape computation," *Proceedings of the IEEE* 76, 899-916, 1988.

6. D. Shulman and J. Aloimonos, "Nonrigid motion interpretation: A regularized approach," *Proc. Royal Society of London B* 233, 217-234, 1988.

7. R. Nelson and J. Aloimonos, "Finding motion parameters from spherical flow fields (or the advantages of having eyes in the back of your head)," *Biological Cybernetics* 58, 261-273, 1988.

8. R. Nelson and J Aloimonos, "Using flow field divergence for obstacle avoidance in visual navigation," *IEEE Transactions on PAMI* 11, 1102-1106, 1989.

9. J. Aloimonos and C.M. Brown, "On the kinetic depth effect," *Biological Cybernetics* 60, 445-455, 1989.

10. J. Aloimonos and D. Shulman, "Learning early vision computations," *Journal of the Optical Society of America A* 6, 906-914, 1989.

11. J. Aloimonos, "Unifying shading and texture through an active observer," *Proc. Royal Society of London B* 238, 25-37, 1989.

12. A. Basu and J. Aloimonos, "A robust, correspondenceless, translation-determining algorithm," *International Journal of Robotics Research* 9, 35-59, 1990.

13. J. Aloimonos and J.-Y. Hervé, "Correspondenceless detection of depth and motion for a planar surface," *IEEE Transactions on PAMI* 12, 504-510, 1990.

14. M. Spetsakis and J. Aloimonos, "Structure from motion using line correspondences," *International Journal of Computer Vision* 4, 171-183, 1990.

15. J. Aloimonos, "Perspective approximations," *Image and Vision Computing* 8, 177-192, 1990.

16. J. Aloimonos and L. Huang, "Motion-boundary illusions," *Proc. Royal Society of London B* 242, 75-81, 1990.

17. A. Bandopadhay and J. Aloimonos, "Image motion estimation by clustering," *International Journal of Imaging Science and Technology* 2, 345-355, 1990.

18. J. Aloimonos and D. Tsakiris, "On the visual mathematics of tracking," *Image and Vision Computing* 9, 235-251, 1991.

19. J. Aloimonos and A. Rosenfeld, "Reply: A response to "Ignorance, Myopia and Naivete in Computer Vision" by R.C. Jain and T.O. Binford," *CVGIP* 53, 120-124, 1991.

20. M. Spetsakis and J. Aloimonos, "A multiframe approach to visual motion perception,"

International Journal of Computer Vision 6, 245-255, 1991.

21.   J. Aloimonos and A. Rosenfeld, "Computer vision," *Science* 253, 1181-1324, 1991.

22.   R. Sharma and J. Aloimonos, "Coordinated motion planning: The warehouseman's problem with constraints on free space," *IEEE Transactions on Systems, Man and Cybernetics* 22, 130-141, 1992.

23.   M. Spetsakis and Y. Aloimonos, "Optimal computing of structure from motion using point correspondences in two frames," *IEEE Transactions on PAMI* 14, 959-964, 1992.

24.   C. Fermüller and Y. Aloimonos, "Tracking facilitates 3-D motion estimation," *Biological Cybernetics* 67, 259-268, 1992.

25.   Y. Aloimonos, "Is complete visual recovery necessary? Obstacle avoidance without passive ranging," *Journal of Robotic Systems* 9, 843-858, 1992.

26.   Y. Aloimonos, (Ed.), Purposive and Qualitative Active Vision, Special Issue of *CVGIP: Image Understanding* 56, 1992.

27.   Y. Aloimonos, "Purposive active vision," *CVGIP: Image Understanding*, 840-850, August 1992.

28.   R. Sharma, D. Mount, and Y. Aloimonos, "Probabilistic analysis of some navigation strategies in a dynamic environment," *IEEE Transactions on Systems, Man and Cybernetics* 23(5):1465-1474, September 1993.

29.   C. Fermüller and Y. Aloimonos, "The role of fixation on visual motion analysis," *International Journal of Computer Vision* 11, 165-186, 1993.

30.   L. Huang and Y. Aloimonos, "How normal flow constrains relative depth for an active observer," *Image and Vision Computing* 12, 435-445, September 1994.

31.   Y. Aloimonos, "What I have learned," *CVGIP: Image Understanding*, 74-85, July 1994.

32.   Y. Aloimonos and Z. Duric, "Estimating the heading direction using normal flow," *International Journal of Computer Vision* 13(1), 33-56, 1994.

33.   Y. Aloimonos, "Qualitative vision," *International Journal of Computer Vision* 14, 115-117, 1995.

34.   Y. Aloimonos (Ed.), Special Issue on Qualitative Vision, *International Journal of Computer Vision* 14, 115-201, 1995.

35.   C. Fermüller and Y. Aloimonos, "Qualitative egomotion," *International Journal of Computer Vision* 15, 7-29, 1995.

36.   C. Fermüller and Y Aloimonos, "Vision and action," *Image and Vision Computing* 13, 725-744, 1995.

37.   S. Negahdaripour, B.Y. Hayashi, and Y. Aloimonos, "Direct motion stereo for passive navigation," *IEEE Transactions on Robotics and Automation* 11(6):829-843, December 1995.

38.   C. Fermüller and Y. Aloimonos, "Direct perception of three-dimensional motion from patterns of visual motion," *Science* 270, 1973-1976, 1995.

39.   Y. Aloimonos, C. Fermüller, and A. Rosenfeld, "Seeing and understanding: Representing the visual world," *ACM Computing Surveys* 27(3):307-309, 1995.

40.   R. Sharma and Y. Aloimonos, "Early detection of independent motion from active control of normal image flow patterns," *IEEE Transactions on Systems, Man and Cybernetics* 26(2), February 1996.

41.   C. Fermüller and Y. Aloimonos, "On the geometry of visual correspondence," *International Journal of Computer Vision* 21(3):223-247, 1997.

42.   C. Fermüller, R. Pless and Y. Aloimonos, "Families of stationary patterns producing illusory movement: Insights into the visual system," *Proc. Royal Society of London B* 264:795–806, 1997.

43.   L. Cheong, C. Fermüller and Y. Aloimonos, "Effects of errors in the viewing geometry

on shape estimation," *Computer Vision and Image Understanding*, 71:356–372, 1998.

44.   C. Fermüller and Y. Aloimonos, "Ambiguity in structure from motion: Sphere versus plane," *International Journal of Computer Vision* 28(2):137–154, 1998.

