CURRICULUM VITAE

VASUDEVAN LAKSHMINARAYANAN
School of Optometry and Vision Science
University of Waterloo
200 University Avenue West
Waterloo, ON N2L 3G1, Canada
e-mail: Vengu@uwaterloo.ca

Nationality: USA

EDUCATION:

University of Madras, INDIA; 1973-1976 (B.Sc. Physics, First Class)
University of Madras, INDIA; 1976-1978 (M.Sc. Physics)
University of Oregon, Eugene; 1978-1979
University of California, Berkeley; 1979-1985 (Ph.D,1985)

PROFESSIONAL AND ACADEMIC APPOINTMENTS:

1978-1979 Graduate Teaching Fellow and Graduate Research Assistant, Departments of Physics and Chemistry, University of Oregon, Eugene

1979-1981 Visiting Scientist: National Resource for Computation in Chemistry, Lawrence Berkeley Laboratory, Berkeley, CA.

1979-1981 Consultant: W. L. Peticolas Group; Department of Chemistry, University of Oregon, Eugene.

1979-1984 Teaching Assistant/Associate: School of Optometry, and Physics Department, University of California, Berkeley.

1980-1981 Assistant Specialist and Research Assistant: Department of Chemistry, University of California, Berkeley (Summer employment)

1983-1986 Postgraduate Researcher: School of Optometry, University of California, Berkeley .

1986-1991 Assistant Research Scientist (Steps I-III): School of Optometry, University of California , Berkeley.

1991-1993 Principal Clinical Research Scientist: Surgical Clinical Research, Allergan Therapeutics, Irvine, CA.

1993-1994 Adjunct Associate Professor, Dept. of Cognitive Sciences, School of Social Sciences, University of California, Irvine

1993-1998 Assistant Professor of Optometry, University of Missouri-St. Louis.

1994-2001 Adjunct Associate Professor of Physics, Dept. of Physics and Astronomy, University øf Missouri-St. Louis.

1996- 98 Adjunct Associate Professor, School of Optometry, University of Waterloo, Waterloo, Ontario, Canada

1999-2006 Associate Professor of Optometry, UMSL.

2001- 2006 Associate Professor of Physics, UMSL

2001-2005 "KITP Scholar", Kavli Institute for Theoretical Physics, University of California, Santa Barbara

2005 Visiting Professor, Dept. of Vision Sciences, Glasgow Caledonian University, Scotland (January 2005)

2006- present Professor of Optometry and Vision Science, Physics and Electrical & Computer Engineering, University of Waterloo

2007 Visiting Professor, Dept. of Physics, Indian Institute of Technology, New Delhi.

2010-2013 Associate, Michigan Center for Theoretical Physics, University of Michigan, Ann Arbor

2011- Member, Center for Bioengineering and Biotechnology, University of Waterloo

2011 Instructor/mentor, QWEST program, University of Waterloo.

2012- 2019 Consultant, Ophthalmic and Medical devices panel, US Food and Drug Administration

2013- 2016 member, Academic Council, Nanyang Technological University, Singapore.

2013-2014 Visiting Professor of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI.

2013-2016 Visiting Scholar, Department of Physics, University of Michigan, Ann Arbor, MI.

2015- Adjunct Professor, Electrical and Computer Engineering, Ryerson University, Toronto

2014- Chief Scientist, VidyaSmart, Hamilton, ON.

2016 - Professor of Systems Design Engineering, University of Waterloo

2016- 2018 Member, Research Board, Institute of Engineering and Management, Kolkata, India.

2016 GIAN Professor of Physics, Indian Institute of Technology, Madras

2017 International Visiting Professor of Biophotonics, Dept. of Information Engineering, Università degli Studi di Brescia, Italy.

***HONORS*:**

1981 Merck, Sharp & Dohme Travel Award
1981-83 Ezell Fellow of the American Optometric Foundation
1984-85 Ezell Fellow of the American Optometric Foundation
1984 University Fellow, University of California, Berkeley
1985 National Institutes of Health/National Eye Institute Post-doctoral fellowship (declined)
1988 Fellow, American Academy of Optometry
1994, 1998 ,2007,2014 Optical Society of America Fellow-Lecturer award
1998 Fellow , Optical Society of America.

1999 Fellow, Institute of Physics, and "Chartered Physicist", Institute of Physics, UK.
2000 Outstanding Optometric Educator, Beta Sigma Kappa, Optometric Honor Society, UMSL.
2001 Gulbenkian Foundation, Lisbon, Portugal, Invited Professor
2004 Royal Society of Edinburgh Lecturer Award
2005 Fellow, SPIE- International Society for Optical Engineering
2005 Citation for distinguished service and research, Elite School of Optometry, Chennai, India
2005 Optical Society of India Medal, biennial award for significant achievements in optics and optoelectronics.
2006 Fellow, Optical Society of India
2007 Fellow, American Association for the Advancement of Science
2009 Distinguished Lecturer, OSA, Optical Society of Greater St. Louis
2010 Plenary Lecture, American Association of Physics Teachers annual meeting, Portland, OR.
2010 Plenary Lecture, EIVOC-2010, Chennai, India
2010 Fellow, American Physical Society
2011 Keynote address, SPIE conference on Eco-Optics, Strausbourg, France, March 2011
2011 Educator Award, SPIE-International Society for Optical Engineering
2012 Senior Member, IEEE
2012 Invited Speaker, PISCES, San Diego, August 2012.
2012 Distinguished Lecturer, SPIE chapter, UT Arlington
2013 Honorary Co-Chair, ETOP, Porto, Portugal.
2013 Esther Hoffman Beller Medal, OSA
2013 Keynote speaker, ETOP, Porto, Portugal, July 2013
2013 Finalist, AAAS Science and Technology Policy Fellowship
2013 OSA Visiting Lecturer, Ecole Superiore des Communication, Tunis, Tunisa
2013 OSA Visiting Lecturer, Universidad de Valle, Cali, Colombia
2014 Invited Speaker, 50th anniversary meeting, International Conference on Optics and Lasers.
2014 Saturday Morning Physics, University of Michigan.
2014, Plenary talk, Asia Student Photonics Conference, Kolkata, India.
2015 Invited Speaker, Jerome Wiesner Symposium, University of Michigan; also member of organizing committee, Office of Vice President for Research, UM.
2015 IONS/Focus speaker, Tunisia
2015 Invited Speaker, Heritage of Ibn al Haytham and the Golden Age of Islamic Science, UNESCO, 2015.
2015 Best Paper Award, Optronix 2015, Vacouver, BC. IEEE Photonics meeting.
2016, Invited speaker, International Year of Light concluding ceremony, Merida, Mexico.
2016 Gian Profsssor award, Depts. of Physics and biomedical engineering, Indian Institute of Technology, Madras, India
2016 OSA Visiting Lecturer award, University of Engineering and Management, Kolkata and Dept. of Physics, Indian Institute of Technology, Kharaghpur.
2017 SPIE Lecturer, Optoelectronics Research Center, University of Southampton, UK
2018 Inaugural speaker, The Dr.S.S.Badrinath Oration, Indian Eye Research Group – Association for Research in Vision and Ophthalmology

PROFESSIONAL AFFILIATIONS

Optical Society of America
Sigma Xi
Optical Society of India
Society for Mathematical Psychology
SPIE – International Society for Optics and Photonics
American Physical Society

Institute of Physics
American Association for the Advancement of Science
American Association of Physics Teachers
IEEE

Editorships

Section Editor (Ocular Physiology and Optometry) and Member, International Editorial Board: European Journal of Implant and Refractive Surgery, 1994-1996

Co-editor, Journal of the Optical Society of America A: Optics, Image Science and Vision, Feature issue on Non-invasive Assesement of the Visual System, Volume 12, #10, October, 1995.

Member, Editorial Board, Photonics-96 : Proceedings of the International Conference on Fiber Optics and Photonics, 2 Volumes, Tata McGraw Hill, New Delhi, 1996.

Co-editor, Journal of the Optical Society of America A: Optics, image science and vision, Feature issue on Measurement and correction of the Optical Aberrations of the Eye, Volume 15, #9, September 1998.

Member, Editorial Advisory Board, Handbook of Visual Optics, Optical Society of America, 1998-2000

Member, Board of Editors, Journal of Modern Optics, 2001-

Founding member and editor, African Journal of Physics, http://hoth.ncat.edu/~michael/asn/ajp/, 2005-2009

Member, Editorial Board, Handbook of Optics, Optical Society of America/McGraw Hill, 2005-2009

Co-editor, Special issue: Developments in vision enhancement technology and their evaluation, Journal of Modern Optics, Volume 53, #9, 15 June 2006.

Co-editor, Special issue: Elite International Vision and Optometry Conference, Journal of Modern Optics, Volume 54, Number 9, 2007.

Co-editor, Special Issue: 3rd European Conference on Physiological Optics, Journal of Modern Optics, Volume 55, 2008.

