

SYED AZER REZA, PhD

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RESEARCH INTERESTS

Computational imaging | Optical metrology | Instrumentation | Photonic signal processing | Optical design.

EDUCATION

Doctor of Philosophy (PhD) in Optics <i>College of Optics (CREOL), University of Central Florida</i> <i>Dissertation Title: "MEMS and agile lensing technology-based modules for communications, signal processing and sensing." (PhD Advisor: Prof. Dr. Nabeel A. Riza)</i>	2006 – 2010
Master of Science (M.S) in Optics <i>College of Optics, University of Central Florida</i>	2006 – 2007
Master of Science (M.S) in Electrical Engineering <i>Department of Electrical Engineering, Darmstadt University of Applied Sciences</i> <i>Dissertation Title: "Investigation of cavities with improved unloaded Q factors and implementation of filter designs at 26GHz and 52GHz."</i>	2003 – 2005
Bachelor of Science (B.S) in Electronic Engineering <i>Ghulam Ishaq Khan (GIK) Institute of Engineering Sciences & Technology</i>	1999 – 2003

PROFESSIONAL APPOINTMENTS

Associate Professor Rose-Hulman Institute of Technology (RHIT) <i>Department of Physics and Optical Engineering Terre Haute, IN, U.S.A</i> <i>Director Rose Imaging Lab</i>	July 2024 – Present
Assistant Professor Rose-Hulman Institute of Technology (RHIT) <i>Department of Physics and Optical Engineering Terre Haute, IN, U.S.A</i>	Nov. 2019 – Jun. 2024
Assistant Scientist University of Wisconsin-Madison <i>Department of Biostatistics and Medical Informatics Madison, WI, U.S.A</i> <i>Computational Optics Group</i>	Apr. 2017 – Nov.2019
Assistant Professor Lahore University of Management Science (LUMS) <i>Department of Electrical Engineering Lahore, Pakistan</i>	Aug. 2012 – Mar.2017
Post-Doctoral Research Associate University of Florida <i>Department of Physics Gainesville, FL, U.S.A</i> <i>NASA/ESA Laser Interferometer Space Antenna Lab</i>	July 2010 – July 2012
Research Assistant University of Central Florida <i>College of Optics and Photonics (CREOL) Orlando, FL, U.S.A</i>	Jan.2006 – May 2010
Intern & Master Thesis Student Marconi Communications GmbH <i>Department of RF and Microwave Component Design Backnang, Germany</i>	Sep.2004 – Oct.2005

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

MANUSCRIPTS UNDER REVIEW/PREPARATION (2)

1. A. Imeri, and **S. A. Reza**, “Automating commercial focal length measurement techniques through an active beam control,” Under Review in *OSA Journal of Optical Society of America A (JOSA A)*.
2. M. Kim, A. Krajecki, and **S. A. Reza**, “Diffuse interferometry: realizing optically efficient, scalable, and cost-effective interferometers with engineered diffusers,” Under Preparation.

PUBLISHED/ACCEPTED ARTICLES (36)

