Curriculum Vitae

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ZYGMUNT PIZLO

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Education

1973-1978 Warsaw University of Technology, Poland, Department of Electronic Engineering, M.Sc. thesis: "Tolerance assignment for selection tests of integrated circuits," 1978 (Wojciech Maly – advisor).

1978-1982 Institute of Electron Technology, Center for Microelectronics, Warsaw, Poland, Ph.D. thesis: "The optimization of technological parameters of integrated circuits," 1982 (Edward Stolarski – advisor).

1988-1991 Department of Psychology, University of Maryland at College Park. Ph.D. thesis: "Shape constancy in human beings and computers based on a perspective invariant," 1991 (Robert M. Steinman and Azriel Rosenfeld – advisors).

Honors

Doctoral thesis judged to be "Distinguished" by the Scientific Committee of the Institute of Electron Technology, Warsaw, 1982.

Jack Bartlett Award for the excellence in doctoral research, Department of Psychology, University of Maryland, 1991.

New Investigator Award from the Society for Mathematical Psychology, 1994.

Team Excellence Award in the Purdue College of Engineering, 2006.

Team Award, Science and Technology Center Team, College of Science, Purdue University 2012.

Professional Experience

1982-1984	Research Fellow, Nencki Institute of Experimental Biology, Department of Neurophysiology, Laboratory of Psychophysiology, Polish Academy of Sciences, Warsaw.
1984-1987	Research Fellow, Central Institute of Occupational Hazards, Department of Ergonomics, Warsaw.
1987-1988	Research Fellow, Nencki Institute of Experimental Biology, Department of Neurophysiology, Laboratory of Afferent Systems, Polish Academy of Sciences, Warsaw.
1991-1997	Assistant Professor, Department of Psychological Sciences, Purdue University, West Lafayette, IN.
1997-2004	Associate Professor, Department of Psychological Sciences, Purdue University, West Lafayette, IN.
2004-2017	Professor, Department of Psychological Sciences, Purdue University, West Lafayette, IN.
2017-	Professor and Falmagne Endowed Chair in Mathematical Psychology, Department of Cognitive Sciences, Institute for Mathematical Behavioral Sciences, University of California at Irvine, Irvine, CA.
2019-2022	Director of the Institute for Mathematical Behavioral Sciences, UC, Irvine.
2023-	Director of the Center for Theoretical Behavioral Sciences, UC Irvine

Professional Affiliations

Society for Mathematical Psychology
Vision Sciences Society

Editorial Work

Member of the Editorial Board of *Behavior Research Methods, Instruments, & Computers* (1995-98).

Member of the Editorial Board of the *Journal of Mathematical Psychology* (2003-2018).

Editor of the *Journal of Problem Solving* (2005-2018).

Member of the Editorial Board of *Cognitive Processing* (2017-2022).

Guest Editor of the special issue on Models in Vision (ModVis) to be published annually in Vision Research (2024 -)

Ad hoc reviewer for

ACM Computing Surveys, Acta Neurobiologiae Experimentalis, Acta Psychologica, Cognition, Cognitive Science, Cognitive Processing, Graphical Models, IEEE Proceedings, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Haptics, IEEE Transactions on Image Processing, IEEE Transactions on Pattern Analysis & Machine Intelligence, IEEE Transactions on Systems, Man, and Cybernetics, Journal of Experimental Psychology, Journal of Mathematical Psychology, Journal of Vision, Memory & Cognition, Pattern Recognition, Perception, Perception and Psychophysics, PLOS One, PNAS, Psychological Research, Psychological Review, Psychonomic Bulletin & Review, Quarterly Journal of Experimental Psychology, Spatial Vision, Topics in Cognitive Science, Vision Research.

Conference program committees

Member of the program committee of the 9th Workshop on Image and Multidimensional Signal Processing organized by the IEEE Signal Processing Society and the Society for Imaging Science and Technology. Belize City, Belize, 1996.

Member of the program committee for IS&T/SPIE Symposium on Electronic Imaging: Science & Technology, Conference on Human Vision and Electronic Imaging. San Jose, California, 1996-2000.

Member of the program committee for IS&T/SPIE Symposium on Electronic Imaging: Science & Technology, Conference on Computational Imaging. San Jose, California, 2004-2008.

Member of the Program Committee of the IEEE Computer Society Workshop on Perceptual Organization in Computer Vision, New York, June 2006.

Member of the program committee for IS&T/SPIE Symposium on Electronic Imaging: Science & Technology, Conference on Vision Geometry. San Jose, California, 2007.

Organizer of workshops and symposia

Co-organizer of an International Workshop on Human Problem Solving at Purdue University – June 2005.

Co-organizer (with Sven Dickinson) of the First International Workshop on Shape Perception in Human and Computer Vision. European Conference on Computer Vision, Marseille, France, October 2008.

Co-Organizer (with Robert Goldstone) of the Purdue Winer Memorial Lectures: Symposium on New Perspectives in Human Problem Solving, Purdue University, November 2008.

Co-organizer (with Sven Dickinson and Longin Jan Latecki) of the Second International Workshop on Shape Perception in Human and Computer Vision. European Conference on Visual Perception, Regensburg, Germany, August, 2009.

Co-organizer (with Sven Dickinson) of the Third International Workshop on Shape Perception in Human and Computer Vision. European Conference on Visual Perception, Crete, Greece, 2010.

Co-organizer (with Iris van Rooij, Yll Haxhimusa and Georg Gottlob) of a 5-day seminar on Computer Science & Problem Solving: New Foundations. Schloss Dagstuhl, Germany, August 28 – September 2, 2011.

Co-organizer (with Sven Dickinson) of the Fourth International Workshop on Shape Perception in Human and Computer Vision. Annual Meeting of the Vision Sciences Society, Naples. FL, May 5, 2011.

Co-organizer (with Manish Singh) of a symposium on Symmetry at the annual meeting of the Society for Mathematical Psychology, Quebec City, Canada, July 2014.

Co-organizer (with Louis Narens) of a conference on Invariance and Symmetry. Institute of Mathematical Behavioral Sciences, UC Irvine, November 2017.

Co-organizer (with Jun Zhang) of a symposium on Symmetry at the annual meeting of the Society for Mathematical Psychology, Montreal, Canada, July 2019.