45.   C. Fermüller, L. Cheong and Y. Aloimonos, "Visual space distortion," *Biological Cybernetics* 77:323–337, 1997.

46.   C. Fermüller, L. Cheong and Y. Aloimonos, "3D motion and shape representations in visual servo control," *International Journal of Robotics Research* 17:4–18, 1998.

47.   T. Brodský, C. Fermüller and Y. Aloimonos, "Directions of Motion Fields are Hardly Ever Ambiguous," *International Journal of Computer Vision* 26:5–24, 1998.

48.   C. Fermüller and Y. Aloimonos, "Observability of 3D Motion," *International Journal of Computer Vision*, 37(1):43–62, June 2000.

49.   C. Fermüller, R. Pless and Y. Aloimonos, "The Ouchi Illusion as an Artifact of Biased Flow Estimation," *Vision Research*, 40:77–96, 2000.

50.   C. Fermüller, T. Brodský and Y. Aloimonos "New Eyes for Building Models from Video," *Computational Geometry: Theory and Applications*, 15:3–23, 2000.

51.   T. Brodský, C. Fermüller and Y. Aloimonos "Structure from Motion: Beyond the Epipolar Constraint," *International Journal of Computer Vision*, 37(3):231–258, June 2000.

52.   Y. Aloimonos and C. Fermüller, "On the Cognitive Impenetrability of Visual Space," a commentary in Behavioral and *Brain Sciences* 22:366-367, 1999.

53.   R. Pless, T. Brodsky and Y. Aloimonos, "Detecting Independent Motion: The Statistics of Temporal Continuity," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22(8):768-773, August 2000.

54.   C. Fermüller, D. Shulman and Y. Aloimonos, "The Statistics of Optical Flow," *Computer Vision and Image Understanding*, 82:1-32, 2001.

55.   C. Fermüller, P. Baker and Y. Aloimonos "Visual Space Time Geometry: A Tool for Perception and Imagination," *Proceedings of the IEEE*, 90(5):1113-1135, July 2002.

56.   J. Neumann and Y. Aloimonos, "Spatio-temporal stereo using multiresolution subdivision surfaces", *Int'l. Journal of Computer Vision*, 47(1/2/3):181-193, 2002.

57.   Y. Aloimonos, "Computational Video", *The Visual Computer*, *19(6): 355-359 (2003).*

58.   J. Neumann, C. Fermüller and Y. Aloimonos, "A hierarchy of Cameras for 3D Photography", *Computer Vision and Image Understanding*, *47(1/2/3):181-193, 2002.*

59.   A. S. Ogale, C. Fermüller, and Y. Aloimonos " Motion segmentation using occlusions", *IEEE Transactions on Pattern Analysis and Machine Intelligence , vol. 27, no.6, 988-992, June 2005.*

60.   A. S. Ogale and Y. Aloimonos, " Shape and the stereo correspondence problem", *International Journal of Computer Vision, vol. 65, no. 1, October 2005.*

61.   A. S. Ogale and Y. Aloimonos, " A roadmap to the integration of early visual modules", *International Journal of Computer Vision, Special issue on early cognitive vision,* vol. 72, no. 1, 9-25, Apr 2007.

62.   J. Domke, Y. Aloimonos, "Image Transformations and Blurring" *IEEE Transactions on Pattern Analysis and Machine Intelligence,* **31**(5): 811-823 (2009).

63.   Y. Aloimonos**, A** language for Human Action, *Journal of Vision*, Vol. 8, No 6, 2008

64.   Y. Aloimonos, Sensory Grammars for Sensor Networks, *Journal of Ambient Intelligence and Smart Environments, JAISE 1*(1): 15-21 (2009).

65.   G. Guerra-Filho, Y. Aloimonos: A Language for Human Action. *IEEE Computer* 40, (5): 42-51 (2007)

66.   G. Guerra-Filho, Y. Aloimonos: Understanding visuo-motor primitives for motion synthesis and analysis. *Journal of Visualization and Computer Animation* 17,(3-4): 207-217

(2006)

67.   J. Domke and Y. Aloimonos "A Probabilistic Notion of Camera Geometry: Calibrated vs. Uncalibrated", Journal of Photogrammetrie, Fernerkundung and Geoinformation, 2007, 1, 25-33.

68.   Ajay K. Mishra, Yiannis Aloimonos: Active Segmentation. *I. J. Humanoid Robotics 6* (3): 361-386 (2009).

69.   Ajay K. Mishra, Yiannis Aloimonos, Loong Fah Cheong, Ashraf A. Kassim: Active Visual Segmentation. *IEEE Trans. Pattern Anal. Mach. Intell. 34* (4): 639-653 (2012).

70.   Pastra K. and Aloimonos Y. (2012), "The Minimalist Grammar of Action", *Philosophical Transactions of the Royal Society* **B**, 367(1585):103.

71.   Gutemberg Guerra-Filho and Yiannis Aloimonos. (2010). The Syntax of Human Actions and Interactions. *Journal of Neurolinguistics (JNL)* (Article in Press).

72.   Ajay Mishra and Y. Aloimonos, Motion Segmentation using optical flow and border ownership", International Journal of Computer Vision (IJCV) (in press).

• **Selected Refereed Conference Proceedings**

1.   J. Aloimonos and C.M. Brown, "The relationship between optic flow and surface orientation," *Proc. 7th International Conference on Pattern Recognition* (ICPR'84), Montreal, Canada, 542–546, 1984.

2.   J. Aloimonos and C.M. Brown, "Direct processing of curvilinear sensor motion form a sequence of perspective images," *Proc. Workshop on Computer Vision: Representation and Control*, 1984, Annapolis, MD, 72–77.

3.   J. Aloimonos and M. Swain, "Shape from texture," *Proc. International Joint Conference on Artificial Intelligence* (IJCAI'85), 1985.

4.   J. Aloimonos, P. Chou and A. Banerjee, "On the foundations of trinocular machine vision," *Proc. Top. Meet. Opt. Soc. America*, Lake Tahoe, NV, 1985.

5.   J. Aloimonos and A. Basu, "Shape and motion from contour without correspondence," *Proc. IEEE Conference on Computer Vision and Pattern Recognition* (CVPR'86), June 1986, Miami, FL.

6.   J. Aloimonos and I. Rigoutsos, "Motion without correspondence," *Proc. IEEE Workshop on Motion*, Kiawah Island, SC, 1986.

7.   J. Aloimonos and I. Rigoutsos, "Determining 3-D motion without correspondence," *Proc. American Association for Artificial Intelligence* (AAAI'86), 1986.