Editor, Special issue on 75 years of the Stiles Crawford Effect, Journal of Modern Optics, Volume 56, 2009

Co-editor, special issue on Imaging the Eye, Journal of Modern Optics, vol. 60, 2010

Member, honorary editorial board, Clinical Optometry, 2009-

Editor for Optical Science, African Physical Review, ICTP, Italy, 2009-2011

Section Editor, Optics Letters, 2009-2015

Section editor, Papers in Physics, 2010-

Co-editor, Special issue on Vision Science and Ophthalmic Optics, Journal of Modern Optics, 2011

Co-editor, Special issue on Computational Imaging, Journal of Modern Optics, 2011.

Editor, OSA-Wiley series on Optical sciences and Engineering, 2010-2013

Editorial Board member, American Journal of Biomedical Engineering, 2011-

Co-editor, special issue on Adaptive Optics and Applications, Journal of Modern Optics, 2012

Editorial Board member, Optoelectronics and Photonics, 2012-

Editorial Board Member, BioEngineering Reports, 2012-

Editorial Advisory Board, Optics and Photonics News, 2013-2018

Editorial Board, International Journal on Engineering Applications, 2012-

Academic Editor, Ophthalmology Research – An International Journal, 2013-

Member, editorial board, Journal of Ocular Biology, 2013-

Member, editorial board, International Journal of Ophthalmology and Eye Science, 2014-

Member, editorial board, Ophthalmology and Clinical Research, 2014-

Member, Editorial Board, Asian Journal of Physics 2014-2017

Co-editor, Special issue on Optical Coherence Tomography, J. Modern Optics, 2015.

Member, Editorial Board, International Year of Light website, UNESCO/ICTP, www.Light2015.org , 2014-2016.

Editorial Board Member, African Physical Review, 2014-2016

Editorial Advisory Board, De Gruyter Open Access, 2015-

Member, Honorary editorial board, Clinical Ophthalmology, 2015-

Series Editor,Miultidisciplinary and Applied Optics, CRC/Taylor and Francis, 2016- (book series)

Editor, Special issue, Novel mathematical and computational techniques in image processing, J. Imaging, 2019.

SUPERVISION OF STUDENT RESEARCH

Summary:

Supervision of Ph.D. and Master's Theses: 23
Graduate committee membership: 15
External Examiner: 14
Other: 29

1. J. Estrada, R. Janda, J. Maggiano: A study of quantitative layer-by-layer perimetry in diabetes, Doctor of Optometry Thesis, School of Optometry, University of Calfironia, Berkeley. Committee Member, 1987.

2. L. Reich and C. Joe: Analysis of the method of adjustment for testing potential acuity with the hyperacuity gap test, Doctor of

Optometry Thesis, University of California, Berkeley, Committee Member, 1988.

3. H.W. Chen: A new method to quantify metamorphopsia using hyperacuity techniques, M.S. Thesis, Dept. of Physiological Optics, University of California, Berkeley, Committee Member, 1988.

4. K.A.Koralewski , T. Mock: Quantitative layer-by-layer perimetry in Type I diabetics, Doctor of Optometry Thesis, University of California, Berkeley. Committee Member, 1990.

5. K. Harrington: Spatial disparity effects on reaction times to dual auditory and visual stimuli, M.S. Thesis, University of Missouri-St. Louis, Committee member, 1996-1997.

6. S. Cooper, Stochastic eye movements, MS Thesis, Dept. of Physics, University of Missouri, Kansas City, Committee member, 1995-1996.

7. C. Liu, Wavefront aberrations in human eyes, Ph.D. Thesis, University of Waterloo, Co-Supervisor, Degree awarded May 1998.

8. A. Manzanares, Edge detection in human and machine vision, Ph. D. thesis, Dept. de Optica, Facultad Ciencias Fisicas, Universidad Complutense, Madrid, Jury member, 1997-2001.

.

9. L. Srinivasa Varadharajan, Supervisor, Wavelet Applications in Electrophysiology, Ph.D. thesis, Dept. of Physics and Astronomy, University of Missouri-St. Louis, 2001.

10. R. Jindal: Studies on optical waveguide devices and components, Ph. D. Thesis, Dept. of Physics, Indian Institute of Technology, New Delhi, exetrnal examiner, 1998.

11. H. Shabany: Synthesis of protease inhibitors from allylic alpha hydorxoy phophonates.Ph.D. Thesis, Dept. of Chemistry, Univ. of Missouri-St. Louis, external examiner, 1998.

12. Y. Dong, Investigation of solid-liquid interfacial chemistry using nonlinear optical molecular probing method. Ph.D. Thesis, Dept. of Chemistry, Univ. of Missouri-St. Louis, external examiner, 1999.

13. L. Hunt, Member, Ph.D. thesis committee, Physiological Optics, University of Missouri - St. Louis, .2001

14. A. Raghuram, Supervisor Motion perception in the elderly, Ph.D. Thesis, Physiological Optics, University of Missouri – St. Louis, 1999-2004.

15. V. Rajaram, Supervisor, Visual attention and reading disability, Ph.D. Thesis, Physiological Optics, University of Missouri-St. Louis, 1999-2005

16. S. Joseph, Supervisor, Multi-objective optimization techniques in optical system design, Ph.D. Thesis, Physics, University of Missouri – St. Louis, 2001-2005

17. S.Subramanian, supervisor, Evaluation of visual outcome and corneal changes following overnight orthokeratology in RGP and non-RGP wearers, MS thesis, Physiological Optics, University of Missouri-St. Louis, 2003.

18. A. Rajagopalan, supervisor, Evaluation of Performance of Presbyopic contact lenses under mesopic conditions.MS Thesis, Physiological Optics, University of Missouri-St. Louis, 2003.

19. J.Seshadri, co-supervisor, Evaluation of the new City University dynamic color vision test using reliability and validity measures, MS Thesis, Physiological Optics, University of Missouri-St. Louis, 2002-2004.

20. J. Seshadri, supervisor, Effect of wavelength on the nonius horopter, Ph.D. thesis, Physiological Optics, University of Missouri-St. Louis,2004- 2007.

21. P. Thiagarajan, Effect of vergence adaptation on oculomotor parameters, MSc Thesis, committee member, University of Waterloo, 2006-2008.

22. A. Fayelinejad, Modeling of monochromatic wavefront aberrations and retinal image quality, MSc thesis, supervisor, University of Waterloo, 2007-2009

23. D. Thapa, co-supervisor, Statistical analysis of monochromatic wavefront aberrations in children, MSc thesis, University of Waterloo, 2007-2009

24. S.Basukthar, Scaling ocular comfort, Ph.D. thesis committee, University of Waterloo, 2007-

25. Andre Fleck, Stuides of high order monochromatic aberrations using a hand held autorefractor, Co-Supervisor, Ph.D. thesis, University of Waterloo, 2007-2011.

26. S. Guthrie, Tear film interferometry, Ph.D. thesis committee, Univerisity of Waterloo, 2007-2012

27. A.Bora, Studies of visual attention, M.Sc. thesis, Supervisor, University of Waterloo, 2007-2009

28. R.K.Sarkar, Study of induced nonlinear optical fiber waveguides and devices, Ph.D. thesis, external examiner, Birla Institute of Technology, Ranchi, India. 2010

29. D.Sussman, MSC Physics dissertation, Eye Model for the Ground Squirrel, Supervisor, University of Waterloo, 2009.

30. C.J.Kee, Investigation into optical nanolithography employing wavefront engineering techniques and evanescent wave interference, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore, external examiner, 2012.

31. A.Omani, Supervisor, Assessment of ocular aberrations at scaled pupil size and reduced Hartmann-Shack number Ph.D., Advisor, 2009-2019

32. M. Ramamoorthy, Supervisor, M.Sc., Thesis, Color discrimination thresholds with new video monitors, University of Waterloo, 2009-2011.

33. S.Rawal, Photonic crystal waveguides and devices, Ph.D. Thesis, external examiner, Dept. of Applied Physics, Delhi University, 2012.

34. D.Thapa, Compressive sensing of biomedical images, Ph.D., University of Waterloo, advisor.2009-2014

35. Y. Lu, Lagrange: a method for designing lenses using differential geometry, M.Sc. thesis, University of Waterloo, 2011-2013

36. B.S.Suresh Ananad, Studies on factors affecting quantification of biomarkers using optical spectroscopy of turbid media” External

Examiner, Ph.D. thesis, Dept. of Applied Mechanics, Indian Institute of Technology, Madras, 2012.

37. R. Radhakrishnan, "Investigations into liquid crystal based optofluidic polarization devices", External examiner, Ph.D. Thesis, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore, 2013.

38. T. Hassinen, "Studies on coherence and purity of electromagnetic fields" Department of Physics and Optics, University of Eastern Finland, Joensuu, 2013.