Co-organizer (with Marianne Maertens, Jeff Mulligan, Anne Sereno and Qasim Zaidi) of the workshop on Computational and Mathematical Modeling of Vision (ModVis), Forida, 2012- .

Co-organizer of the Annual Interdisciplinary Conference (2017-).

Conducting tutorials

One-day tutorial on psychophysics at the Human Computer Interaction Conference, New Orleans, Louisiana, 2001, and in Las Vegas Nevada, 2005 (with Hong Tan).

Half a day tutorial on psychophysics at the Human Computer Interaction Conference, Crete, Greece, 2003 (with Hong Tan).

Half a day tutorial on Human Shape Perception at the Electronic Imaging Conference, San Jose, CA, 2006 (with Longin Latecki).

Other Professional Activities

Chair of a Symposium on Perception and Action in Human and Machines. Society for Philosophy and Psychology, 1990, College Park, MD.

Member of the Executive Board of the Society for Mathematical Psychology (2005-2010)

President of the Society for Mathematical Psychology, 2008-2009.

Vice-President of the Society for Mathematical Psychology, 2009-2010.

Guest Editor (with Sven Dickinson) of a special issue of *Seeing & Perceiving* on Shape (2011).

Guest Editor (with Christopher Tyler and Manish Singh) of a special issue on Symmetry in Vision in the journal *Symmetry.*

Patents

US Patent No. 8,224,065: Reconstruction of shapes of objects from images. July 17, 2012.

US Patent No. 8,406,567: Reconstruction of shapes of near symmetric and asymmetric objects. March 26, 2013.

US Patent No. 9,225,964: Figure-ground organization of 3D scenes. December 29, 2015.

Grants & Fellowships

1986/06 – 1986/07	Fellowship sponsored by the United Nations Development Program to visit British Universities engaged in research on the role of eye movements in visual perception (Nottingham, Birmingham, Durham and Reading).
1994/07 – 1996/06	PHS-NIH Grant: Preclinical ROC Studies of Digital Stereomammography, co-PI (award for Z. Pizlo, $65,383.00).
1995/08 – 1996/07	Hewlett-Packard Grant: Research on Printer Characterization and Print Quality Assessment, co-PI (award for Z. Pizlo, $86,280.00).
1996/02 – 1998/01	Hewlett-Packard Grant: Infrastructure for a New Curriculum in Video and Image Systems Engineering ($1,376,002.00-Shared institutional teaching grant with seven participants).
1996/07 – 1997/06	Hewlett-Packard Grant: Human Visual System Based Image Quality Metrics, co-PI (award for Z. Pizlo, $63,666.00).
1997/08 – 1998/08	Hewlett-Packard contract: Improving image quality: metrics, models, and scaling. ($390,399.00-shared institutional contract with 4 participants).
1998/02 – 2008/01	Hewlett-Packard Grant: Print Quality Improvement, co-PI (total award for Z. Pizlo, $297,191.).
2000/05 – 2002/05	21st Century Research and Technology Fund: Advanced Imaging Technology for Disease Detection and Control, co-PI (award for Z. Pizlo, $11,183.00).
2001/01 – 2005/01	Ford Foundation gift to Purdue University to create "Perception-Based Engineering Laboratory" (award for a number of co-PIs from Mechanical Engineering, Electrical and Computer Engineering, Audiology and Speech Sciences, and Psychology: $3,500,000.).
2001/08 – 2004/01	National Science Foundation grant: Haptic texture perception and rendering for personal robotics, co-PI (award for Z. Pizlo, $13,793.).
2002/05 – 2004/04	Ford Motor Company: “Haptic perception”, co-PI (award for Z. Pizlo, $11,920.00).
2004/06 – 2004/06	12 day visit to the Vienna University of Technology sponsored by European Cognitive Computer Vision.
2004/05 – 2006/04	Air Force Office of Scientific Research grant: Human problem solving – an extension of Newell & Simon’s paradigm, PI (award $193,397.).

2005/02 – 2005/07	National Science Foundation grant for organizing a workshop titled "Human problem solving: difficult optimization problems." Total award: $14,300. (Dr. Edward Chronicle – co-PI). Supplementary funds ($16,000) provided by the Air Force Office of Scientific Research.
2005/07 – 2008/06	National Science Foundation collaborative grant (Latecki and Pizlo) titled: From edge pixels to recognition of parts of object contours, co-PI (total award for Pizlo, $105,418.)
2006/05 – 2009/05	Air Force Office of Scientific Research grant: Human problem solving: the complete model of the Traveling Salesman Problem., PI (award $390,155.).
2006/09 – 2009/09	US Department of Energy grant (Latecki and Pizlo): Image recognition and classification based on object parts. Co-PI (total award for Pizlo, $147,520.)
2008/08 – 2011/07	National Science Foundation Collaborative Grant (Latecki and Pizlo) titled: Simultaneous Contour Grouping and Medial Axis Estimation. Co-PI (total award for Pizlo, $150,000.)
2008/05 – 2008/11	AFOSR grant for organizing the First Interdisciplinary Workshop on Shape Perception in Human and Computer Vision. Total award: $15,000. (Dr. Sven Dickinson – co-PI).
2008/05 – 2008/11	AFOSR grant for organizing a Symposium on New Perspectives in Human Problem Solving. Total award: $25,000. (Dr. Robert Goldstone – co-PI). Supplementary funds provided by the Purdue Winer Memorial Fund ($5,000.) and the Department of Psychological Sciences, Purdue University ($5,000.).
2009/05 – 2009/08	National Science Foundation. Supplemental funding for undergraduate students: Collaborative Grant titled: Simultaneous Contour Grouping and Medial Axis Estimation. ($12,000).
2009/07 – 2010/06	Department of Defense equipment grant (DURIP): Robotic navigation emulating human performance (total award: $297,201. Latecki, Temple U. – Co-PI).
2009/03 – 2011/12	Air Force Office of Scientific Research grant: Robotic navigation emulating human performance: research plan (total award $655,000. Latecki, Temple U. – Co-PI).
2009/08 – 2012/07	National Science Foundation Collaborative grant (Latecki – Co-PI) titled: Recovery of 3D shapes from single views (total award $297,338.).

2010/08 – 2015/07 National Science Foundation, Science and Technology Center: Emerging Frontiers of Science of Information (Szpankowski – PI, total award $25,000,000).