8.   J. Aloimonos, "Determining surface orientation from texture: The case of planes," *Proc. IEEE Conference on Computer Vision and Pattern Recognition* (CVPR'86), 1986.

9.   J. Aloimonos and A. Basu, "Determining the translation of a rigidly moving surface without correspondences," *Proc. International Joint Conference on Artificial Intelligence* (IJCAI'87), 1987.

10.   J. Aloimonos, "Shape and light source from shading and motion," *Proc. International Joint Conference on Artificial Intelligence* (IJCAI'87), 1987.

11.   E. Ito and J. Aloimonos, "Determining 3-D transformation parameters from images," *Proc. IEEE Conference on Robotics and Automation*, 1987.

12.   M. Spetsakis and J. Aloimonos, "Structure from motion from line correspondences," *Proc. American Association for Artificial Intelligence* (AAAI'87), 1987.

13.   M. Spetsakis and J. Aloimonos, "Spatiotemporal blur streaks: A new representation for retinal motion," *Proc. Ann. Meet. Opt. Soc. Amer.*, Rochester, NY, 1987.

14.   J. Aloimonos and B. Kamgar-Parsi, "Correspondence from correspondence," *Proc. Top.*

Meet. Opt. Soc, America, Lake Tahoe, NV, 1987.

15.   R. Nelson and J. Aloimonos, "Towards qualitative vision: Obstacle avoidance," *Proc. 2nd International Conference on Computer Vision* (ICCV'88), 1988.

16.   M. Spetsakis and J. Aloimonos, "Optimal computing of structure from motion," *Proc. 2nd International Conference on Computer Vision* (ICCV'88), 1988.

17.   M. Spetsakis and J. Aloimonos, "Optimal motion estimation," *Proc. Workshop on Motion: Representation and Analysis*, Irvine, CA, 1989.

18.   A. Basu and J. Aloimonos, "Constrained motion planning," *Proc. IEEE Conference on Robotics and Automation*, Cincinnati, OH 1990.

19.   J. Aloimonos and D. Tsakiris, "Tracking in complex environments," *Proc. 1st European Conference on Computer Vision* (1st ECCV), Antibes, France 1990.

20.   M. Spetsakis and Y. Aloimonos, "A unified theory of structure from motion," *Proc. ARPA Image Understanding Workshop*, Pittsburgh, PA, 1990.

21.   Y. Aloimonos, "Purposive and qualitative active vision" (invited paper), *International Conference on Pattern Recognition* (ICPR'90), Atlantic City, NJ, 1990.

22.   J. Aloimonos and L. Huang, "Motion-boundary illusions and their regularization," *Proc. IEEE Workshop on Visual Motion*, Princeton, NJ, October, 1991.

23.   L. Huang and J. Aloimonos, "Relative depth from motion using normal flow: An active and purposive solution," *Proc. IEEE Workshop on Visual Motion*, Princeton, NJ, October, 1991.

24.   Y. Aloimonos and Z. Duric, "Active egomotion estimation: A qualitative approach," *Proc. European Conference on Computer Vision '92* (2nd ECCV), Nice, France, May 1992.

25.   J.-Y. Hervé and Y. Aloimonos, "Exploratory active vision," *Proc. IEEE Conference on Computer Vision and Pattern Recognition* (CVPR'92), Urbana, IL, 1992.

26.   R. Sharma and Y. Aloimonos, "Visual motion analysis under interceptive behavior," *Proc. IEEE Conference on Computer Vision and Pattern Recognition* (CVPR'92), Urbana, IL, 1992.

27.   L. Huang and Y. Aloimonos, "The geometry of visual interception," *Proc. IEEE Conference on Computer Vision and Pattern Recognition* (CVPR'92), Urbana, IL, 1992.

28.   C. Fermüller and Y. Aloimonos, "Determining 3-D motion from image gradients," *Proc. International Conference on Pattern Recognition* (ICPR'92), 1992.

29.   C. Fermüller and Y. Aloimonos, "Recognizing 3-D motion," *Proc. IJCAI'93*, Chambery, France, 1993.

30.   C. Fermüller and Y. Aloimonos, "The geometry of visual correspondence" (invited paper), in *Proc. Deutsche Arbeitsagemeinschaft fur Mustererkennung*, Vienna, Austria, 1994, 1–35.

31.   C. Fermüller, B. Stuart, and Y. Aloimonos, "Medusa Synthesized," *Proc. ARPA Image Understanding Workshop*, Monterey, CA, 1994.

32.   C. Fermüller and Y. Aloimonos, "Global rigidity constraints in image displacement fields," *Proc. 5th International Conference on Computer Vision* (ICCV'95), Boston, MA, June 1995.

33.   C. Fermüller and Y. Aloimonos, "Representations for active vision," *Proc. International Joint Conference on Artificial Intelligence* (IJCAI'95), Montreal, Canada, August 1995.

34.   L. Cheong and Y. Aloimonos, "Isodistortion contours and egomotion estimation," *Proc. IEEE International Symposium on Computer Vision*, Coral Gables, FL, November 1995.

35.   C. Fermüller, L. Cheong, and Y. Aloimonos, "3D motion representations in visual servo control," *Proc. IEEE International Symposium on Computer Vision*, Coral Gables, FL, November 1995.

36.   T. Brodský, C. Fermüller, and Y. Aloimonos, "On the information in the sign of the optic

flow," *Proc. IEEE International Symposium on Computer Vision*, Coral Gables, FL, November 1995.

37.   C. Fermüller and Y. Aloimonos, "Towards a theory of direct perception," *Proc. ARPA Image Understanding Workshop*, February 1996.

38.   C. Fermüller and Y. Aloimonos, "Ordinal representations of visual space," *Proc. ARPA Image Understanding Workshop*, February 1996.

39.   L. Cheong, C. Fermüller, and Y. Aloimonos, "Spatiotemporal representations for visual navigation," *Proc. 4th ECCV*, Cambridge, U.K., April 1996.

40.   T. Brodský, C. Fermüller, and Y. Aloimonos, "Directions of motion fields are hardly ever ambiguous," *Proc. 4th ECCV*, Cambridge, U.K., April 1996.

41.   T. Brodský, C. Fermüller, and Y. Aloimonos, "Self-calibration from image derivatives," *Proc. 6th International Conference on Computer Vision (ICCV'98)*, Bombay, India, January 1998, 83–89.

42.   C. Fermüller and Y. Aloimonos, "Which shape from motion? " *Proc. 6th International Conference on Computer Vision (ICCV'98)*, Bombay, India, January 1998, 689–695.