39. Bhawana Dabhas, "Linear and Nonlinear propagation characteristics of photonics crystal fibers", External examiner, Ph.D. thesis, Dept. of Applied Physics, Delhi Technological University, 2013.

40. Shruti, "Design and development of planar waveguide devices for optical communications and sensors" External examiner, Ph.D. thesis, Dept. of Applied Physics, Delhi Technological University, 2014.

41. Amor Gueddana, Modeling and Optimization of Quantum Logic Gates: Application to Quantum Cryptography and Information Encoding, Ph.D. thesis, Ecole Supérieure des Communications de Tunis, University of Carthage, Tunis, external examiner, 2014.

42. A. Almustanyir, Computerized and non-computerized color vision tests, M.Sc. Thesis, Committee member, University of Waterloo, 2014.

43. A. AlMaroza, Glaucoma: retinal image processing, Ph.D. Thesis, supervisor, Univ. of Waterloo, 2012-2016 (Pearson gold medal for outstanding doctoral thesis, University of Waterloo).

44. P.K.Bandyopadhyay, "Modeling and simulation of linear and nonlinear optical fiber and linear fiber Raman amplifier", External examiner, Ph.D. Thesis, Institute of Radio Physics and Electronics, University of Calcutta, 2014.

45. Michael Purcell, Holographic imaging and iterative enhancement methods for focusing and transmitting light in scattering media Ph.D. thesis, Dept. of Applied Physics, committee member, University of Michigan, 2013-2016

46. Navneet Dhindsa, Semiconductor nanowires for energy harvesting, PH.D. thesis committee, Dept. of Electrical and Computer Engineering, University of Waterloo, 2014-2016.

47. A.Bakroon, Motion perception in autism spectrum disorders, Ph.D. Thesis, advisor, 2013-2019

48. M.K.Parthasarathy, Studies of the reverse Phi phenomenon, Ph.D. thesis, Advisor, 2015-2019

49. Priyanka Roy,Automated Segmentation of Retinal Optical Coherence Tomography Images, M.Sc. thesis, Systems Design Engineering, 2016-2018

50. Gholami Peyman, Developing algorithms for the analysis of retinal Optical Coherence Tomography images, M.Sc. thesis, Systems design engineering, 2016-2018

51. Henry Leopold, Deep learning methods for retinal disease diagnosis, Ph.D., 2016-

52. Arunansu Sadhu, Modeling and analysis of nonlinear subwavelength diameter fiber and conventional single mode fiber, Dept. of Eelctronic Science, University of Calcutta, India, external examiner, 2018.

53. Darwin Patricio Castillo Malla, Processing MRI algorithms to identify demyelination and ischemia patterns, Co-advisor,Sección Física Química y Matemáticas,Universitat politcnica de Valencia, Spain, 2018-

54. Amitojdeep Singh, Convolutions Neural Networks to detect Glaucoma from retinal images, B.S. Thesis, Birla Institute of Technology and Science, Pilani, India, 2018

Other student mentorship

(V. L. has mentored high school students as a NSF research mentor in the STARS program as well as the Solutia-Pfizer program at UMSL). The students and their projects are:

1. Nikki Ruffin "Aniseikonia: A Condition Caused by Intraocular Lenses", 1994
2. Patrick Wehmeier "Gap Test to Examine Visual Potential: A Study of Hyperacuity", 1995.
3.Michael Moss "A Comparison of the Accuracy and Repeatability of the Awaya Test for Cyclodeviation Against the Madox Wing Test", 1998
4. Chris Choi "Is the Retinal Fundus a Fractal?, 1999. Grant Award in Physical/Mathematical Sciences
5. Swathi Nadindla "Visual Performance with Monofocal and Multifocal Lenses,"1999
6. Jacob Myerson "The Quantifying of the Retinal Fundus Through Fractal Dimension", 2000, Grant Award, Physical/mathematical Sciences.
7. Alex Borodyanskiy, "Quantifying the Effect of Monocular Magnification on Binocular Vision" Solutia Award in Biological Sciences, 2001.
8. Joe Bedard, Jr. Lesson Plan I - "Fractals, Patterns in Nature." Lesson Plan II - "Chaos, Behavior of Non-Linear Systems.". 2002.
9. Manu Johny "Quantifying the Image Resolution Necessary for Human Facial Recognition" 2002.
10. Nam Kim,"The Role of Symmetry in Perception of Human Faces" Solutia Award in Psychological Science, 2004
11. Mary Lueder "Gender Difference in Motion Perception", Pfizer award in Psychological Sciences, 2005.

OD Student Summer Research Mentorship

1. Jeremy Beatty, OD, Investigations of the Horopter, 2001.
2. Mark Kharhoff, Use of the Feynmann arrow formalism in optics, Neumuller award, American Academy of Optometry, 2004.
3. Trent Henderson and Mitchell Cleary, Visual performance on color acuity charts and reverse contrast charts, 2004.
4. Joanna Gervais, Motion perception and gender effects, 2005.
5. Shaun Hansen, Investigations of visual attention, 2005.
6. Vandana Rajaram and Rebecca Zak, "Effect of disability glare on the horopter", Niemuller award project, 2007.

Co-Op/MITACS and other students

1. Tarun Aggarwal, Dept. of Computer Science, Indian Institute of Technology, New Delhi, M.Tech. student, 2008.
2. Ashish Gupta, Dept. of Computer Science, Indian Institute of Technology, Bombay, B.Tech. student, 2010.
3. Kelly E. McBride, Software Engineering, University of waterloo, 2013.
4. Ritambhar Burman, MITACS summer student,Dept. of Electrical Engineering, Jadhavpur University, 2014.
5. Chandrahas Thatiparthi, MITACS Summer student,Dept. of Electrical Engineering, Indian Institute of Technology, Madras, 2015

6. Lise Liebert, Optics and Image processing, Tleom Saint Etienne, Ecole d'ingenieurs nouvelles technologies, France, 2015
7. Anand Gopalakrishnan, Dept. of Electrical Engineering, National Institute of Technology, Mangalore, India,2015.
8. Weiwei Sun, Dept. of Electrical Engineering, Fudan University, MITACS student, 2015.
9. Jeeervishan Chittaranjan, B.Sc. Biology, Centennial college, Missusauga, 2015-2017
10. Ziriu Xu, Northeastern University, Shenyang, China, MITACS student, 2017.
11. Kaspaer Hoeshel, Technical University of Vienna, exchange student, 2017
12. Amor Gueddana, Ecole Superieure des Communications de Tunis, Post-Doc, 2018.
13. Amitojdeep Singh, Birla Institute of Technology, M.Sc. computer science thesis project, 2018

***FILM*:**

Lakshminarayanan, V. *Molecular gymnastics: the normal modes of Retinal*. A film displaying the molecular vibrations of retinal, the visual chromophobe, made using computer graphics and quantum mechanical (QCFF-π) calculations. Presented at Biophysical Society Annual Meeting (Denver, Colorado, 1981), International Raman Spectroscopy Meeting (Toronto, Canada, 1981) & Association for Research in Vision & Ophthalmology annual meeting (1981). Department of Chemistry, University of California, Berkeley.

INVENTION/PATENTS

"Novel strategy for high performance optical memory devices" Co-inventors: Z.Xu, Y.Dong, C.Spilling and S. Pappu. University of Missouri Patents and Licensing Office, April 1998.

Theses

1. Lakshminarayanan, V. Lasers and the eye, M.Sc. Thesis, School of Physics, University of Madras, India, 1978.

2. Lakshminarayanan, V. The Stiles - Crawford Effect in Aniridia, Ph.D. Dissertation, University of California, Berkeley, CA., 1985.

PUBLICATIONS

Google Scholar:

https://scholar.google.com/citations?hl=en&user=ipkmLWUAAAAJ&cstart=0&pagesize=20
Citations: 5478 (as of January 15,2019); H-index: 28

Summary:

Books and CDs: 23
Book Chapters: 17
Refereed Papers: 230
Refereed Conference Proceedings papers:68
Citable Abstracts:124
Other Publications (book reviews, editorials, reports): 53

Books and CDs

1. Selected Topics in Mathematical Physics, Allied Publishers, New Delhi, 1995. (Editors: K. Srinivasa Rao, R. Sridhar and V. Lakshminarayanan); ISBN: 81-7023-488-3

2. Basic and Clinical Applications of Vision Science, Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997; ISBN: 0-7923-4348-4

3. Lagrangian Optics (V.Lakshminarayanan, A.Ghatak and K. Thyagarajan), Kluwer, Boston: 2001. ISBN: 0-7923-7582-3.

4. Vision Science and its Applications, Trends in Optics and Photonics Series,Volume #35, Optical Society of America, Washington DC. , 2000. ISBN: 1-55752-624-9.