2011/01 – 2012/09 Sandia National Laboratories contract (Latecki – Co-PI) titled: Recovery of 3D shapes from 2D images (total award $520,000).

2012/10 – 2013/09 Sandia National Laboratories contract (Latecki – Co-PI) titled: Recovery of 3D shapes from 2D images (award for Pizlo $95,000).

2013/10 – 2014/06 Sandia National Laboratories contract titled: Recovery of 3D shapes from 2D images (award for Pizlo $70,000).

2014/09 – 2018/08 National Institutes of Health (NEI) grant: Mechanisms responsible for veridical visual perception (total award $940,000.).

Publications (Refereed Journals)

Sobotka, S., Pizlo, Z. & Budohoska, W. (1984) Hemispheric differences in evoked potentials to pictures of faces in the left and right visual fields. *Electroencephalography and Clinical Neurophysiology*, **59**, 441-453.

Maly, W. & Pizlo, Z. (1985) Tolerance assignment for IC selection tests. *IEEE Computer Aided Design*-**4**, 156-162.

Pizlo, Z. (1988) Physiology-based simulation model of triangle shape recognition. *Biological Cybernetics*, **58**, 41-62.

Tarnecki, R., Kaluzny, P. & Pizlo, Z. (1989) Correlations of neural spike discharges of VL neurons during spontaneous firing and during the activity evoked by peripheral stimulation. *Acta Physiologica Polonica*, **40**, 215-234.

Pizlo, Z. & Rosenfeld, A. (1992) Recognition of planar shapes from perspective images using contour-based invariants. *Computer Vision, Graphics and Image Processing: Image Understanding*, **56**, 330-350.

Pizlo, Z. (1994) A theory of shape constancy based on perspective invariants. *Vision Research*, **34**, 1637-1658.

Pizlo, Z. & Salach-Golyska, M. (1994) Is vision metric? Comment on Lappin and Love. *Perception and Psychophysics*, **55**, 230-234.

Pizlo, Z., Rosenfeld, A. & Epelboim, J. (1995) An exponential pyramid model of the time course of size processing. *Vision Research*, **35**, 1089-1107.

Pizlo, Z. & Salach-Golyska, M. (1995) 3-D shape perception. *Perception & Psychophysics*, **57**, 692-713.

Hsu, J., Chelberg, D. M., Babbs, C. F., Pizlo, Z. & Delp, E. J. (1995) Preclinical ROC Studies of Digital Stereomammography. *IEEE Transactions on Medical Imaging*, **14**, 318-327.

Epelboim, J., Kowler, E., Steinman, R. M., Collewijn, H. Erkelens, C. J. & Pizlo, Z. (1995) When push comes to shove: Compensation for passive perturbations of the head during natural gaze shifts. *Journal of Vestibular Research*, **5**, 421-442.

Epelboim, J., Steinman, R. M., Kowler, E. Edwards, M., Pizlo, Z., Erkelens, C. J. & Collewijn, H. (1995) The function of visual search and memory in sequential looking tasks. *Vision Research*, **35**, 3401-3422.

Hsu, J., Pizlo, Z., Chelberg, D. M., Babbs, C. F. & Delp, E. J. (1996) Issues in the design of studies to test the effectiveness of stereo imaging. *IEEE Transactions on Systems, Man and Cybernetics*, **A 26**, 810-819.

Pizlo, Z., Rosenfeld, A. & Weiss, I. (1997) The geometry of visual space: About the incompatibility between science and mathematics. Dialogue. *Computer Vision and Image Understanding*, **65**, 425-433.

Pizlo, Z., Rosenfeld, A. & Weiss, I. (1997) Visual Space: Mathematics, Engineering and Science. Response. *Computer Vision & Image Understanding*, **65**, 450-454.

Pizlo, Z., Salach-Golyska, M. & Rosenfeld, A. (1997) Curve detection in a noisy image. *Vision Research*, **37**, 1217-1241.

Epelboim, J., Steinman, R. M., Kowler, E., Pizlo, Z., Erkelens, C. J. & Collewijn, H. (1997) Gaze-shift dynamics in two kinds of sequential looking tasks. *Vision Research*, **37**, 2597- 2607.

Pizlo, Z. & Stevenson, A. (1999) Shape constancy from novel views. *Perception & Psychophysics,* **61**, 1299-1307.

Chan, M.W., Pizlo, Z. & Chelberg, D.M. (1999) Binocular shape reconstruction: psychological plausibility of the 8 point algorithm. *Computer Vision & Image Understanding* **74**, 121-137.

Pizlo, Z. & Loubier, K. (2000) Recognition of a solid shape from its single perspective image obtained by a calibrated camera. *Pattern Recognition* **33**, 1675-1681.

Steinman, R.M., Pizlo, Z. & Pizlo, F.J. (2000) Phi is not beta, and why Wertheimer's discovery launched the Gestalt revolution. Minireview. *Vision Research* **40**, 2257-2264.

Graham, S.M., Joshi, A. & Pizlo, Z. (2000) The traveling salesman problem: a hierarchical model. *Memory & Cognition* **28**, 1191-1204.

Pizlo, Z. (2001) Perception viewed as an inverse problem. Minireview. *Vision Research* **41**, 3145-3161.

Steinman, R.M., Pizlo, Z., Forofonova, T.I. & Epelboim, J. (2003) One fixates accurately *in order to* see clearly not *because* one sees clearly. *Spatial Vision*, **16**, 225-241.

Ng, D-Y., Allebach, J.P., Analoui, M. & Pizlo, Z. (2003) Non-Contact Imaging Colorimeter for Human Tooth Color Assessment Using A Digital Camera. *Journal of Imaging Science & Technology*, **47**, 531-542.

Kropatsch, W.G., Haxhimusa, Y., Pizlo, Z. & Langs, G. (2005) Vision pyramids that do not grow too high. *Pattern Recognition Letters*, **26**, 319-337.

Pizlo, Z., Li, Y. & Francis, G. (2005) A new look at binocular stereopsis. *Vision Research*, **45**, 2244-2255.

Pizlo, Z. & Li, Z. (2005) Solving combinatorial problems: 15-puzzle. *Memory & Cognition,* **33***,* 1069-1084.