43.   C. Fermüller and Y. Aloimonos, "What is computed by structure from motion algorithms? " *Proc. European Conference on Computer Vision*, Freiburg, Germany, 1998, 359–375.

44.   T. Brodský, C. Fermüller and Y. Aloimonos, "Simultaneous Estimation of Viewing Geometry and Structure" *Proc. European Conference on Computer Vision*, Freiburg, Germany, 1998, 82–85.

45.   T. Brodský, C. Fermüller and Y. Aloimonos, "Beyond the Epipolar Constraint: Integrating 3D Motion and Structure Estimation" *Proc. Workshop on 3D Structure from Multiple Images*, Freiburg, Germany, June 1998, 109–123.

46.   T. Brodský, C. Fermüller and Y. Aloimonos, "The Video Yardstick," *Proc. International Workshop, CAPTECH'98*, 1998, 144–158.

47.   C. Fermüller, R. Pless and Y. Aloimonos, "Statistical Biases in Optic Flow," *IEEE Conference of Computer Vision and Pattern Recognition*, 1999, vol. 1, 561–566.

48.   C. Fermüller, T. Brodský and Y. Aloimonos, "Motion Segmentation: A Synergistic Approach," *IEEE Conference of Computer Vision and Pattern Recognition*, 1999, vol. 2, 226–231A.

49.   T. Brodský, C. Fermüller and Y. Aloimonos, "Shape from Video," *IEEE Conference of Computer Vision and Pattern Recognition*, 1999, vol. 2, 146–151.

50.   R. Pless, T. Brodský and Y. Aloimonos, "Independent Motion: The Importance of History," *IEEE Conference of Computer Vision and Pattern Recognition*, 1999, vol. 2, 92–97.

51.   T. Brodský, C. Fermüller and Y. Aloimonos, "Shape from Video: Combining Segmentation, Structure and Motion Estimation," in *Proc. Image Understanding Workshop*, 1998.

52.   J. Neumann, C. Fermüller and Y. Aloimonos, "Eye Design in the Plenoptic Space of light rays", 9th IEEE International Conference on Computer Vision, Nice, France, October 13-16 2003.

53.   J. Neumann, C. Fermüller and Y. Aloimonos, "Polydioptric Camera Design and 3D Motion Estimation", *IEEE Computer Society Conference on Computer Vision and Pattern Recognition,* Madison, Wisconsin, June 16-22, 2003.

54.   J. Neumann, C. Fermüller and Y. Aloimonos, "Polydioptric cameras: New eyes for structure from motion", *In DAGM Symposium*, volume 2449 of LNCS, pages 618-625, Zürich, Switzerland, September 2002, Springer, Berlin.

55.   J. Neumann, C. Fermüller and Y. Aloimonos, "A hierarchy of cameras for 3d

photography", In 1st Symposium on 3D Processing, Visualization, and Processing (3DPVT), pages 2-11, Padova, Italy, June 2002.

56.   J. Neumann, C. Fermüller and Y. Aloimonos, "Eyes from eyes: New cameras for structure from motion", *In IEEE Workshop on Omnidirectional Vision* 2002 (in conjunction with ECCV 2002), pages 19-26, Copenhagen, Denmark, June 2002.

57.   J. Neumann and Y. Aloimonos, "Spatio-temporal stereo using multi-resolution subdivision surfaces", *Stereo and Multi-Baseline Vision Workshop 2001* (in conjunction with CVPR2001), Kauai, Hawaii, December 2001.

58.   J. Neumann and Y. Aloimonos, Spatio-temporal analysis of human faces using multi-resolution subdivision surfaces, In *DAGM Symposium*, pages 61-68, September 2001.

59.   J. Neumann and Y. Aloimonos, Introducing the tool of 3D motion fields to the study of action, In Proc. *HUMO Workshop*, Austin, Texas, December 2000.

60.   C. Fermüller, Y. Aloimonos, P. Baker, R. Pless, J. Neumann, and B. Stuart, "Multi-camera networks: Eyes from eyes", In Proc. IEEE Workshop on Omnidirectional Vision, pages 11-18. IEEE Computer Society, June 2000.

61.   J. Hui, C. Fermüller and Y. Aloimonos, "Uncertainty in Shape Estimation", in *IEEE workshop on Statistical and Computational Theories of Vision*, Nice France, 2003.

62.   P.Baker, Y. Aloimonos: Structure from Motion of Parallel Lines. *ECCV* (4) 2004: 229-240

63.   A. S. Ogale, Y. Aloimonos: Stereo Correspondence with Slanted Surfaces: Critical Implications of Horizontal Slant. *CVPR* (1) 2004: 568-573

64.   Abhijit S. Ogale, Yiannis Aloimonos: The Influence of Shape on Image Correspondence. *3DPVT* 2004: 945-952

65.   A. S. Ogale, Y.Aloimonos: Robust Contrast Invariant Stereo Correspondence. *ICRA* 2005: 819-824

66.   J. Domke, Y. Aloimonos: A Probabilistic Framework for Correspondence and Egomotion. *WDV* (Workshop on Dynamic Vision), 2006: 232-242.

67.   A. Ogale, A. Karapurkar, Y. Aloimonos: View-Invariant Modeling and Recognition of Human Actions Using Grammars. WDV 2006: 115-126

68.   G.Guerra-Filho, Y. Aloimonos: Human Activity Language: Grounding Concepts with a Linguistic Framework. *SAMT* 2006: 86-100.

69.   D Lymberopoulos, A. Ogale, A. Savvides,Y. Aloimonos: A sensory grammar for inferring behaviors in sensor networks. *IPSN* 2006: 251-259

70.   J. Domke, Y. Aloimonos: Integration of Visual and Inertial Information for Egomotion: a Stochastic Approach. *ICRA* 2006: 2053-2059

71.   J. Domke, Y. Aloimonos: A Probabilistic Notion of Correspondence and the Epipolar Constraint. *3DPVT* 2006, 41-48.

72.   G. Guerra-Filho and Y. Aloimonos. (2006)Towards a Sensorimotor WordNet[SM]: Closing the Semantic Gap**.** In Proc. of the *3rd International WordNet Conference* (GWC-06), Jeju Island, Korea.

73.   G. Guerra-Filho and Y.Aloimonos. (2006).A Sensory-Motor Language for Human Activity Understanding. In Proc. of the 6th *IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS'06),* Genoa, Italy, pages 69-75.

