VASUDEVAN LAKSHMINARAYANAN

Professor of Vision Science, Physics and Electrical and Computer Engineering, Systems Design Engineering, University of Waterloo; Member, Center for Bioengineering and Biotechnology, University of Waterloo; Member, AI@Waterloo.

Education

PhD, Optics and Vision Science, University of California at Berkeley

M.Sc. in Theoretical Physics, University of Madras, India

B.Sc. in Physics and Math, University of Madras, India

Technical Activities/Interests

I have worked in many areas of multidisciplinary science ranging from molecular spectroscopy, biomedical engineering, applied mathematics, cognitive science and perception, optical science and engineering, science education/policy as well as in physiological optics/vision science/ophthalmology/optometry, Image Processing, Machine learning/AI for automated diagnosis of disease from biomedical images

Service to the Technical Community (selected)

- Member, Trieste System Optical Sciences Advisory Board, International Center for Theoretical Physics, ICTP, Trieste Italy.
- Member, international Steering Committee, International Year of Light and International Day of Light
- Founding Member and facilitator, ALOP project, UNESCO
- Editorial Board/Technical editor/section editor of a number of Journals e.g., Optical Letters, Journal of Modern Optics, Optics and Photonics, Bioengineering, BMC Ophthalmology,Springer Nature Computer Science, etc.)
- Chair, USAC ICO Liason committee
- Member, Education committee, National Photonics Initiative
- Member at Large and Member, Steering committee, US IUPAP Committee
- Chair, Committee on International Scientific Affairs, American Physical Society.
- Member, Board of Directors and Member, Executive Committee of BOD, OSA (2001–2004)
- Conference and Program Committees (various)
- Member, Grant review panels (various) (e.g., NIH,NSF,NSERC,DFG,A-Star,...)
- Member advisory and technical Committee, ICTP-AIP Industrial Physics Forum Physics for Development
- Book and Paper Reviewer

Service to SPIE (selected)

- Chair, Education committee
- Member, Awards committee; Chair, Gabor Award sub-committee
- Chair, Developing Nations sub-committee of the Education Committee
- Member, ETOP advisory committee; Co-Chair, ETOP and honorary Co-Chair, ETOP 2013
- Co-chair, Light and Nature meetings
- Member, Strategic Planning committee

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- Member, Biomedical Optics award planning committee
- Reviewer for SPIE journals, publications and activity grants

Professional Honors (selected)

- Fellow of SPIE, OSA, APS, IoP, AAAS,Optical Society of India, American Academy of Optometry, etc.
- SPIE educator Award
- OSA Esther Hoffman Beller Medal
- OSI Optics medal
- Foreign Fellow, National Academy of Sciences, India
- AAAS Science and Technology Policy Fellow
- KITP Scholar, Kavli Institute for Theoretical Physics, UCSB
- Gulbenkian Foundation Fellow, Portugal
- Royal Society of Edinburgh Visiting Professor
- SPIE Visiting/invited Lecturer.

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Election Statement

Our global society faces many challenges – energy, climate change, resources, inequality to name a few – and I believe that it is only through science and technology that we can surmount these challenges. Optics, as an enabling science holds to the key to solving many of these problems. Optics and Photonics has a major impact on our daily lives and we, the members of the Optics community have a very important (and privileged) role. SPIE is an ideal vehicle to achieve solutions to these challenges.

SPIE can do this by leveraging its strengths in conferences, publications, student chapters, it's altruistic activities as well as its work in public policy and education. I believe, SPIE should pro-actively identify and foster growth in frontier areas of optical science and engineering in its various activities. It should strengthen its ties to industry and government laboratories. SPIE has a major role in fostering international co-operation and education. SPIE should take advantage of developments in communications technologies to host virtual meetings and conferences, disseminate information, mentor young scientists (especially women and under-represented minorities) and foster the scientific spirit amongst the public. SPIE chapters can and should play a major role in this and SPIE should provide resources to achieve these goals. I also believe we should be inclusive catering not only to professional scientists and engineers, but also to technicians, policy makers as well as the general public through outreach activities.

In terms of "brain drain" – i.e., the loss of educated people from developing countries to developed countries, SPIE, in co-operation with other societies and organization should help assist and improve the working conditions of young professionals in these countries and assist in visa issues to facilitate participation in international conferences, We are in unique position in assisting developing countries and least-developed countries enhance their science and technology foundation. As a non-profit, volunteer driven organization, we do not have the constraints more traditional agencies have.

Here, at home, SPIE should play a role in STEM education at all levels, especially to traditional underrepresented groups. SPIE should also take the initiative in advising policy makers and co-operate with relevant organizations both in and outside the government.

On a personal note, I am honored and humbled by this opportunity to serve as a director of SPIE. I have worked with SPIE for a number of years (In fact my very second paper was published in the Proceedings of the SPIE in the early 80s!) and hope to serve it for many more years. This society has played a major role in shaping my professional career. I believe with my background I will be able to serve as an effective and productive director of the society.