Taskiran, C.M., Pizlo, Z., Amir, A., Ponceleon, D. & Delp, E.J. (2006) Automated Video Program Summarization Using Speech Transcripts. *IEEE Transactions on Multimedia,* **8,** 775-791.

Chan, M.W., Stevenson, A.K., Li, Y. & Pizlo, Z. (2006) Binocular shape constancy from novel views: the role of a priori constraints. *Perception & Psychophysics*, **68**, 1124-1139.

Hoffmann, C., Pizlo, Z., Popescu, V. & Rosen, P. (2006) Study of the perception of 3D spatial relations for a volumetric display. *Journal of Electronic Imaging,* **15**(3), 33002.

Pizlo, Z., Stefanov, E., Saalweachter, J., Li, Z., Haxhimusa, Y. & Kropatsch, W.G. (2006) Traveling Salesman Problem: a Foveating Pyramid Model. *Journal of Problem Solving **1**,* 83-101.

Bang, B., Pizlo, Z. & Allebach, J.P. (2006) Banding assessment with controlled halftoning: The ten printer experiment. *Journal of Imaging Science and Technology,* **50**, 522-529.

Arslan, O., Pizlo, Z. & Allebach, J.P. (2007) Softcopy banding visibility assessment. *Journal of Imaging Science & Technology,* **51**, 271-281.

Scheessele, M.W. & Pizlo, Z. (2007) Does contour classification precede contour grouping in perception of partially visible figures? *Perception,* **36**, 558-580.

Lee, B.S., Pizlo, Z. & Allebach, J.P. (2007) Characterization of red-green and blue-yellow

opponent channels. *Journal of Imagine Science & Technology,* **51**, 23-33.

Bernal, E., Allebach, J.P. & Pizlo, Z. (2007) Improved pen alignment for bidirectional printing. *Journal of Imaging Science and Technology*, **51**, 1-22.

Pu, J., Kalyanaraman, Y., Jayanti, S., Ramani, K. & Pizlo, Z. (2007) Navigation and discovery of 3D models in a CAD repository. *IEEE Transactions on Computer Graphics and Applications, **27***, 38-47.

Hoffmann, C., Pizlo, Z., Popescu, V. & Price, S. (2007) Perception of surfaces from line drawings. *Displays*, 28, 1-7.

Pizlo, Z., Li, Y. & Steinman, R.M. (2008) Binocular disparity only comes into play when everything else fails; a finding with broader implications than one might suppose. *Spatial Vision, **21**,* 495-508.

Sawada, T. & Pizlo, Z. (2008) Detection of skewed symmetry. *Journal of Vision* **8(5)**, No. 14.

Tan, H.Z., Yang, S., Pizlo, Z., Buttolo, P. & Johnston, M. (2008) Manual detection of spatial and temporal torque variation through a rotary switch. *IEEE Transactions on Haptics,* **1**, 96-107.

Haxhimusa, Y., Kropatsch, W.G., Pizlo, Z., & Ion, A. (2009) Approximate graph pyramid solution of the E-TSP. *Journal of Image and Vision Computing* **27**, 887-896.

Li, Y., Pizlo, Z. & Steinman, R.M. (2009) A computational model that recovers the 3D shape of an object from a single 2D retinal representation. *Vision Research* **49**, 979-991.

Troscianko, T., Benton, C.P., Lovell, P.G., Tolhurst, D.J. & Pizlo, Z. (2009) Camouflage and visual perception. *Philosophical Transactions of the Royal Society B* **364**, 449-461.

Park, H.J., Allebach, J.P. & Pizlo, Z. (2010) A psychophysical investigation of the effect of coring on perceived tonner scatter. *Journal of Electronic Imaging,* **19,** 1-13.

Pizlo, Z., Sawada, T., Li, Y., Kropatsch, W.G. & Steinman, R.M. (2010) New approach to the perception of 3D shape based on veridicality, complexity, symmetry and volume. Minireview. *Vision Research* **50**, 1-11.

Abdollahian, G., Taskiran, C. M., Pizlo, Z. & Delp, E.J. (2010) Camera Motion-Based Analysis of User Generated Video. *IEEE Transactions on Multimedia* **12**, 28 - 41.

Chu, Y., Li, Z, Su, Y. & Pizlo, Z. (2010) Heuristics in problem solving: the role of direction in controlling the search space. *Journal of Problem Solving* **3**, 27-51.

Haxhimusa, Y., Carpenter, E., Catrambone, J., Foldes, D., Stefanov, E., Arns, L. & Pizlo, Z.

(2011) 2D and 3D Traveling Salesman Problem. *Journal of Problem Solving* **3**, 167-193.

Kwon, O.-S., Zelaznik, H.N., Chiu, G. & Pizlo, Z. (2011) Human Motor Transfer is Determined by the Scaling of Size and Accuracy of Movement. *Journal of Motor Behavior* **43**, 15-26.

Li, Y. & Pizlo, Z. (2011) Depth cues vs. simplicity principle in 3D shape perception. *Topics in Cognitive Science* 3, 667-685.

Li, Y., Sawada, T., Shi, Y., Kwon, T. & Pizlo, Z. (2011) A Bayesian model of binocular perception of 3D mirror symmetric polyhedra. *Journal of Vision*, **11(4)**:11, 1-20.

Sawada, T., Li, Y. & Pizlo, Z. (2011) Any pair of 2D curves is consistent with a 3D symmetric interpretation. *Symmetry* **3**, 365-388.

Law, A.J., Aliaga, D.G., Sajadi, B., Majumder, A., & Pizlo, Z. (2011) Perceptually Based Appearance Modification for Compliant Appearance Editing. *Computer Graphics Forum*, **30**, 2288-2300.

Li, Y., Sawada, T., Latecki, L.J., Steinman, R.M. & Pizlo, Z. (2012) A tutorial explaining a machine vision model that emulates human performance when it recovers natural 3D scenes from 2D images. Journal of Mathematical Psychology 56, 217-231.

Fay, K., Breslin, G., Czyz, S.H. & Pizlo, Z. (2013) An especial skill in elite wheelchair basketball players. Human Movement Science 32, 708-718.

Czyz, S.H., Breslin G., Kwon, O., Mazur, M., Kobialka, K. & Pizlo, Z. (2013) Especial skill effect across age and performance level: the nature and degree of generalization. Journal of Motor Behavior 45, 139-152.