74.   J. Domke, Y. Aloimonos: Multiple View Image Reconstruction: A Harmonic Approach. *CVPR* 2007.

75.   J. Domke, Y. Aloimonos, "Deformation and viewpoint invariant color histograms", Proc. *BMVC (British Machine Vision Conference*, September 2006, Edinburgh, UK

76.   J. Domke, A. Karapurkar, Y. Aloimonos, "Who Killed the Directed Model?" Proc. CVPR (*IEEE Conference on Computer Vision and Pattern Recognition*) 2008.

77.	Konstantinos Bitsakos, Justin Domke, Cornelia Fermüller, Yiannis Aloimonos: Measuring 1st order stretchwith a single filter. ICASSP 2008: 909-912.
78.	Gutemberg Guerra-Filho, Yiannis Aloimonos: Grounding Concrete Motion Concepts with a Linguistic Framework. SETN 2008: 1-12
79.	Yi Li, Konstantinos Bitsakos, Cornelia Fermüller, Yiannis Aloimonos: Real-time shape retrieval for robotics using skip Tri-Grams. IROS 2009: 4731-4738
80.	Ajay K. Mishra, Yiannis Aloimonos, Cornelia Fermüller: Active segmentation for robotics. IROS 2009: 3133-3139.
81.	Ajay K. Mishra, Yiannis Aloimonos, Loong Fah Cheong: Active segmentation with fixation. ICCV 2009: 468-475
82.	Xiaodong Yu, Yiannis Aloimonos: Attribute-Based Transfer Learning for Object Categorization with Zero/One Training Example. ECCV (5) 2010: 127-140.
83.	Konstantinos Bitsakos, Cornelia Fermüller, Yiannis Aloimonos: An Experimental Study of Color-Based Segmentation Algorithms Based on the Mean-Shift Concept. ECCV (2) 2010: 506-519.
84.	Yi Li, Cornelia Fermüller, Yiannis Aloimonos, Hui Ji: Learning shift-invariant sparse representation of actions. CVPR 2010: 2630-2637.
85.	Douglas Summers-Stay, Yiannis Aloimonos: Learning to Recognize Objects in Images Using Anisotropic Nonparametric Kernels. BICA 2010: 163-168.
86.	Ajay K. Mishra, Yiannis Aloimonos: Visual Segmentation of Simple Objects for Robots. Robotics: Science and Systems 2011.
87.	Xiaodong Yu, Cornelia Fermüller, Yiannis Aloimonos: Visual Scene Interpretation as a Dialogue between Vision and Language. Language-Action Tools for Cognitive Artificial Agents 2011.
88.	Ching Lik Teo, Yezhou Yang, Hal Daumé III, Cornelia Fermüller, Yiannis Aloimonos: A Corpus-Guided Framework for Robotic Visual Perception. Language-Action Tools for Cognitive Artificial Agents 2011.
89.	Xiaodong Yu, Cornelia Fermüller, Ching Lik Teo, Yezhou Yang, Yiannis Aloimonos: Active scene recognition with vision and language. ICCV 2011: 810-817.
90.	Yezhou Yang, Ching Lik Teo, Hal Daumé III, Yiannis Aloimonos: Corpus-Guided Sentence Generation of Natural Images. EMNLP 2011: 444-454.

## •	Technical Reports and Abstracts

List available upon request.

## •	Selected Invited Presentations and Colloquia

1.	"Computing Intrinsic Images," Department of Computer Science, University of Texas at Austin (April 1986).
2.	"On Low-Level Visual Computations," Courant Institute of Mathematical Sciences, New York University (March 1986).
3.	"On Low-Level Visual Computations," Department of Computer Science, University of Minnesota (April 1986).
4.	"Shape from Patterns," Department of Computer Science, Columbia University (November 1986).
5.	"Shape from Texture," Department of Electrical Engineering, State University of New York at Stony Brook (December 1986).

6.   "Perception of Motion: Fact and Fiction," 12th Annual Interdisciplinary Conference, Jackson Hole, Wyoming (January 1987).

7.   "Learning Shape Computations," Artificial Intelligence Laboratory, Massachusetts Institute of Technology (April 1987).

8.   "Aspects of Active Vision," Department of Computer and Information Sciences, University of Pennsylvania (April 1987).

9.   "Tutorial on Computer Vision," (Robotics Week) Institute for Mathematics and its Applications, University of Minnesota (August 1987).

10.   "Stability of Visual Algorithms," 1st Workshop on the Study of Evaluation, UCLA (September 1987).

11.   "Approximate Solutions to Intractable Vision Problems," Courant Institute of Mathematical Science, New York University (October 1987).

12.   "Active Vision," 41st Annual Meeting, Soc. Phot. Sci. and Eng., Crystal City, Washington, D.C. (May 1988).

13.   "On the Foundations of Active Vision," Workshop on Exploratory Vision: The active eye, University of Michigan (June 1988).

14.   "On Visual Homing," Conference on Pattern Recognition for Advanced Missile Systems (November 1988).

15.   "The Maryland Approach to Image Understanding," Kopenhagen University, Denmark (August 1988).

16.   "Integration of Visual Modules: An Extension of the Marr Paradigm," Department of Computer and Information Sciences, University of Pennsylvania (March 1989).

17.   "Unification and Integration of Visual Modules," Department of Computer Science, Stanford University, (March 1989).

18.   "Integration and Unification of Visual Modules," DARPA Image Understanding Workshop, Stanford, CA (May 1989).

19.   "Does the Marr-Poggio Paradigm Need to Be Defended? A Response to V.J. Ramachandran," 1989 Stockholm Workshop on Computational Vision, Rosenon Island, Sweden (August 1989).

20.   "Reconstructing a Scene from Two Noisy Projections," Royal Institute of Technology, Stockholm, Sweden (August 1989).

21.   "Learning How to Compute Shape," York University, Toronto, Canada (February 1990).

22.   "Purposive and Qualitative Active Vision," ESPRIT Workshop on Coordination of Perception, Palais de Congres, Antibes, France (April 1990).

23.   "Catastrophe Theory and Computational Vision," Dept. of Computer and Information Science, University of Pennsylvania, Philadelphia, PA (April 1990).

24.   "Purposive Navigation," Dept. of Computer Science, University of Toronto, Toronto, Canada (May 1990).

25.   "Robust Active Vision," Machine Intelligence Group, IBM T.J. Watson Research Center, New York (May 1990).

26.   "Understanding the World: Quantitative and Qualitative Approaches," AFOSR Workshop on the Encounter of Mathematics and Computer Vision, University of Pennsylvania, Philadelphia, PA (May 1990).