1. M. Kim, A. Imeri, and **S. A. Reza**, “Measuring the radius of curvature of spherical surfaces with actively controlled Fizeau and Twyman-Green Interferometers,” *Applied Optics*. 63(15), 4077 – 4087, 2024. <https://doi.org/10.1364/AO.519083>
2. M. Kim, A. Krajecki, A. Imeri, and **S. A. Reza**, “How good are collimated Gaussian beams produced from engineered diffusers?” *Applied Optics* 63(12), 3304-3316, 2024. <https://doi.org/10.1364/AO.517705>
3. T. Sultan, **S. A. Reza**, and A. Velten, “Towards a More Accurate Light Transport Model for Non-Line-Of-Sight Imaging,” *Optics Express* 32(5), 7731-7761, 2024. <https://doi.org/10.1364/OE.508034>
4. M. Syed, **S. A. Reza**, P. D. Miller, and B. Roop, “Magneto-Optical Characterization of TCO Films using Standard and Enhanced Cavity Configurations,” *AIP Advances* 14(2), 2024. <https://doi.org/10.1063/9.0000751>
5. A. Imeri, and **S. A. Reza**, “A low-loss tunable beam collimator and expander assembly with no moving parts using an engineered diffuser and varifocal lenses,” *JOSA A* 40(7), 1434-1442, 2023. <https://doi.org/10.1364/JOSAA.489081>
6. **S. A. Reza**, and A. Imeri, “Simultaneous thickness and phase index measurements with a motion-free actively tunable Twyman–Green interferometer,” *Applied Optics* 62(15), 3948-3958, 2023. <https://doi.org/10.1364/AO.489084>
7. A. Imeri, and **S. A. Reza**, “Robust, motion-free optical characterization of samples using actively-tunable Twyman–Green interferometry,” *Nature Scientific Reports* 13(1), 5678, 2023. <https://doi.org/10.1038/s41598-023-32791-2>
8. M. La Manna, J. H. Nam, **S. A. Reza**, and A. Velten, “Non-line-of-sight imaging using dynamic relay surfaces,” *Optics Express*, 28(4), 5331-5339, 2020. <https://doi.org/10.1364/OE.383586>
9. **S. A. Reza**, M. La Manna, S. Bauer and A. Velten, “Phasor field waves: Experimental validation of wave-like properties,” *Optics Express*, 22(28), 32587-32608, 2019. <https://doi.org/10.1364/OE.27.032587>
10. **S. A. Reza**, M. La Manna, and A. Velten, “Phasor field waves: A Huygens-like light transport model for non-line-of-sight imaging applications,” *Optics Express*, 27(20), 29380-29400, 2019. <https://doi.org/10.1364/OE.27.029380>
11. X. Liu, I. Guillen, M. La Manna, J. H. Nam, **S. A. Reza**, T. H. Le, D. Gutierrez, A. Jarabo and A. Velten, “Non-line-of-sight imaging using phasor-field virtual wave optics,” *Nature* 572(7771), 620-623, 2019. <https://doi.org/10.1038/s41586-019-1461-3>
12. J. Lee, J. Chacko, B. Dai, **S. A. Reza**, A. Sagar, K. Eliceiri, A. Velten, and M. Gupta, “Coding scheme optimization for fast fluorescence lifetime imaging,” *ACM Transactions on Graphics*, 38(3), 26, 2019. <https://doi.org/10.1145/3325136>
13. T. S. Khwaja and **S. A. Reza**, “Low-cost profiling of Gaussian beams with circular irises and apertures,” *Applied Optics*, 58(4), 1048-1056, (2019). **(Selected as an OSA Spotlight Article)** <https://doi.org/10.1364/AO.58.001048>
14. **S. A. Reza**, T. S. Khwaja and H. Suleman, “A dual-mode variable optical power splitter using a digital spatial light modulator and a variable focus lens,” *Elsevier Optical Fiber Technology*, 47, 118-125, 2019. <https://doi.org/10.1016/j.yofte.2018.11.031>