Pizlo, Z. & Stefanov, E. (2013) Solving large problems with a small working memory. Journal of Problem Solving 6(1), 34-43.

Sawada, T., Li, Y. & Pizlo, Z. (2014) Detecting 3-D mirror symmetry in a 2-D camera image for 3-D shape recovery. Proceedings of IEEE 102, 1588-1606.

Kwon, T., Agrawal. K., Li, Y. & Pizlo, Z. (2016) Spatially-global integration of closed, fragmented contours by finding the shortest-path in a log-polar representation. Vision Research **126**, 143-163.

Kwon, T., Li, Y., Sawada, T. & Pizlo. Z. (2016) Gestalt-like constraints produce veridical (Euclidean) percepts of 3D indoor scenes. Vision Research **126**, 264-277.

Michaux, A., Jayadevan, V., Delp, E. & Pizlo, Z. (2016) Figure-ground organization based on 3D symmetry. Journal of Electronic Imaging 25(6).

Michaux, A., Kumar, V., Jayadevan, V., Delp, E. & Pizlo, Z. (2017) Binocular 3D object recovery using a symmetry prior. Symmetry 9, 64: Special issue: *Symmetry in Vision* (doi:10.3390/sym9050064).

Fleischer, P., Helie, S. & Pizlo, Z. (2018) The role of problem representation in producing near-optimal TSP tours. Journal of Problem Solving 11, 1-12.

Jayadevan, V., Sawada, T., Delp, E. & Pizlo, Z. (2018) Perception of 3D symmetrical and nearly symmetrical shapes. Symmetry 10, 344 (doi: 10.3390/sym10080344).

Pizlo, Z. (2019) Unifying physics and psychophysics on the basis of symmetry, least-action ≈ simplicity principle, and conservation laws ≈ veridicality. American Journal of Psychology 132, 1-25.

Pizlo, Z. & de Barros, A. (2021) The concept of symmetry and the theory of perception. Frontiers in Computational Neuroscience 15, 1-18 (Special Issue on "Symmetry as a Guiding Principle in Artificial and Brain Neural Networks").

Helie, S. & Pizlo, Z. (2021) When is psychology research useful in artificial intelligence? A case for reducing algorithmic complexity in problem solving. Topics in Cognitive Sciences 00, 1-15.

Sawada, T. & Pizlo, Z. (2022) Testing a formal theory of perception is not easy: comments on Yu, Todd & Petrov (2021) and Yu, Petrov & Todd (2021). Journal of Vision 22(4):15, (1-4).

VanDrunen, J., Nam, K., Beers, M. & Pizlo, Z. (2022) Traveling Salesperson Problem with Simple Obstacles: The Role of Multidimensional Scaling and the Role of Clustering. Computational Brain & Behavior. https://link.springer.com/article/10.1007/s42113-022-00155-0

Sawada, T. & Pizlo, Z. (2023) Geometrical Properties of a Generalized Cone and its 2D Image. Journal of Mathematical Psychology 114 (102765), 1-16.

Hii, D. & Pizlo, Z. (2023) Combining contour and region for closed boundary extraction of shape. Frontiers in Psychology 14, 1-18 (Special Issue on "Perceptual Organization in Computer and Biological Vision").

Beers, M. & Pizlo, Z. (2024) Monocular reconstruction of shapes of natural objects from orthographic and perspective images. Frontiers in Neuroscience 18, 1-17 (Symmetry as a Guiding Principle in Artificial and Brain Neural Networks, Volume II).

Books

Pizlo, Z. (2008) 3D shape: its unique place in visual perception. Cambridge, MA: MIT Press.

Dickinson, S. & Pizlo, Z. (Eds.) (2013) Shape perception in human and computer vision. London: Springer.

Pizlo, Z., Li, Y., Sawada, T. & Steinman, R.M. (2014) Making a machine that sees like us. NY: Oxford University Press.

Pizlo, Z. (2022) Problem solving: cognitive mechanisms and formal models. Cambridge University Press.

Book Reviews

Pizlo, Z. (2001) The whole is different from the sum of its parts. Review of S. Edelman's Representation and Recognition in Vision. *Journal of Mathematical Psychology* **45**, 402-409.

Sawada, T. & Pizlo, Z. (2008) There is no royal road to vision science. Review of M.R.M. Jenkin & L.R. Harris's Seeing spatial form. *Perception,* **37,** 1612-1616.

Pizlo, Z. (2009) Visual versions: Philosophy of vision. Review of R. Schwartz's Visual Versions. *American Journal of Psychology* **122,** 557-561.

Book Chapters and Technical Reports

Kowler, E., Pizlo, Z., Zhu, G-L., Erkelens, C. J., Steinman, R. M. & Collewijn, H. (1992) Coordination of head and eyes during the performance of natural (and unnatural) visual tasks. In A. Berthoz, W. Graf & P. P. Vidal (Eds.), *The Head-Neck Sensory Motor System: Evolution, Development, Disorders and Neuronal Mechanisms* (pp. 419-426). Cambridge: Oxford University Press.

Collewijn, H., Steinman, R. M., Erkelens, C. J., Pizlo, Z. & Van der Steen, J. (1992) The effect of freeing the head on eye movement characteristics during 3-D shifts of gaze and tracking. In A. Berthoz, W. Graf & P. P. Vidal (Eds.), *The Head-Neck Sensory Motor System: Evolution, Development, Disorders and Neuronal Mechanisms* (pp. 412-418). Cambridge: Oxford University Press.

Collewijn, H., Steinman, R. M., Erkelens, C. J., Pizlo, Z., Kowler, E. & Van der Steen, J. (1992) Binocular gaze control under free-head conditions. In H. Shimazu & Y. Shinoda (Eds.), *Vestibular and Brain Stem Control of Eye, Head and Body Movements* (pp. 203-220). New York: Springer Verlag.

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Pizlo, Z. (2014) What is the nature of perception? In: V. Hosle (Ed.), Symposium on Conceptions of Truth and the Unity of Knowledge. Notre Dame Institute for Advanced Study, Notre Dame University, Indiana.