27.   "Recognition from Images," Caltech, Pasadena, CA, (May 1990).

28.   "Maryland Progress in Image Understanding," DARPA Image Understanding Workshop, Pittsburgh, PA (September 1990).

29.   "Purposive Computer Vision," Department of Computer Science, SUNY at Buffalo, NY (October 1990).

30. "Visually Guided Behaviors," AFCET Symposium for the retirement of Prof. J.-C. Simon, Paris, France (October 1990).

31. "Purposive Vision," 16th Annual Interdisciplinary Conference, Jackson Hole, Wyoming (January 1991).

32. "See Me, Touch Me, Feel Me," Department of Computer Science, University of Alberta, Edmonton, Alberta, Canada (February 1991).

33. "Principles of Systems Neurophysiology," Royal Institute of Technology, Stockholm, Sweden (March 1991).

34. "Modular vs. Labyrinthic Vision Systems," NSF Workshop on Challenges in Computer Vision, Maui, Hawaii (June 1991).

35. "Purposive Interpretation of Visual Motion," Workshop on Computational Vision, Stockholm, Sweden (August 1991).

36. "What Is a Visual Behavior? " NSF Workshop on Active Vision, Chicago, IL (August 1991).

37. "Towards Behavioral Vision," Department of Electrical Engineering, Linkoping University, Sweden (September 1991).

38. "Qualitative Vision," Department of Computer Science, Yale University (September 1991).

39. "Purposive Vision," Technical University of Vienna (May 1992).

40. "What is Visual Learning? " Special Panel on Learning, International Conference on Pattern Recognition (August 1992).

41. "Recognizing Motion Patterns," DARPA PI Meeting, Snowbird, Utah (September 1992).

42. "Perception, Action and the Design of Seeing Systems," Department of Computer Science, Kaiserslautern University, Germany (October 1992).

43. "A Methodology for Building Visual Systems," Department of Computer Science, University of Crete, Hellas (October 1992).

44. "Flies, Bees and UGVs (Unmanned Ground Vehicles): What Can Engineers Learn from Insect Vision," Department of Physics, University of Barcelona, Spain—A talk given on the occasion of the 25 years of the University of Barcelona (November 1993).

45. " Computational Studies on Navigating Vision Systems," German School of Artificial Intelligence (KIFS), Goenesee, Germany (March 1994).

46. "Purposive Recognition," Department of Physics and Department of Biology, University of Bremen, Germany (April 1994).

47. "Qualitative Vision: Reconstruction without Calibration," Department of Informatics, Erlangen University, Nurenberg, Germany (April 1994).

48. "The Geometry of Visual Correspondence," Department of Computer Sciences, University of Kiel, Germany (March 1994).

49. "Noetics: Vision and Action," National Foundation for Research, Athens, Greece (March 1994).

50. "Handling Motion Related Queries in Video Databases," Department of Electrical Engineering and Computer Science, University of Patras, Patras, Greece (March 1994).

51. "A Vision of the Mind," Academy of Athens, Athens, Greece (March 1994).

52. "The Geometry of Visual Motion," Artificial Intelligence Laboratory, Massachusetts Institute of Technology (April 1994).

53. "Qualitative Techniques in Visual Navigation," German Conference in Pattern Recognition and Image Processing, Vienna, Austria (September 1994).

54. "Primates, Bees and UGV's (Unmanned Ground Vehicles)," NSF/ESPRIT Workshop on Computational Vision, Jerusalem (December 1994).

55. "Analysis of Visual Motion and Virtual Reality," Royal Institute of Technology, Stockholm, Sweden (January 1995).

56. "Principles of Visuomotion Coordination," Datalogisk Institut, University of Kopenhagen, Denmark (April 1995).

57. "Vision, Action and Recognition," Symposium on Recent Trends in Computer Science, Max Planck Institut fur Informatik, Saarbucken, Germany (June 1995).

58. "Ordinal Vision," a Socratic dialogue delivered with C. Fermüller at the 1995 Stockholm Workshop in Computational Vision, Rosenon Island, Stockholm (August 1995).

59. "Theories of Visual Perception," after-dinner speech at CAIP'95 (Computer Analysis of Images and Patterns), Prague, Czech Republic (September 1995).

60. "A Computational Theory of Direct Perception," Department of Computer Science, Yale University (November 1995).

61. "Applications of Computer Vision to the Video World," IBM T.J. Watson Research Center (December 1995).

62. "Direct Motion Algorithms," panel discussion, EUROPACE televised computer vision course, Leuven, Belgium (February 1997).

63. "Geometry of Visual Space," Workshop on Vision and Action, Kiel, Germany (September 1997).

64. "Geometric Constraints on 'Cognitive Architectures'," University of Bielefeld, Germany (December 1997).

65. "The Geometry of Video," Department of Computer Science, Pennsylvania State University (December 1997).

66. "Computational Video Geometry: Theory and Applications," IBM T. J. Watson Research Center (February 1998).

67. "Principles of 3D Video," National Institute of Standards and Technology (April 1998).

68. "The Geometry of 'Motion Capture'," University of Geneva, Switzerland (December 1998).

69. "On the Geometry of Thought," Socratic dialogue given at the Cognitive Science Colloquium, University of Maryland (December 1998).

70. "The Geometry of Thought: A Search for the Universal Grammar," Socratic dialogue to be delivered with C. Fermüller at the Cognitive Science Colloquium, University of Pennsylvania (December 1999).

71. Invited talk at Seminar on Multi-image Search, Filtering, Reasoning and Visualization, Schloss Dagstuhl, Wadern, Germany (March 2000).

72. "Visual Space-Time Geometry", Robotics Institute, Carnegie-Mellon University (October 2001).

73. "Vision as a Chicken-Egg Problem", Robotics Institute, Carnegie-Mellon University (April 2003).

74. "New Eyes", Artificial Intelligence Laboratory, MIT, (May 2002).

75. "Harmonic Computational Geometry", plenary talk, British Machine Vision Conference, Cardiff, (September 2002).

76. "Video processing: From motion descriptions to video indexing", keynote address, DIMACS Workshop on Video Indexing, Rutgers Univ., (October 2002).

77. "Motion patterns", Distinguished Lecture, Brown University, (April 2002).

78. "On the Geometry of the Mind", keynote address, British AI Society Convention: Cognition in Animals and Machines, Aberystwyth, (March 2003).

79. "Non-commutative harmonic analysis and action representations", NATO Workshop on Non commutative algebra and applications, IlChiocco, Italy (July 2003).