5. The Stiles-Crawford Effect, (editors: V. Lakshminarayanan, A. Raghuram, J.M. Enoch), Classic Reprints on CD-ROM, Optical Society of America, Washington DC, 2004; ISBN: 1-55752-763-6

6. Optical Waveguides: From Theory to Technological Applications, M.L.Calvo and V. Lakshminarayanan, Marcel Dekker, New York, 2007. ISBN:1-57444-698-3

7.NBEO Optometry Exam Review, Part I (V. Lakshminarayanan and E.Bennett), Elsevier, St. Louis, 2005.ISBN: 0-7506-7489-X

8. NBEO Optometry Exam Review, Part II (E.Bennett and V. Lakshminarayanan), Elsevier, St. Louis, 2005. ISBN: 0-7506-7566-7.

9. Handbook of Optics, 3rd edition, 5 volumes, (M.Bass, C.deCusatis, J.M.enoch, V. Lakshminarayanan, et al), McGraw Hill, NY, 2009.

10. Dihedral Fourier Analysis, (M.Viana and V. Lakshminaryanan), Springer, 2013.

11. Quantum Information Science (V.Sahni, V. Lakshminarayanan), Tata McGraw Hill, 2010.

12. Mathematical Optics: Classical, Quantum and Imaging, (V. Lakshminarayanan, M.L.Calvo, T.Alieva), CRC Press/Taylor and Francis, 2012.

13. Special Functions for Optical Science and Engineers (V. Lakshminarayanan and L.S.Varadharajan,) , SPIE Press, December, 2015.

45. Advances in Optics and Photonics (V. Lakshminarayanan and I. Bhattarcharya), Springer, 2015.

15. Understanding Optics with Python,(V.Lakshminarayanan, H.Ghallila, L.S.Varadharajan) CRC/Taylor and Francis, February 2018.

16. Symmetry in Optics and Vision Science,(M.Viana and V. Lakshminarayanan), CRC Press/ Taylor and Francis, April 2019.

17. Advances in Optical Science and Engineering III – Green Photonics, (Indrani Bhattacharya, Satyajit Chakarbarti, Hari Singh Reehal and Vasudevan Lakshminarayanan) Springer, 2017; ISBN-10: 9811039070

18. The Generalized Gauss Hypergeometric Functions – Transformations and Group Theoretical Aspects, (K.Srinivasa Rao and V. Lakshminarayanan) IoP Press, Bristol, UK, October 2018 http://iopscience.iop.org/book/978-0-7503-1496-1

19., Light in Nature VI, (J.Shaw, K.Creath, V.Lakshminarayanan), SPIE Optical Engineering and Applications, PROCEEDINGS VOLUME # 10367, SPIE, Bellingham, WA. 2017

20. Light Based Science, Technology and Sustainable Development, The Legacy of Ibn al Haytham, (R.Rahsed, A,Boudrioua, V. Lakshminarayanan) CRC Press, Boca Raton, FL., August 2017

21. Visual Optics,(V. Lakshminarayanan and L.S.Varadharajan), SPIE Press, Bellingham, WA., 2019

22. Light, Vision and Perception: A Short Introduction, Part 1: Physics (V. Lakshminarayanan and M.K.Parthasarathy), IoP Press, Bristol, UK, in preparation

23. Light, Vision and Perception: A Short Introduction, Part II: Perception (M.K. Parthasarathy and V.Lakshminarayanan), IoP Press, Bristol, UK, in preparation

Book Chapters

1. Enoch, J.M. and Lakshminarayanan V.: Clinical Visual Psychophysics Measurements, Chapter 23 in Non-invasive Diagnostic Techniques in Ophthalmology, (ed.) B. Masters, Springer-Verlag, New York, Pages 451-478,1990.

2. Enoch, J.M. and Lakshminarayanan, V.: Retinal Fiber Optics, in Vision and Visual Dysfunction : Visual Optics and Instrumentation, Vol. 1, (ed.) W.N.Charman, MacMillan Press, London, Pages 280-309, 1991.

3. Norton, T., Lakshminarayanan V. and Bassi C.J.: Visual Psychophysics: Spatial Vision in Psychophysical Foundations of visual function, , (ed.s). T. Norton, D.Corliss and J.E.Bailey, Butterworth Heinemann, Boston, 2002. Pages 137-176.

4. Lakshminarayanan V, Enoch JM. Biological Waveguides, in: Handbook of Optics, Vol. 3, Optical Society of America, Washington DC. , 2000. Revised and updated chapter in Handbook of Optics, 3rd edition, Volume 3, McGraw Hill, NY, 2010.

5. Lakshminarayanan V, Raghuram A. Visual Considerations for the Optical Engineer, in : Handbook of Optical Engineering, Ed. W. Wolfe, Chapter 30, Pages 593-659, SPIE Press, Bellingham, WA., 2003.

6. Lakshminarayanan V., Lenses and Optics of the Eye, Module 2, Active Learning in Optics and Photonics, Ed., D. Sokoloff, United Nations Educational, Cultural and Scientific Organization, Paris, Pages 81-106, 2006. (translated into French, Arabic and Spanish).

7. C.Garhart and V. Lakshminarayanan, Physiology and structure of the human eye, Chapter 2.1.1, Handbook of Video Technology, ed. J.Chen et al, Springer Verlag, Berlin, 2011.

8. V. Lakshminarayanan, Light detection and sensitivity, Chapter 2.1.2, Handbook of Video Technology, ed. J.Chen et al, Springer Verlag, Berlin, 2011.

9. V. Lakshminarayanan, Visual Acuity, Chapter2.1.3, Handbook of Video Technology, ed. J.Chen et al, Springer Verlag, Berlin, 2011.

10. V. Lakshminarayanan,Flicker Sensitivity, Chapter 2.1.4, Handbook of Video Technology, ed. J.Chen et al, Springer Verlag, Berlin, 2011.

11. V. Lakshminarayanan, Color deficiencies, Chapter 2.2.7, Handbook of Video Technology, ed. J.Chen et al, Springer Verlag, Berlin, 2011.

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49. H.A.Neal, D.Ball,R.Bierbaum,L.Fisk,S.J.Hu, V.Lakshminarayanan, G.Omenn,J.Owen-Smith,C.Simon,J.Wells, and L.Vasquez, Strengthening the Role Of Universities in National Science Policymaking, Jerome B. Wiesner symposium summary report, University of Michigan, Office Of Research, 2016.

50. Book Revew: Visible and Invisible: The wonders of Light Phenomena, Contemporary Physics http://dx.doi.org/10.1080/00107514.2017.1291722, 2017

51. Book Review, Scientific Computation with Python, Contemporary Physics, 2017. http://dx.doi.org/10.1080/00107514.2017.1312543

52. V. Lakshminarayanan, ALOP: Bringing optics and photonics to the developing world, Photonics Spectra, June 2015, https://www.photonics.com/Article.aspx?AID=57453.

53. Book Review, Optics in Our Time, Optics and Photonics News, https://www.osa.opn.org/home/book_reviews/2018/0518/optics_in_our_time/ May, 2018.

54. Book Review: Concise Optics: Concepts, Examples and Problems A. Haija, M.Z. Numan and W.L. Freeman, Optics and Photonics News, https://www.osa-opn.org/home/book_reviews/2019/0319/ concise_ optics _concepts_examples_and_problems, April 2019.

Database:

Gholami, Peyman, and Lakshminarayanan, Vasudevan. Optical Coherence Tomography Image Retinal Database. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2019-02-20. https://doi.org/10.3886/E108503V1
Persistent URL: http://doi.org/10.3886/E108503V1
OCTID: Optical Coherence Tomography Image Database. This is a public database of over 500 OCT retinal images classified into 4 groups (including normals) as well as 25 manually segmented images and a semi-automated method for manual segmentation.

Social Media:

1. Heritage of Ibn al Haytham and Islamic Golden Age of Science
Teaser https://www.youtube.com/watch?v=P_8QBbIMjOU
Full video : https://www.youtube.com/watch?v=fmzDkoKbfUw , UNESCO, 2015.

2. American Institute of Physics International Year of Light, https://www.youtube.com/watch?v=rcoMeWV0jZc, 2015.

3. Saturday Morning Physics, University of Michigan, https://www.youtube.com/watch?v=6wQ4WlJxc2c, 2014

4. Radio Interview, BBC 4; http://www.bbc.co.uk/programmes/b016ljj2 2011.

5. Jerome Wienser Symposium talk, University of Michigan, https://www.youtube.com/watch?v=5T61Y6OGuKo (from about 20:00), 2015.