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Conference Proceedings

Pizlo, Z. & Szczechura, J. (1987) Simulation model of judgments of asymmetry of a triangle based on eye fixations. In J. K. O'Regan & A. Levy-Schoen (Eds.). *Eye Movements: From Physiology to Cognition* (pp. 376-377). North Holland.

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Shelton, J.N., Chiu, G.T.-C., and Pizlo, Z. (2007) Exponentially Segmented Positioning of a Single Link Mechanism: A Control Algorithm that Satisfies Fitts' Law. In: Proceedings of the 2007 American Control Conference, pp. 5983-5988, New York City, USA, July 11-13.

Pizlo, Z. (2007) Human perception of 3D shapes. Conference on Computer Analysis of Images and Patterns. *Lecture Notes in Computer Science*, vol. 4673 (pp. 1-12). Berlin: Springer.

Sawada T. Pizlo, Z. (2008) Detecting mirror-symmetry of a volumetric shape from its single 2D image. Proceedings of the Workshop on Perceptual Organization in Computer Vision, IEEE International Conference on Computer Vision and Pattern Recognition, Anchorage, Alaska, June 23.

Dorjgotov, E., Bertoline, G.R., Arns, L., Pizlo, Z. & Dunlop, S.R. (2008) Force Amplitude Perception in Six Orthogonal Directions. In Proceedings of the 16th International IEEE Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS), pp. 121–127.

Yang, X., Adluru, N., Latecki, L.J., Bai, X. & Pizlo, Z. (2008) Symmetry of shapes via self-similarity. 4th International Symposium on Visual Computing. Las Vegas, Nevada, December 1-3.

Min, B., Pizlo, Z. & Allebach, J.P. (2008) Development of softcopy environment for primary color banding visibility. *Proceedings of IS&T/SPIE Conference on Image Quality and System Performance V*, S. P. Farnand and F. Gaykema (Eds.), vol. 6808, San Jose, CA, January 28-30.

Abdollahian, G., Pizlo, Z. & Delp, E.J. (2008) A study on the effect of camera motion on human visual attention. *Proceedings of IEEE International Conference on Image Processing*, 693-696.

Park, H-K., Pizlo, Z. & Allebach, J.P. (2009) Analysis of optimal coring values from psychophysical experiments. Image Quality and System Performance VI, SPIE vol. 7242, S.P. Farnand & F. Gaykema (Eds.), San Jose, CA, January 18-22.

Li, Y., Sawada, T. & Pizlo, Z. (2012) Building a seeing machine. Proceedings of the 21st Behavior Representation in Modeling & Simulation (BRIMS) Conference (pp. 161-168).

Pizlo, Z., Li, Y. & Sawada, T. (2012) Building a machine that sees like us. Proceedings of the 13th Annual Science & Engineering Technology Conference. National Defense Industrial Association. North Charleston, South Carolina, April 17-19.

Yi, M., Yang, Y., Qi, W., Zhou, Y., Li, Y., Pizlo, Z. & Latecki, L.J. (2012) Navigation toward Non-static Target Object using Footprint Detection based Tracking. Asian Conf. on Computer Vision (ACCV).

Xue, S-F., Lin, Q., Tretter, D.R., Lee, S., Pizlo, Z. & Allebach, J.P. (2012) Investigation of the role of aesthetics in differentiating between photographs taken by amateur and professional photographers. *IS&T/SPIE Electronic Imaging*. International Society for Optics and Photonics.

Satkhozhina, A., Ahmadullin, I., Lee, S., Pizlo, Z. & Allebach, J.P. (2012) Psychophysical evaluation of document visual similarity. *IS&T/SPIE Electronic Imaging*. International Society for Optics and Photonics, 2012.

de-Frutos-López, M., Mejia-Ocana, A.B., Sanz-Rodriguez, S., Peláez-Moreno, C., Diaz-de-Maria, F. & Pizlo, Z. (2012) A simplified subjective video quality assessment method based on signal detection theory. In *Picture Coding Symposium (PCS),* pp. 237-240. IEEE.

Hu, S., Pizlo, Z. and Allebach, J.P. (2014) JPEG ringing artifact visibility evaluation. *IS&T/SPIE Electronic Imaging*. International Society for Optics and Photonics, 2014.

Palmer, E., Michaux, A., & Pizlo, Z. (2016) Using virtual environments to evaluate assumptions of the human visual system. *IEEE Virtual Reality Conference*, 257-258.

Jayadevan, V., Michaux, A., Delp, E. and Pizlo, Z. (2017) 3D shape recovery from real images using a symmetry prior. Proceedings of SPIE Conference, Computational Imaging XV, pp. 106-115.

Palmer, E., Kwon, T.K. & Pizlo, Z. (2017) Using virtual reality to test the regularity priors used by the human visual system. Proceedings of SPIE Conference 10410, Unconventional and Indirect Imaging, Image Reconstruction, and Wavefront Sensing. September, San Diego, CA.

Gradus-Pizlo, I., Agrawal, K., Delp, E. & Pizlo, Z. (2018) Development of screening echocardiogram for detection of asymptomatic left ventricular dysfunction. Proceedings of SPIE Conference on Computational Imaging. San Francisco 200: 1-7.

Sajedinia, Z., Pizlo, Z. & Helie, S. (2019) Investigating the role of the visual system in solving the traveling salesperson problem. Annual Conference of the Cognitive Science Society. Montreal, Canada, July.

Pellicer, A.O., Yadav, A.K.S., Bhagtani, K., Xiang, Z., Pizlo, Z., Gradus-Pizlo, I. & Delp, E.J. (2024) Generation of synthetic echocardiograms using video diffusion models. IEEE, Southwest Symposium on Image Analysis and Interpretation, Santa Fe, NM.

Invited Colloquia

Problem solving by man and computer. Polish Cybernetics Society, 1981.

The role of eye fixation position in shape perception. Department of Neurophysiology, Nencki Institute of Experimental Biology, Warsaw, 1984.

Physiology-based simulation model of human shape recognition. Department of Neurophysiology, Nencki Institute of Experimental Biology, Warsaw, 1986.

Simulation model of shape recognition based on eye fixations. Departments of Biomedical Engineering and Psychology, Rutgers University, New Brunswick, NJ, 1986.

Modeling approach to form perception. Department of Psychology, Carnegie-Mellon University, Pittsburgh, PA, 1987.