80.   "Perception, Action and Cognition", Department of Engineering, University of Genoa, (July 2003)

81.   "Vision is a chicken-egg problem", Colloquium of the Engineering School, Beckman Institute, University of Illinois at Urbana-Champaign, (December 2003).

82.   "The loops of vision", Distinguished Lecture, Center for Computer Vision and Graphics, Columbia University, (December 2003).

83.   "On the structure of the motion pathway in primates: a view through illusions and geometry", Medical School, Department of Neurobiology, Washington University, St. Louis (December 2003).

84.   "Compositional Vision", Distinguished Lecture, Center for Visual Perception, University of Texas at Austin, (March 2004).

85.   "Aristotles Dream: The Geometry of Action and Cognition", AI seminar, Department of Computer Science, University of Texas at Austin, (March 2004).

86.   "The Loops of Visual Correspondence", Keynote Address, Workshop on Early Cognitive Vision, England, (May 2004).

87.   "Understanding Action: The Visuomotor Hypothesis", Cognitive Science Colloquium, University of Massachusetts at Amherst, (May 2004).

88.   "Human Action: Developing the Praxicon," National Science Foundation, invited talk in the Human and Social Dynamics Program, October 2007.

89.   "Grammars of Human Movement", Colloquium at the Institute for Language and Speech Processing, Athens, Greece, October 2007

90.   "Language and action", OMLL Meeting of the European Science Foundation (Origin of Man, Language and Languages), Rome, Dec 2007 (invited presentation).

91.   " Two laws of humanoids", Workshop on the Active Vision of Humanoids, Pittsburgh, Dec. 2007.

92.   "Signals and Symbols in Human Action" , International Symposium on Image and Signal Processing and Analysis, Sep. 2007, Istanbul, Turkey. (keynote address).

93.   "Hands, mouths and words", 1st Intl Conference on Cognitive Systems, Karlsruhe, Germany, April 2008. (keynote address).

94.   "Sensorimotor linguistics", Univ. of Pennsylvania, Cognitive Science Colloquium, May 2008.

95. Aloimonos Y. (May 2008), "The POETICON: languages of sensorimotor experiences", Google Tech Talk, Mountain View, CA.

96.   "New approaches to segmentation", Int'l Workshop on Mathematics and Image Processing, Singapore, July 2008 (invited talk).

97.   "A new segmentation constraint and the theory of swirling fields", AFOSR Workshop on Surface Representation in Mid-Level Vision, Smith Kettlewell Institute, San Fransisco, CA, September 2008).

98.   "Languages of motor synergies: a new approach to human action", Int'l Conference on Distributed Smart Cameras, Stanford, CA, Sept. 2008 (keynote address).

99. "Segmenting the world visually", European Conference in Visual Perception, ECVP, Regensburg, Germany, (August 2009).

100.   Active Segmentation", Workshop on Trends in Computer Vision,Prague, Czech Republic. (July 2009),

101.   Perceptual competences of humanoids", Workshop Humanoids@Home, Karlsruhe, Germany. (October 2009),

102.   Human Activity Languages: Theory and Applications", Human Motion Conference, Aalborg Univ., Odense, Denmark, (November 2009). (keynote).

103. Models of action", Colloquium, Carnegie-Mellon Univ., Robotics Institute, Nov. 2010.
104. Patterns of thought", Colloquium, Department of Applied Math, Brown University (Feb. 2011).
105. The confluence of computational vision and linguistics", Workshop on Vision and Language, Univ. of Brighton, UK (Sept. 2011) (keynote).
106. Vision, Action and Cognition", AAAI Workshop on Language-Action Tools for Cognitive Artificial Agents, AAAI 2011 (Aug. 2011).

• **Ph.D. Students Supervised**

1. Randal C. Nelson. Thesis: "Visual navigation" (completed August 1988). Currently Associate Professor, Department of Computer Science, University of Rochester, NY.
2. Minas E. Spetsakis. Thesis: "The geometry and statistics of visual motion" (completed August 1989). Currently Professor, Dept. of Computer Science, York University, Toronto, Canada.
3. John Sullins. Thesis: "Distributed learning: Motion in constraint space" (completed May 1990). Currently Professor, Dept. of Computer Science, Southern Methodist University, Dallas, TX.
4. Anup Basu. Thesis: "Model-based visual navigation" (completed August 1990). Currently Professor, Dept. of Computer Science, University of Alberta, Edmonton, Alberta, Canada.
5. David Shulman. "A theory of discontinuous regularization" (completed August 1990). Currently Research Associate, Department of Computer Science, Temple Univ., Philadelphia, PA..
6. Ehud Rivlin. Thesis: "Purposive recognition" (completed December 1992). Currently Professor, Dept. of Computer Science, Technion Israel Institute of Technology, Haifa, Israel.
7. Larry Huang. Thesis: "Qualitative visuo-motor coordination" (completed March 1993). Currently President, Primeton Technologies, Bejing, China..
8. Jean-Yves Hervé. Thesis: "A theory of hand/eye coordination" (completed March 1993). Currently Associate Professor, Department of Computer Science and Statistics, Univ. of Rhode Island, Providence.
9. Rajeev Sharma. Thesis: "Visual interception" (completed March 1993). Currently Professor, Department of Computer Science, Pennsylvania State University.
10. LoongFah Cheong. Thesis: "Distortion of space due to perceived motion" (completed August 1996). Currently Associate Professor, Department of Electrical Engineering, National University of Singapore.

11. Gregory Baratoff. Thesis: "Qualitative space representations extracted from stereo" (completed June 1997). Currently Assistant Professor, Department of Neural Information Processing, University of Ulm, Germany.

12. Tomáš Brodský. Thesis: "The Video Yardstick" (completed March 1999). Currently at Honeywell, Briarcliff Manor, NY.
13. Bradley Stuart. Thesis: "Visual memories: 3D video" (expected date of completion: June 2012. Currently at General Dynamics Robotic Systems.
14. Robert Pless. Thesis: "Visual shape" (completed June 2001). Currently Professor, Washington University, St. Louis, MI.
15. Patrick Baker. Thesis: "Harmonic Computational Geometry" (completed December 2006; currently at NRL).
16. Jan Neumann. Thesis: "Eye Design" (completed 2005; currently at Siemens Corporate

Research).

17.   Abhijit Ogale. Thesis: "Visual Correspondence" (completed June, 2005; currently at Google).

18   Ji Hui. Thesis: "Statistics of Visual Space" (completed June 2006; currently Assistant Professor, National Univ. of Singapore).