6. Science News, https://www.sciencenews.org/archive/natural-roots-fiber-optics , 1989.

7. OSA blog, http://www.osa.org/en-us/the_optical_society_blog/2016/september_2016/my_summer_trip_to_india/ , 2016.

8. OSA Twitter Live feed : https://twitter.com/opticalsociety?lang=en January 31, 2018

PROFESSIONAL ACTIVITIES (selected)

A. Invited Lectures
(*= multiple; **=prior to affiliation)

1. Quantum Theory Project, University of Florida, Gainesville.
2. Dept. of Chemistry, Clemson University
3. Dept. of Biophysics and Crystallography, University of Madras, India,*
4. Medical Research Foundation, Madras,India.*
5. Elite School of Optometry, Madras, India*
6. Wilmer Ophthalmological Institute, The Johns Hopkins University School of Medicine.
7. Dept. of Psychology, University of Minnesota.
8. Southern California College of Optometry, Fullerton.
9. Dept. of Cognitive Sciences, University of California, Irvine.**
10. School of Optometry, University of California, Berkeley.(post-affiliation Oxyopia seminar)
11. Pacific University College of Optometry.
12. Dept. of Ophthalmology, School of Medicine, University of California at Irvine.
13. Dept. of Ophthalmology, University of Missouri School of Medicine, Kansas City.
14. Dept. of Physics, Simon Fraser University, Canada
15. Dept. of Physics, University of Missouri, Kansas City.
16. Institute of Mathematical Sciences, Madras*
17. Applied Optics Laboratory, Indian Institute of Technology, Madras.*
18. Optoelectronics Group, Osmania University, Hyderabad, India.
19. Dept. of Physics, Osmania University, Hyderabad.
20. Dept. of Physics, Indian Institute of Technology, New Delhi*.
21. Instituto De Optica, Consejo Superior de Investigaciones Cientificas, Madrid.
22. School of Optometry, University of Missouri-St. Louis.**
23. Center for Science and Technology, UMSL
24. Dept. of Electrical Engineering, Indian Institute of Technology, Madras .
25. Dept. of Psychology, University of Toronto
26. Dept. of Optometry, University Kebaansang Malaysia, Kuala Lumpur*
27. Dept. of Physics, University of Arkansas, Fayetteville.
28. Dept. do Fisica, Universidade do Minho, Braga, Portugal
29. Union of Optometrists and Opticians, Lisboa, Portugal
30. Dept. de Optica, Universidad Complutense, Madrid, Spain.*
31. Ente Per Le Nuove Tecnologie, L'Energia e L'Ambiente. Dip Innovazione, Div. Fisica Applicata, Centro Ricerche Frascati, Frascati, Roma, Italy.
32. Blackett Laboratories, Optics Group, Physics Department, Imperial College, London.
33. Institute of Ophthalmology, University of London.
34. School of Mathematics, University of Newcastle-upon-Tyne, UK.
35. International Center of Theoretical Physics, Trieste, Italy*.
36. Escuela de Optometry, Ciudad Universitaria de Madrid, Madrid, Spain.
37. Dept. of Experimental Psychology, University of Cambridge, UK. Kenneth Craik club lecture.
38. Dept. of Optometry, Glasgow Caledonian University, Glasgow, Scotland.
39. Kavli Institute for Theoretical Physics, University of California, Santa Barbara.
40. Dept. of Ophthalmology and Vision Science, University of Illinois, Chicago.
41. Physics Dept., Ataneo de Manila University, Quezon City, Phillipines
41. School of Optometry, University of Waterloo, Waterloo, Canada**

42. School of Engineering and Science, Heriot-Watt University, Edinburgh, Scotland.
43. Dept. of Physics, University of Milano, Bicocca.
44. Eye Institute, West Virginia University, Morgantown, West Virginia.
45. Physics dept., Faculty of Sciences Semlalia, Cadi Ayyad University, Marrakech, Morrocco
46. Institute of Optics, University of Rochester, Rochester, NY
47. Physics Dept. Miranda House, University of Delhi, New Delhi, India
48. Optometry Dept., City University, London, UK
49. Dept. of Applied Physics, Delhi College of Engineering, Delhi University, New Delhi
50. Applied Optics Group, Central Scientific Instrumentation Organization, Chandigarh, India.
51. Dept. of Physics, Florida Atlantic University, Boca Raton, FL.
52. Schurnmacher Institute for Vision Research, SUNY, New York, NY
53. Dept. of Electrical Engineering, University of Delaware, Newark, DE.
54. National Institute of Science and Mathematics Education and development, University of the Philippines, Manila.
55. Dept. of Electrical Engineering, University of Southern California, Los Angeles, CA.
56. Dept. of Engineering Science and Mechanics, Pennsylvania State University.
57. Dept. of Physics, University of Texas, Arlington.
58. Dept. of Electrical Engineering, Sathyabama University, Chennai, India.
59. Dept. of Physics, Universidad del Valle, Cali, Colombia
60. Ecole Superiore des communication des Tunis, Tunisia
61. Dept. of Physics, University of Minnesota
62. LV Prasad Eye Institute, Hyderabad, India
63. Department of Physics, Indian Institute of Technology, Madras
64. Dept. of Applied Physics, New York University, NYC
65. Dept. of Electronics Engineering, Indian School of Mines, Dhanbad, India.
66. Dept. of Applied Optics and Photonics, Calcutta University, India.
67. Dept. of Biomedical Engineering, Indian Institute of Technology, Hyderabad.
67. National Center for Physics, Islamabad, Pakistan.
68. Dept. of Electrical and Computer Engineering, Ryerson University, Toronto, Canada
69. Dept. Of Electrical and Computer Engineering, Wayne State University, Detroit, MI
70. Dept. of Physics, Indian Institute of Technology, Karaghpur, India
71. Dept. of Atomic and Molecular Physics, Manipal University, India
72. Optoelectronics Research Center, University of Southampton, UK
73. Dept. of Information Engineering, University of Padova, Italy
74. Centro de Investigaciones en Optica, Leon, Mexico
75. Aravind Eye Hospital and Research Institute, Pondicherry, India

B. Lecture Series/Courses

1. Invited lecture series "Clinical Visual Psychophysics", Elite School of Optometry, Madras, India, 1988.
2. Invited participant/lecturer: Workshop on genetics and psychophysics, Smith Kettlewell Institute of Visual Science, San Francisco, California, April, 1990.
3. Lecture Series, "Optics of the eye and clinical psychophysics", Allergan Medical Optics, spring/fall 1992.
4. Lecture series: "sensory processes of vision", Elite School of Optometry, Madras, December 1994.
5. Invited Lecturer: Course on Neural Networks and Vision, Sponsored by SEDO (Sociedad Espanola de Optica), and Universidad Complutense, Madrid, July 1995.

6. Short Course: Introduction to Fiber Optics, Center for Science and Technology Continuing Education & Outreach, University of Missouri-St. Louis, July 1996.
7. Short Course: Fourier Optics for the Vision Scientist, Optical Society of America Annual meeting, Rochester, October 1996.
8. Faculty, Continuing Education Course: "Forever Young?" Visual functions that resist aging, School of Optometry and The Academic geriatric Resource Program, University of California at Berkeley, April 1997.
9: Short Course: Wavelets for the vision scientist, Optical Society of America Annual Meeting, Baltimore, MD. October 1998.
10. Invited Faculty, Winter College on Biophtonics and Optical Imaging, International Center for Theoretical Physics, Trieste, Italy, February, 2003.
11. Co-organizer/Director and Lecturer, Mathematical methods in Optics, International Center for Theoretical Physics, Trieste, Italy, January, 2006.
12. Facilitator, Active Learning in Optics and Photonics III, La Societe Tunisienne d'Optique, Carthage, Tunisia, February 2007 (invited).
13. Lecturer, Physical Optics and Visual Perception, International Optometric Bridging Program II, University of Waterloo, 2007.
14. Instructor, PHL 759: Selected Topics in Applied Optics, summer, Physics Dept., Indian Institute of Technology, New Delhi, 2007.
15. Invited faculty, Winter College on Nano-biophotonics, International Center for Theoretical Physics, Trieste, Italy, February 2008.
16. M. Viana and V. Lakshminarayanan, instructors, Symmetry studies with applications, Int. Conf. on Optoinformatics, St. Petersberg, Russia, September 2008.
17. Facilitator, Active Learning in Optics and Photonics Workshops held in Manila, Philipines (2004), Monastir, Tunisia(2005), Marrakech, Morroco (2005), New Delhi, India (2006), Dar es Salam, Tanzania (2007), Sao Paolo, Brazil (2007), San Luis Potosi, Mexico (2007), Lusaka, Zambia (2008), Douala, Cameroon (2008), Bogota, Columbia (2009), Khatmandu, Nepal (2009), Manila (2010) and others
18. Invited faculty, College on environmental optics, International Center for Theoretical Physics, Trieste, Italy, February 2009.
19. Co-director and faculty member, College on Optics and Energy, International Center for Theoretical Physics, Trieste, Italy, February 2010.
20. Invited faculty, College on optical imaging, International Center for Theoretical Physics, Trieste, Italy, February, 2011.
21. Invited Faculty, College on Lasers, ICTP, Trieste, February 2012.
22. Short Course: Special functions in Optics, SPIE Optics and Photonics Meeting, San Diego, August, 2016.
23. Short Course: Physics of Vision for the Engineer, Dept. of Physics, Indian Institute of Technology, December 2016.
24. Short Course: Physics of Vision, University of Brescia, Italy, 2017
25. Short Course: Physiological Optics for the Engineer, SPIE Photonics West, February 2018; SPIE Optics and Photonics, San Diego, August 2017; Photonics West, February,2019.
26. Short Course: Visual Optics and Perception, Thalmic Labs., Kitchener, ON, January 2018.