Shape perception. National Institute of Mental Health, Laboratory of Neuropsychology, Bethesda, MD, 1990.

Shape constancy. Department of Psychology, University of Maryland, College Park, MD, 1992.

Perception of 3-D shapes. Department of Neurophysiology, Nencki Institute of Experimental Biology, Warsaw, 1993.

Invariance under perspective and human vision. European Conference on Computer Vision. Workshop on New Results in Geometric Invariants. Stockholm, Sweden, 1994.

Interdisciplinary study of visual invariants. Workshop on Structural and Syntactic Pattern Recognition. Haifa, Israel, 1994.

The concept of group and the theory of shape constancy. SPIE Conference on Human Vision, Visual Processing and Digital Display, San Jose, CA, 1995.

Interdisciplinary study of visual invariants. Department of Psychology, Rutgers University, New Brunswick, NJ, 1995.

Geometric models in psychology. Annual Meeting of the Society for Mathematical Psychology, Irvine, CA, 1995.

Figure-ground segregation in human vision. Department of Neurophysiology, Nencki Institute of Experimental Biology, Warsaw, 1996.

Perception viewed as an inverse problem. Department of Psychology, Indiana University, IN, 1998.

Perception viewed as an inverse problem. Cognitive Science, Ohio State University, Columbus, OH, 1999.

Perception viewed as an inverse problem. Institute for Mathematical Behavioral Sciences, University of California at Irvine, Irvine, 1999.

Binocular shape and space perception. Department of Psychology, Miami University, Oxford, OH, 2002.

Binocular shape reconstruction: computational model and psychophysics. Department of Psychology and Center for Automation Research, University of Maryland, College Park, MD, 2003.

Binocular shape reconstruction: psychophysics and a computational model. Institute of Computer Aided Automation, Vienna University of Technology, Austria, June 2004.

Human problem solving: a pyramid model. Institute of Computer Aided Automation, Vienna University of Technology, Austria, June 2004.

Human visual perception: the role of a priori constraints. Department of Computer and Information Sciences, Temple University, Philadelphia, PA, 2005.

Human shape perception: the role of priors. Department of Computer Science, University of Toronto, Canada, 2005.

Geometry of Human Vision. SPIE.IS&T Electronic Imaging Symposium, Vision Geometry Conference, San Jose, CA, January 2006.

3D shape reconstruction: the role of priors. Department of Psychology, University of Illinois, Urbana-Champaign, IL. 2006.

3D shape perception: the role of priors. Department of Psychology, Rutgers University, New Brunswick, NJ, 2006.

The traveling salesman problem: human performance and a computational model. Department of Psychology, Rutgers University, New Brunswick, NJ, 2006.

Human perception of 3D shapes. The 23th International Conference on Computer Analysis of Images and Patterns. Vienna University of Technology, Austria, 2007.

3D shape: its unique place in visual perception. Department of Computer Science, University of Toronto, Canada, 2007.

Symmetry, shapes and surfaces. AFOSR Workshop on surface representation in mid-level vision.

Smith-Kettlewell Eye Research Institute, San Francisco, CA, 2008.

A new approach to 3D shape perception. Bodian Seminar in Mind/Brain Institute, Johns Hopkins University, 2009.

A new approach to the perception of 3D shape based on veridicality, complexity, symmetry & volume. Department of Psychology, Ohio State University, 2009.

The role of priors in veridical 3D shape perception: perceptions as hypotheses. Symposium of Bristol Vision Institute, University of Bristol, UK, 2009.

Towards a new theory of figure-ground organization. Christmas Meeting of the Applied Vision Association, University of Bristol, UK, 2009.

Visual Perception of three-dimensional objects. One-day seminar at the Catholic University of Lublin, Poland, 2010.

The role of information *a priori* in perception of 3D shapes. Department of Neurophysiology, Nencki Institute of Experimental Biology, Warsaw, Poland, 2010.

Perception of symmetry by human beings. Computational symmetry: past, present, future. Tutorial at the European Conference on Computer Vision, Crete, Greece, 2010.

Definition of shape. IS&T/SPIE Symposium on Electronic Imaging, Sand Francisco, CA, January 2012.

What is the nature of perception? Notre Dame Institute for Advanced Study. Symposium on conceptions of truth and the unity of knowledge. Notre Dame University, Indiana, April, 2012.

Multiscale pyramid representation for vision, motor control and thinking. Institute for Advanced Studies, Technical University of Munich. Workshop on the role of abstraction and hierarchical structures in cognitive systems. Munich, Germany, July 2012.

The role of *a priori* constraints in veridical perception of 3D shapes. Institute for Mathematical and Behavioral Sciences. University of California at Irvine, February 2013.

Minds and robots: study in Cognitive Science. “Ideafest.” Department of Engineering and Computer Science, University of Victoria, Canada. March, 2014.

Emulating human three-dimensional vision. Department of Engineering and Computer Science, University of Victoria, Canada. March 2014.

Figure-ground organization under ecologically relevant conditions. Department of Cognitive Sciences, University of California, Irvine. May, 2014.

Psychology of Problem Solving. Dagstuhl seminar on resource-bounded problem solving. Dagstuhl, Germany. August 2014.

A new look at human problems solving: near-optimal solutions to NP-hard problems. Department of Psychology, University of Birmingham, UK. September 2014.

Veridical 3D vision in humans and computers. First ViiHM Workshop on Biological and Machine Vision, Stratford-upon-Avon, UK, September 2014.

The role of symmetry in 3D vision: psychophysics and computational modeling. Department of Computer Science, University of California, Santa Barbara. November 2015.

The role of symmetry in 3D vision: psychophysics and computational modeling. Department of Psychology, Stanford University. December 2015.

The role of symmetry in 3D vision: psychophysics and computational modeling. Sensing: from Minds to Machines. Workshop. Ben-Gurion University of the Negev, Be'er-Sheva, Israel. May-June, 2016.

Symmetry as the fundamental prior in human 3D vision. Keynote at the Workshop on Detecting symmetry in the wild. International Conference on Computer Vision, Venice, Italy. October 2017.

The role of symmetry in vision and image processing. Keynote at the Conference on Human Vision and Electronic Imaging, International Symposium on Electronic Imaging, San Francisco. January 2019.

The role of symmetry in veridical 3D vision: can visual science be a hard science? Cognitive Forum, UCLA. February 2019.