19.   Gutemberg Guerra-Filho. Thesis: "A linguistic framework for human activity" (completed 2007; currently Assistant Professor, University of Texas)

20.   Morimichi Nishigaki. Thesis: "Image segmentation" (expected date of completion: June 2012.

21.   Yi Li. Thesis: "Human action synergies" (completed June 2010; currently Research Scientist at Australian National University)

22.   Kostas Bitsakos. Thesis: " Segmentation and occlusions" (completed 2010; currently at General Motors).

23.   Justin Domke. Thesis: "Tractable Learning" (completed 2009; currently Assistant Professor at Rochester Institute of Technology).

M.S. Students Supervised Dimitri Tsakiris. Thesis: "Visual tracking strategies" (Completed June 1988).

- **Grants, Contracts and Projects**
    1. Co-Principal Investigator in
       "Robust Image Understanding: Techniques and Applications"
       Agency: DARPA/ISTO
       Amount: $1,962,223
       Duration: 9/89–9/92
    2. Co-Principal Investigator in
       "Vision-based Navigation and Recognition"
       Agency: DARPA/ISTO
       Amount: $2,278,003
       Duration: 4/92–3/95
    3. Principal Investigator in
       "Purposive and Qualitative Vision"
       Agency: NSF, Presidential Young Investigator Award (PYI)
       Amount: $500,000
       Duration: 1990–1995
    4. PYI corporate funds
       Agency: Honeywell Research Co. (Alliant Techsystems, Inc.)
       Amount: $50,000
       Duration: 9/90–12/92
       Agency: Texas Instruments, Inc.
       Amount: $20,000
       Duration: 1/91–12/92
       Agency: Sony Corporation
       Amount: $25,000
       Duration: 8/92–7/93
       Agency: Westinghouse

Amount: $35,000 in equipment
Duration: 1/94–12/95
Agency: IBM Corporation
Amount: $33,000 in equipment
Duration: 10/95–10/96

5. Principal Investigator in
   "NSF-CISE Research Instrumentation Proposal"
   Agency: National Science Foundation
   Amount: $37,000
   Duration: 6/92–11/93

6. Principal Investigator in
   "Qualitative Navigation Techniques"
   Agency: Office of Naval Research
   Amount: $300,000
   Duration: 2/93–2/96

7. Co-Principal Investigator in
   "Vision and Learning"
   Agency: ARPA/SISTO
   Amount: $500,000
   Duration: 3/93–3/96

8. Principal Investigator in
   "Integrated Active Vision for an Unmanned Vehicle"
   (Consortium with the Universities of Rochester and Pennsylvania, and the National
   Institute of Standards and Technology)
   Agency: ARPA
   Amount: $900,000
   Duration: 6/93–6/96

9. Principal Investigator in
   "Sensory Feedback Robotics"
   Agency: Dassault Aviation
   Amount: $50,000 French Francs
   Duration: 3/95–12/95

10. Principal Investigator in
    "Spatiotemporal Representations in Visual Navigation and Object Recognition"
    Agency: NATO
    Amount: $150,000 Belgian Francs
    Duration: 6/95–6/97

11. Principal Investigator in
    "3D Approaches to Digital Television: Video Manipulation/Indexing"
    Agency: IBM/NIST
    Amount: $400,000
    Duration: 8/95–8/98

12. Principal Investigator in
    "Computational Theories of Direct Perception" Agency: Office of Naval Research
    Amount: $360,000
    Duration: 1/1/96–1/1/99

13. Co-Principal Investigator in

"The Keck Laboratory for the Study of Visual Movement"
Agency: The Keck Foundation
Amount: $1,000,000
Duration: 1999–

14. Co-Principal Investigator in
"A Distributed System for Modeling Shape and Action"
Agency: National Science Foundation, Experimental Partnerships
Amount: $1,200,000
Duration: 10/1/99–10/1/02

15. Principal Investigator in
"Eye Design"
Agency: NSF
Amount: $200,000
Duration: 10/1/00–10/1/03

16. Principal Investigator in
"Decision Making using Camera Networks"
Agency: NSF
Amount: $300,000
Duration: 10/1/03–10/1/06

17. Co-Principal Investigator in
"VACE: Action Interpretation"
Agency: ARDA
Amount: $2 million
Duration: 2004-2006

18. PI in Project/Proposal Title: SEER: **A Gigascale Neuromorphic Vision System**, Source of Support: **NSF**, Total Award Period Covered: 9/1/05-9/1/08. A collaborative project with Kwabena Boahen, Stanford

19. PI in Project/Proposal Title: **The Grammars of Human Behavior** Source of Support: **NSF** Total Award Period Covered: 9/1/04-9/1/07 A collaborative project with Ken Nakayama, Harvard.

20. Project/Proposal Title: **Integrating Perception and Reasoning** Source of Support: **NSF** Total Award Period Covered: 9/1/03/-9/1/06 A collaborative project with V.S.Subramanian, UMIACS, Univ. of Maryland

21 Project/Proposal Title: **Behaviorscope: Sensory grammars for sensor networks,** Source of Support: **NSF** Total Award Period Covered: 9/1/07/-9/1/09. A collaborative project with Andreas Savvides, Yale.

22. Project/Proposal Title: **the POETICON**: Source of Support: **European Union** Total Award Period Covered: 9/1/08/-9/1/11

23. Project/Proposal Title: **The HAL (Human Activity Language) Tool** Source of Support: **NIH** Total Award Period Covered: 9/1/07/-9/1/10

24. Project/Proposal Title: **An integrated approach to visual surveillance** . Source of support: ARDA (VACE) Total Award Period Covered: 9/1/04-9/1/06. A collaborative project with Larry Davis and Rama Chellappa, Univ. of Maryland

25. Project/Proposal Title: **Robots with vision that find objects**. Source of support: NSF Cyber-physical Systems. Total award period covered: 9/1/10-9/1/13.

26. Project/Proposal Title: **the POETICON++ : Robots need language.** Source of Support: **European Union**. Total Award Period Covered: 1/1/12-1/1/16

- **Research Interests**

Active Vision: The study of the mechanisms responsible for recovering three-dimensional information from image sequences obtained by an active observer, that is, descriptions of visual space and space-time (motion, shape, segmentation). Application of discovered principles to the analysis and synthesis of visual data—eye and camera design, video editing/manipulation, graphics and virtualized reality, visualization, sensor networks, robotics/navigation, and to the study of biological vision—gaining insights into the visual system.