C. Meetings (selected)

1. Nam, M.H., Lakshminarayanan, V., Lipiansky, E., and Stark, L.: A heuristic model of the human head movement control system with added viscosity, Oculomotor Society (OMS) Proceedings, California Institute of Technology, Pasadena, CA., 1982.

2. Enoch, J.M., and Lakshminarayanan, V. : Clinical tests of vision in the aged: layer-by-layer perimetry, 40th Annual Meeting of the Gerentological Society of America, Washington, D.C., November 1987.

3. Organizer and Moderator, Session on "Research Frontiers in Retinal Disease" Optical Society of America Topical Meeting on Noninvasive Assessment of the Visual System, Santa Fe, NM, February, 1989.

4. Enoch, J.M., Khamar, B.M., Lakshminarayanan, V.: Static and kinetic perimetric field defects in Gilles de la Tourette Syndrome, VIIIth International Neuro-Ophthalmology Symposium, Winchester, UK June, 1990.

5. Enoch, J.M., Khamar, B.M., Lakshminarayanan, V.: Time variation of visual field defects in Gilles de la Tourette Syndrome. VIIIth International Neuro-Ophthalmology Symposium, Winchester UK ,June, 1990.

6. Enoch, J.M., Lakshminarayanan, V. and Knowles, R.A.: Stability of fixation while performing a hyperacuity task. Conference on Scanning Laser Ophthalmoscopy, Microscopy and Tomography, Boston, November, 1990.

7. Mondal, P.K., Calvo, M.L., Chevalier, M., Lakshminarayanan, V.: Resolution criteria for two line images: an interpretation of hyperacuity tests and experimental MTF of the human eye. Third International Seminar on Digital Image Processing in Medicine, Remote Sensing and Visualization of Information (DIP-92), Riga, Latvia, April 1992.

8. Calvo, M.L., Chevalier, M., Lakshminarayanan, V., and Mondal, P.K. Informacion reciproca MTF/LSF a partir de datos experimentales obtenidos en sistemas limitados por la difraccion. III^{A} Reunion Nacional De Optica, Barcelona, Spain, September, 1992.

9. Portney, V., Lang, A., and Lakshminarayanan V. Multifocal intraocular lenses and entoptic phenomena. Paper delivered at the annual meeting of the American Society for Cataract and Refractive Surgery, Seattle, WA. May 1993.

10. Invited talk, "A generalized perceptual space based on some psychophysical experiments", Conference on Geometric Representations of Perceptual Phenomena, Institute for Mathematical Behavioral Sciences, University of California at Irvine, July 1993.

11. Calvo ML, Chevalier M, Lakshminarayanan V, and Manzanares A. Un analysis de la function de Heaviside como generador sistematico de lineas y bordes: viabilidad de la reciprocaded LSF/MTF muestreo. IV Reunion Nacional de Optica, Granada, Spain, September 13-16, 1994.

12. Fellow, McDonnell Foundation Summer Institute in Cognitive Neuroscience, Dartmouth Medical School, Summer, 1989.

13. Invited participant, College on Neuro-physics, International Center for Theoretical Physics, Trieste, Italy, 1990.

14. Cavlo ML, Lakshminarayanan V, Manzanares A, Chevlier M. A formalism for analyzing degraded edges using modified Heaviside functions. Enoch vision Science Symposium, Berkeley, CA., april 27-30, 1996.

15. Lakshminarayanan V. The use of wavelet transforms in vision science. Enoch Vision Science Symposium, Berkeley, CA. april 27-30, 1996.

16. Bailey JE, Lakshminarayanan V. The MNREAD reading acuity chart: assessing reading ability in normal and low vision. Enoch Vision Science Symposium, Berkeley, CA. April 27-30, 1996.

17. Chair, session on Network Optimization Techniques, Session 9A, International Conference on Fiber Optics and Photonics, Madras, December 9-13, 1996.

18. Chair, Session on Stochastic Differential Equation/Biological Applications, International Conference on Stochastic Processes and Applications, ICSPA'98, Madras, January 8-12, 1998.

19. Presider, Session WT: Symposium on simulation of visual environments. OSA annual meeting, Baltimore, MD. October 1998.

20. Presider, Session ThU: Forum on Education:2, OSA Annual Meeting, Baltimore, MD. October, 1998

21. Presider, Session WII: Machine Vision,. OSA Annual Meeting, Baltimore, MD, October 1998.

22. Invited Speaker: Waveguiding in Photoreceptors, Symposium on Visual Optics, University of Calfornia Berkeley School of Optometry, 75th Anniversary celebration. december 14-16, 1998.

23. Invited Speaker: Sustained visual functions in the geriatric patient, 18th Annual GRECC Symposium: management and Rehabilitation of the Aging Eye, University of Missouri, St. Louis, September 9-10, 1999.

24. Presider, Symposium on Accommodation: Experimental and Model Studies, OSA Annual Meeting, Santa Clara, CA., September, 1999.

25. Presider, Forum on Education 2, OSA Annual Meeting, Santa Clara, CA., September 1999.

26. Presider, Symposium on Perceptual Considerations in Virtual Reality, OSA Annual Meeting, Long Beach, CA., October 1997.

27. Plenary speaker, Annual meeting of the Optical Society of India, New Delhi, January 2003.

28. Keynote Speaker, "Hyperacuity: a technique for evaluation of vision behind cataracts and other occluded ocular media", XXVI International Meeting of Ophthalmology Alpe-Adria, Trieste, Italy, November 2003.

29. A. Raghuram and V. Lakshminarayanan: Speed discrimination, Conference honoring David Regan, Center for Vision Research, York University, Toronto, July 2003.

30. A.Raghuram and V. Lakshminarayanan, Psychophysical estimation of aging on certain motion perception tasks: preliminary results, Vision in vehicles 10, Granada Spain, 2003.

31. Inaugural Talk: Optical Society of India, New Delhi Chapter, January 2003.

32. Invited talk, ESO International Vision Science and Optometry Conference, Chennai, India, august 2005.

33. Invited speaker, "What is a Photon?", SPIE Annual meeting, San Diego, August 2005.

34. Invited speaker, developments in vision enhancement technology and their evaluation, Morgantown, West Virginia, June 2005.

35. Invited lecture, Optical Society of America Hyderabad student chapter, august 2005.

36. Maria L. Calvo, Jay M. Enoch, V. Lakshminarayanan, "An extraordinary contribution of Ibn-Al-Hytham to Vision Science in the last millennium: An experience showing how vision mechanism is induced by external stimuli," in the 2nd Ibn Al-Haytham Workshop on Photography, Douz, Tunisia, Dec. 2006.

37. Inaugural Lecture, CICLO: New insights in electromagnetic beam description: mode transformations, polarization and coherence lecture series, Universidad Complutense, Madrid, Spain, 2007. (invited)

38. Session Chair, Biophotonics, Education and Training in Optics and Photonics, Ottawa, 2007.

39. Invited talk, Optics in Optometry, International Conference on physics education, ICPE 2007, Marrakech, Morrocco, 2007.

40. Invited Talk: Control of adaptive optics, Control theory group, Dept. of Applied Mathematics, University of Waterloo, January 2008.

41. Invited talk: International Workshop on Applied Probability, France, July 2008.

42. Invited talk: Physics of Human Vision, GIREP-2008, Cyprus, August 2008.

43. Invited Talk: Optimization of Optical Systems, Photonics 2008, December 2008.

44. Plenary Talk, Quantum and Nano Science Advanced School, Indo-US advanced studies school, Agra, India, December 2008.

45. Invited Talk, Photometry and the Stiles Crawford effect, 75 th anniversary of the Stiles Crawford Effect, Frontiers in Optics, Optical Society of America annual meeting, Rochester, NY October 2008.

46. Valedictory address, Quantum and Nano Science Advanced School, Indo-US advanced studies school, Agra, India, December 2008.

47. Plenary lecture, American Association of Physics Teachers, annual meeting, Portland, OR., July 2010.

48. A.Bora, V. Lakshminarayanan, T.Aggarwal, Observer detection and discrimination performance as a function of clutter: A signal detection approach, EIVOC 2010, Chennai, India, august 2010

49. M.Ramamurthy, J. Hovis, V. Lakshminarayanan, Correlation between color discrimination thresholds and discrimination ability measured using the Faarnsworth Munsell 100 hue test, EIVOC-2010, Chennai, India.

50. V.Sreenivasan, V. Lakshminarayanan, E.Irving, W.Bobier, Influence of vergence adaptation on cross-link activity, Autumn School in Cognitive Neuroscience, Oxford University, august 2010.