The redundancy and invariance aspects of symmetry. An invited talk at a symposium "The geometry of 3D shape and scene perception", 42nd European Conference on Visual Perception, Leuven, Belgium, August 2019.

The Role of Symmetry in Veridical 3D Vision: Can Visual Science be a Hard Science? Attention and Perception Brown Bag, Department of Psychology, University of Illinois at Urbana Champaign. January 2022.

Human problem solving. Seminar Series in Advances in Computing at the University of South Carolina. February 2022.

The role of symmetry in problem solving: traveling salesman problem, insightful problems and scientific discovery. Winer Memorial Lecture, Mathematical and Computational Psychology, Purdue University. March 2022.

The role of symmetry in veridical 3D vision. Bristol Mind and Machine Seminar, School of Psychological Science & Computational Neuroscience Unit, University of Bristol. June 2022.

Visual perception from symmetry. Symposium on Brain-Like Computation, Annual Convention on Artificial Intelligence (BAAI) in Beijing, China. June 2023.

What the human eye tells the human mind. Ophthalmology Research Seminar, Center for Translational Research Series. UC Irvine. September, 2023.

Teaching Experience

Undergraduate

Statistics
Sensation and Perception
Introductory Psychology
Robot and Human Vision
Human Problem Solving
Physics and Perception

Graduate

Statistics
Multivariate Analysis
Vision Seminar
Shape Seminar
Human Problem Solving Seminar
Psychophysics
Perceptual Processes
Advanced Topics in Visual Perception
Design of Human Subject Experiments in Immersive Environments
Problem Solving and Artificial intelligence
Vision
Decision Making and Problem Solving
Human Problem Solving
Inverse Problems in Cognitive Science

Theses Directed

V. Jayadevan (2020) Ph.D. – School of Electrical & Computer Engineering, Purdue University
(co-advisor with E.J. Delp)
Thesis: The role of priors in visual perception and their applications in computer vision.

A. Michaux (2017) Ph.D. – School of Electrical & Computer Engineering, Purdue University
(co-advisor with E.J. Delp)
Thesis: Two-view geometry, symmetry, and object perception.

T-K. Kwon (2015) Ph.D. – Psychological Sciences, Purdue University
Thesis: *Spatially-global integration of closed, fragmented contours by finding the shortest-path in a log-polar representation.*

Y. Shi (2012) M. Sc. – Psychological Sciences, Purdue University
Thesis: *Recovering a 3D shape of a generalized cone from a single 2D image.*

T-K. Kwon (2012) M.Sc. – Psychological Sciences, Purdue University
Thesis: *Human recovery of the shape and size of a 3D indoor scene.*

Y. Li (2009) Ph.D. – Psychological Sciences, Purdue University
Thesis: *Computational models of 3D shape perception.*

H. J. Park (2009) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *The effect of coring on perceived toner scatter.*

O.S. Kwon (2009) Ph.D. – Psychological Sciences, Purdue University
(H. Zelaznik – co-advisor)
Thesis: *Early correction of human goal-directed movement.*

B. Min (2009) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Development of softcopy environment for color banding assessment.*

B. Zhang (2007) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Three Problems in Digital Photography: Image Sharpness, Image Interpolation, and Image Restoration.*

E. Bernal (2006) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Improved Rendition of Text and Lines in Inkjet and Electrophotographic Printers.*

O. Arslan (2006) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Development of a Softcopy Environment for Banding Visibility Assessment Experiments and Identification of Inkjet Printers for Forensic Applications.*

B-S. Lee (2006) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)

Thesis: *Characterization of Opponent Channels, Automated Detection of PQ Defects, and Green Noise Mask Design by Dual Metric.*

O-S. Kwon (2005) M.Sc. – Psychological Sciences, Purdue University
(H. Zelaznik – co-advisor)
Thesis: *Multi-Resolution Model of Human Motor Control.*

Y. Li (2005) M.Sc. – Psychological Sciences, Purdue University
Thesis: *Binocular disparity vs. a priori constraints in 3D shape perception.*

Y. Bang (2005) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Hardcopy Banding Measurement and Assessment.*

M.R. Scheessele (2001) Ph.D. – Psychological Sciences, Purdue University
Thesis: *A model of the perception of partially occluded and fragmented figures.*

W. Wu (2000) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Two problems in digital color imaging: colorimetry and image fidelity assessor.*

M.W. Chan (1999) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(E.J. Delp – co-advisor)
Thesis: *A psychologically plausible algorithm for binocular shape reconstruction.*

C.C. Taylor (1998) Ph.D. – School of Electrical and Computer Engineering, Purdue University
(co-advisor with J.P. Allebach)
Thesis: *Image quality assessment based on a human visual system model.*

M.R. Scheessele (1998) M.Sc. – Psychological Sciences, Purdue University
Thesis: *Perception of partially occluded figures.*

S.M. Graham (1998) M.Sc. – Psychological Sciences, Purdue University
Thesis: *A model of psychological processes involved in solving the traveling salesman problem.*

M. Salach-Golyska (1994) M.Sc. – Psychological Sciences, Purdue University
Thesis: *Curve detection in a noisy image.*

Doctoral theses currently supervised

Doreen Hii, Cognitive Sciences Department, UCI

Mark Beers, Cognitive Sciences Department, UCI

Post-doctoral fellows

Dr. Yll Haxhimusa – problem solving and visual perception (2007 - 2008).

Dr. Tadamasa Sawada – figure-ground organization, symmetry, 3D shape perception (2006 – 2013).

Dr. Yunfeng Li – figure-ground organization, symmetry, 3D shape perception (2010 – 2014).

Dr. Tae-Kyu Kwon – 3D vision, figure-ground organization (2015 – 2016).

Dr. Eric Palmer – virtual reality and 3D vision (May – November, 2017).

Dr. Peng Sun – 3D vision, contours (2019 - 2020).

School and University Service Activities

Director of the Center for Theoretical Behavioral Sciences, UC Irvine (2023-).

Director of the Institute for Mathematical Behavioral Sciences, UC Irvine (2019-2022).

Member of the Graduate Committee of the Interdisciplinary Program in Computational Science and Engineering, Purdue University (1994-2017).

Member of the University Senate, Purdue University (2009-2015).