51. D.Thapa, A.Fleck, V.Lakshminarayanan, W.Bobier, High order aberrations varies with the degree of hyperopia in pre school children, Autumn School in Cognitive Neuroscience, Oxford University, august 2010.

52. D.Thapa, K.Raahemiifar, V. Lakshminarayanan, Sparsity based image denoising using a new nonlinear dictionary, 8th Bieennial Canadian Optometry Schools research Conference, Waterloo, December 2013.

53. Y.Lu, V. Lakshminarayanan, Lagrange: a three dimensional analytic lens design method for spectacle application., 8th Bieennial Canadian Optometry Schools research Conference, Waterloo, December 2013.

54. Invited Talk, Adaptive Optics and a computational model for predicting visual performance, Ann Arbor Optical Society chapter, October 2013.

55. Invited Speaker, 2nd Simposia de Optica, Universidad del Valle, Cali, Colombia, 2013

56. 13th annual E.V.Vaithilingam Memorial Symposium, invited Speaker, Chennai, India, 2014.

57. Invited talk, ARVO-India 21st. annual meeting, Hyderabad, India, 2014.

58. Invited talk, OSA/SPIE student chapter, Indian Institute of technology, Madras, 2014.

59. Invited Talk, College of Engineering and Management, Calcutta University, SPIE Chapter, 2014.

60. Invited talk, Optics and Photonics, SPIE annual meeting, San Diego, August 2014.

61. A.Almazroa, E.Ahmed, E.Ramadan, M.Dlaim, K.Raahemifar, V. Lakshminarayanan, A database for retinal fundus images for glaucoma analysis, Graduate student research conference, University of Waterloo, april 2015.

62. Invited Plenary, Optronix 2015: International conference on optical science and engineering, Vancouver, B.C., 2015.

63. Ann Arbor Optical Society of America Chapter, invited talk, march 2015.

64. Plenary talk + 1 invited talk, AFSIN international workshop on Optical Signal Processing, Dakar, Senegal, 2015.

65. I. Khodadad, N. Abedzadeh, V. Lakshminarayanan, V. Badrinath, S.S.Saini, Detection of adulteration in edible oils using a low cost imaging spectrometer, Optics and It's Applications, Yeravan,Armenia, July 2016.

66. Keynote address, Asia Student photonics Conference ,Manipal, December 2016

67. P.Roy, J.Zelek, V.Lakshminarayanan, Real-time automated segmentation of retinal layers in SD-OCT images, GSRC, Univ. of Waterloo, april 2017.

68. A.Bakroon, R.Burman,Peyman Gholami, V. Lakshmianrayanan, Global and local motion processing in autism spectrum disorders, Canadian Optometry Schools Research Conference, December 7-9, 2017. Waterloo.

69.Mohana K. Parthasarathy, V. Lakshminarayanan, Motion processing in reverse Phi, Canadian Optometry Schools Research Conference, December 7-9, 2017. Waterloo.

70. Henry Leopold, John Zelelk, V. Lakshminarayanan, Automated retinal health assessments with deep learning, Canadian Optometry Schools Research Conference, December 7-9, 2017. Waterloo.

71. Asmaa Bakroon, V.Lakshminarayanan, Vision in Autism spectrum disorders, Second world congress of optomety, Hyderabad, India, September 2017.

72. Shima Mohammadali Pishnamaz, Pooya Sobhe Bidar, Ahmed Almazroa, Kaamran Raahemifar, Vasudevan Lakshminarayanan, Retinal Image Processing: Optic Disc and Optic Cup Segmentation, 38th annual Engneering in Medicine and Biology conference, Orlando august 2016

73 A. Biran, P. Sobhe Bidari, A. Almazro, V. Lakshminarayanan, and K. Raahemifar, Optic Disc Localization and Detection of Exudates or Hemorrhages from Fundus Retinal Images, 38th annual engineering in medicine and biology conference, Orlando, august 2016.

74. M.K.Parthasarathy, V. Lakshminarayanan, Reverse Phi Motion, ARVO annual meeting, Hawaii, 2018.

D. Professional Service

1. Member, Scientific Information Committee, Corporate Information Center, Allergan Inc., 1991-93.

2. Member, Technical Program Committee, Optical Society of America Topical Meeting on Ophthalmic and Visual Optics, 1992-93.

3. Member, Technical Program Committee, Vision Science and it's Applications, Optical Society of America, 1993-1995.

4. Member, Book Publishing committee, Optical Society of America, 1/94-12/96; 2000-2005.

5. Member, International Foundation Committee, Optical Society of America, 1/94-1/95.

6. Vice-Chair, Applications of Vision Science Technical Group, Optical Society of America, 1995-1997.

7. Member, Theoretical Optics Committee, National Board of Examiners in Optometry, 1994-2001; 2003

8. General Chair, The Enoch Vision Science Meeting, and Member, Scientific Program Committee, Berkeley, CA., April 1996.

9. Chair, Applications of Vision Science Technical Group, Optical Society of America, 1/97-12/99.

10. Vice-President and Program Chair, Optical Society of America Greater St. Louis Chapter, May 1996-May 1997.

11. Member, Advisory Committee, Vision Science and its Applications Meeting, Optical Society of America, 2/96-2/2000.

12. President, Optical Society of America Greater St. Louis Chapter, May 1997-May 1998.

13. Member, Board of Directors and Vice-President, Foundation for Vision Science. 1997-

14 Member, Member & Education Services Council, Optical Society of America, 1998-2001. Co-Chair, Forum on Education, 1999-. Vice-Chair, 2000-2002; Chair, 2002-2004

15. Member, Organizing committee, Photonics'98: International Conference on Fiber Optics and Photonics, New Delhi, 1998.

16. Member, Optical Society of America Annual Meeting Committee, 1997-99.

17. Member, Optical Society of America Technical Council, 1997-99.

18. Program Chair, Vision Science and its Applications Topical Meeting, Santa Fe, Feb. 2000. General Chair, VSIA, Monterey, CA., february 2001.

19. Member, United States Advisory Committee, International Commission on Optics, National Research Council. 2001-2003. Chair 2003-2005.

20. Member, Organizing committee, International Conference on Wavelets and applications, January 2002.

21. Member, Strategic Planning Committee, Optical Society of America, 2001-2003.

22. Member, Board of Directors, Optical Society of America, 2001-2003

23. Member, Program Committee, ETOP (Education and Training in Optics and Photonics) meeting, Tucson, AZ. October, 2003.

24. Member, Active Learning In Optics and Photonics, UNESCO, 2003-

25. Member, Board of International Scientific Organizations, National Research Council, Washington DC, 2003-2005

26. Member, Fellows Admittance Committee, Region 6, American Academy of Optometry, 2003-2005.

27. Member, Trieste System Optical Sciences Advisory Committee, Abdus Salam International Center for Theoretical Physics, 2003-

28. Member, Technical Program Committee, International Conference on Optics and Optoelectronics, ICOL-2005.

29. Member, Program Committee, Tecnolaser , International conference on optics and lasers, Havana, Cuba, 2003, 2005.

30. Member, Technical Program Committee, Education and Training in Optics and Photonics, Marselles, France, October 2005, Ottawa, Canada 2007,Wales 2009

30. Member, Research Sub-committee, Vision Research Foundation, Chennai, India, 2005-2008

31. Member, technical program committee, ESO International Vision Science and Optometry Conference, Chennai, India, 2005.

32. Member, American Physical Society delegation to Physics For Sustainable Development meeting, Durban, South Africa, 2005.

33. Member, Unites States delegation, International Union of Pure and Applied Physics general assembly meeting, Cape Town, South Africa, 2005.

34. OSA representative to AAAS, 2006-2009

35. Member, Local Organizing Committee, ETOP –Education and training in optics and photonics, Ottawa, Canada, June 2007

36. Member-at-large, United States National Committee to IUPAP, National Academy of Sciences, 2006-.

37. Member, Awards Committee, SPIE-International Society for Optical Engineering, 2007-2009; chair, Biomedical Optics award sub-committee.

38. Member, Scholarship Committee, SPIE-International Society for Optical Engineering, 2007-2009

39. Chair, Special Projects Advisory Committee, Optical Society of America, 2006-2011

40. Member, International advisory committee, International Conference on Physics Education, Marrakech, Morocco, 2007.

41. Member, Steering Committee, US Liason Committee to IUPAP, National Academy of Sciences, 2009-2011

42. Member, Program Committee, Optoinformatics, 2008, St. Petersburg, Russia

43. Member, Committee on International Scientific Affairs, American Physical Society, 2008-; Chair, 2010-2011

44. Co-Chair, International technical advisory committee, Photonics-2008

45.Member, International scientific advisory board, LAM – African Laser, atomic, molecular and Optical physics network, 2008- present

46.Member, Publications Council, Optical Society of America, 2008-2011

47. Chair, Dennis Gabor Award, SPIE, 2009-present

48. Member, education committee, SPIE, 2010-present

49. Member, OSA Rapid Action Committee on Biomedical Optics, 2008-2009.

50. Member, International Advisory Committee, Photonics-2010

51. Co-Chair, Education and Training in Optics and Photonics, Tunis, Tunisia, July 2011

52. Member, Eco-Photonics Advisory Committee, SPIE, Strasbourg, France, 2011

53. Member, International advisory committee, XXXV Optical Society of India symposium: International conference on contemporary trends in optics and optoelectronics, Thiruvananthapuram, 2011

54. Member, International Advisory Committee, QANSAS 2010 : Indo_US school on quantum and nanoscience, Agra, India.

55. Member, US delegation to the IUPAP general assembly, London, UK, 2011.

56. Member, Steering Committee, International Year of Light, 2012-.

57. Member, Organizing Committee, Physics and development workshop, ICTP and Forum on Industrial Physics, APS, Trieste 2012, Sao Paulo, 2014

58. Member, Technical program committee, European Meeting on Physiological Optics, Dublin, Ireland, 2012, Warsaw, 2014.

59. Member, technical program committee, International Conference on Photonics, Optics and Laser Technology" - PHOTOPTICS 2013, Barcelona, Spain 2012,Porto,Portugal, 2014, Berlin, 2015, Amsterdam,2016.

60. Chair, Technical Program Committee, ETOP 2013, Porto, Portugal.

61. Member, Technical Program Committee and International advisory committee, ICOL-2014.

62. Member, Education and Training, National Photonics Initiative, 2014-

63. Member, program committee, ETOP, Bordeaux, France, 2015.

64. Member, Advisory committee, Golden Jubilee meeting of the Optical Society of India, 2015.

65. Member, strategic planning committee, SPIE, 2015-2017

66. Chair, Education committee, SPIE, 2015-2017

67. Founding member, Al Hytham International Society, UNESCO, Paris, 2015. Member of Executive Council 2016-

68. Member, scientific committee, 8th European meeting on visual and physiological optics, Antwerp, Belgium, 2016

69. Member, International advisory committee, Photonics 2016 – International conference on fiber optics and photonics, 2016

70. Member, organizing committee, World Congress on Laser Optics & Photonics, Valencia, Spain, 2017

71. Member, Photoptics -2017, Porto, Potugal

72. Member, scientific program committee, Photoptics 2016, Italy

73. Member, advisory committee, Education and Training in Optics and Photonics, ETOP 2017, China.

74. Member, Public Policy Committee, American Physical Society, 2017-2020.

75. Member, International Day Of Light Planning Committee, UNESCO, 2017-2018

76. Member, scientific program committee, Photoptics 2018

77. Member, Advisory Committee, Center for Excellence in Optics and Photonics Research and Education, University of Engineering and Management, Kolkata, India 2018

79. Member, Committee on International Freedom of Scientists, American Physical Society, 2018-2021

80. Member, Technical Program Committee, ETOP-2019, Quebec City, 2019

81. Member, Advisory committee, International conference on fiber optics and photonics, December 2018.

82. Member, advisory committee, Optronix 2019

83. Member, Committee on Membership, American Physical Society, 2019-2022

84. Member, International advisory committee, annual meeting of the optical society of India, 2019.

E. University Service

At University of Missouri – Saint Louis

1. Development Leave Review Committee, 1993-94, 1995-1996, 1997-1998.

2. Graduate Program Committee, UMSL School of Optometry, 1993-.

3. Library Committee, UMSL School of Optometry, 1993-95.

4. University Senate Graduate Curriculum Committee, 1994-99.

5. Senate Committee on Research and Publications, 1994-99.

6. Dean Search Committee, 1994-95; 1997-1998; Affirmative Action Advocate, Dean search Committee, 1997.

7. Mentor, Englemann Institute Scholar's Program, 1994, 1997, 1998, 1999.

8. Optometry Professional Program Admissions Committee, 1995-2006

9. Reviewer, University Patents and Licensing, UM System. 1996-97.

10. Member, UMSL Discrimination Grievance Panel, 1997-99; 2000-2002

11. Member, UMSL Academic Vice Chancellor Search Committee 1997-1998.

12. Chair, Curriculum and Instructions committee, School of Optometry, 1997-98; Member 98-2000.

13. Member, Faculty Search Committee, School of Optometry, 1997-2000; 2003.

14. Member, Faculty Council, 1998-2000

15. Member, Graduate Council,1998-2000

16. Chair, UMSL Graduate Admissions and Scholarship Committee, 1998-2000.

17. Member, Physical facilities committee, School of Optometry, 1998-99; 2003-2006

18. Member, Tenure and Promotion Committee, School of Optometry, 1999-2006

19. Chair, University wide Faculty research and teaching awards committee, 2002-2003. member, 2003-2004.

20. Member, Student Affairs Committee, 2000-2006

At University of Waterloo

21. Member, SACA committee, 2007-2009

22. Member, Profession Program admissions interview committee, 2008

23. Member, Admissions committee, 2008-2009.

24. Member, Faculty of Science Pool of external examiners, 2009-2013

25. Member, Graduate School, Ph.D. exam chair pool, 2017-2020

26. Member, Organizing Committee, University of Waterloo-University of Montreal Vision Research Conference, 2013.

27. Member, Admissions committee, 2017, 2018

28, member, SACA committee for IOBP, 2017. 2018

29. Member, Faculty of Science, Biotechnology Task Force, 2018-

***REVIEWER FOR SCIENTIFIC JOURNALS (selected)*:**

Journal of the Optical Society of America, Part A
Applied Optics
Vision Research
Optometry and Vision Science
Ophthalmic and Physiological Optics
Investigative Ophthalmology and Visual Science
IEEE Trans. Biomedical Engineering
American Journal of Ophthalmology
International Ophthalmology
Concepts in Neuroscience
Optical Engineering
Journal of General Physiology
European Journal of Implant and Refractive Surgery
Optics Communications
Journal of Modern Optics
Optics Letters
Journal of Optics A
Computer programs in Biology and Medicine
IEEE Trans. Quantum Electronics
Journal of Mathematical Biophysics
...

Grants Review:

1. reviewer, National Institute of General Medical Sciences, 1994
2. Member, National Institutes of Health SBIR study sections (various), 2007-present
3. Membr, NIH Bioengineering, and biomedical optics review panels, 2011-
4. Reviewer, Natural Sciences and Engineering Research Panel, Singapore
5. Reviewer, DFG – Deutsche Forschung Gemeinshaft, Germany
6. Reviewer, NIH Neurotechnology Panel, 2011-

Other: Have been a tenure/promotion reviewer for a number of institutions, including Ohio State University, Indian Institute of Technology, Madras, Nanyang Technological University, University of California, Irvine, Indiana University, University of Texas, Universidad Complutense de Madrid, etc.

TEACHING EXPERIENCE

Have given graduate level lectures for courses and seminars on:
Psychophysics (at UC Berkeley)
Clinical Applications of Visual Psychophysics (at UC Berkeley)
Methodology and Instrumentation in Vision Research. (at UC Berkeley)
Co-taught: Phys449/PubPolicy 449: United States Science Policy (with H. Neal, 2014), University of Michigan

Courses taught:

At University of California, Irvine:

Psychology 249: Models and Methodologies in Cognitive Science, - Neural Networks, University of California at Irvine. Graduate Course, Spring quarter, 1993

At University of Missouri

.
Optometry 524: Monocular Sensory Processes of Vision
Optometry 400: Sensory Processes and Perception.
Optometry 470: Neural Networks and Computational Vision, Graduate course,
Optometry 406: Geometrical Optics.
Optometry 401: Visual Optics, graduate course.
Optometry 403: Psychophysical Methods and Experimental Design.
Optometry 519: Physical Optics and Photometry laboratory
Optometry 532: Binocular Vision and Space Perception
Optometry 516: Physiological Optics Laboratory
Optometry 513: Physical Optics and Optometry
Optometry 490: Biomedical Control Theory

At University of Waterloo:

Optom 601: Optical Characteristics of the Eye (grad course)
Optom 116: Physical Optics
Optom 106: Geometric and Ophthalmic Optics
Optom 126: Visual Optics
Optom 219: Visual Perception II: Binocular Vision
Optom 109: Visual Perception I: Monocular Sensory Processes.

Graduate Courses on (Opt 608; special topics):
1. Visual Attention (Spring 2008)
2. Biomedical control theory (Summer 2008; winter 2012, fall 2016)
3. Signal Detection Theory (Fall 2008).
4. Fourier Optics (Spring 2009)
5. Optical design (Spring 2009)
6. Fundamentals of Optical design and engineering (winter 2012)
7. Biophysics of Computation (Fall 2016)
8. Biomedical Image Processing (winter 2015, spring 2016; winter 2018)
9. Biomedical Control Theory (Fall, 2016)