15. **S. A. Reza**, T. S. Khwaja, M. A. Mazhar, H. K. Niazi, "Regression-based technique for improved optical rangefinding using tunable focus lenses," *Applied Optics*, 57(20), 5703-5713, (2018). <https://doi.org/10.1364/AO.57.005703>
16. T. S. Khwaja, **S. A. Reza** and M. Sheikh, "A liquid lens switching-based motionless variable fiber-optic delay line," *Elsevier Optical Fiber Technology*, 42, 29-33, (2018). <https://doi.org/10.1016/j.yofte.2018.02.010>
17. **S. A. Reza**, T. S. Khwaja, M. A. Mazhar, H. K. Niazi and R. Nawab, "An improved laser-based triangulation sensor with enhanced range and resolution through adaptive optics-based active beam control," *Applied Optics*, 56(21), 5996-6006, (2017). <https://doi.org/10.1364/AO.56.005996>
18. H. Rathore, M. Sheikh, U. Javid, H. Ahmed and **S. A. Reza**, "High efficiency measurement of all orbital angular momentum modes in a light beam," *JOSA B*, 34(7), 1444-1449, (2017). <https://doi.org/10.1364/JOSAB.34.001444>
19. **S. A. Reza**, and M. A. Arshad, "A novel method of wireless data transfer through a variable focus lens-induced irradiance modulation of a Gaussian beam," *IEEE Access* 5, 1129-1136, (2017). <https://doi.org/10.1109/ACCESS.2017.2651804>
20. **S. A. Reza** and A. Anjum, "Robust motion-free and error-correcting method of estimating the focal length of a lens," *OSA Applied Optics*, 56(2), 342-353, (2017). <https://doi.org/10.1364/AO.56.000342>
21. **S. A. Reza**, T. S. Khawaja, M. Sheikh, "A tunable focus lens-based variable optical delay line for free-space and fiber-optic applications," *IEEE Photonics Technology Letters*, 28(21), 2423-2426, (2016). <https://doi.org/10.1109/LPT.2016.2598061>
22. **S. A. Reza** and M. Qasim, "Nonbulk motion system for simultaneously measuring the refractive index and thickness of a sample using tunable optics and spatial signal processing," *Applied Optics*, 55(2), 368-378, (2016). <https://doi.org/10.1364/AO.55.000368>
23. A. Anjum, **S. A. Reza** and M. A. Ahsan, "A non-invasive remote pressure sensor design for extreme environments using tunable optics with conventional manometry," *IEEE Sensors Journal*, 16(8), 2411-2424, (2016). <https://doi.org/10.1109/JSEN.2016.2521831>
24. M. Qasim and **S. A. Reza**, "Toward the design of a motion-free tunable coupling module for varying spatial beam profiles - Foundations of optimal coupling of a Gaussian mode into a fiber collimator with a dynamic two-lens system," *Applied Optics*, 54(31), 9242-9252, (2015). <https://doi.org/10.1364/AO.54.009242>
25. N. A. Riza, **S. A. Reza** and P. J. Marraccini, "Digital micro-mirror device-based broadband optical image sensor for robust imaging applications," *Elsevier Optics Communication*, 284(1), 103-111, (2011). <https://doi.org/10.1016/j.optcom.2010.08.078>
26. N. A. Riza, **S. A. Reza** and P. J. Marraccini, "Electronically agile lens-based broadband variable photonic delay line for photonic and RF signal processing," *Applied Optics*, 49(35), 6718-6725, (2010). <https://doi.org/10.1364/AO.49.006718>
27. **S. A. Reza** and N. A. Riza, "Agile lensing-based non-contact liquid level sensor for extreme environments," *Elsevier Optics Communication*, 283(18), 3391-3397, (2010). <https://doi.org/10.1016/j.optcom.2010.03.043>
28. N. A. Riza and **S. A. Reza**, "Smart agile lens remote sensor for three-dimensional object shape measurements," *Applied Optics*, 49(7), 1139-1150, (2010). <https://doi.org/10.1364/AO.49.001139>
29. N. A. Riza and **S. A. Reza**, "Non-contact distance sensor using spatial signal processing," *Optics Letters*, 34(4), 434-436, (2009). <https://doi.org/10.1364/OL.34.000434>
30. **S. A. Reza** and N. A. Riza, "High dynamic range variable fiber optical attenuator using digital micromirrors and optofluidics," *IEEE Photonics Technology Letters*, 21(13), 845-847, (2009). <https://doi.org/10.1109/LPT.2009.2019118>

31. **S. A. Reza** and N. A. Riza, "A liquid lens-based broadband variable fiber optical attenuator," *Elsevier Optics Communication*, 282(7), 1298-1303, (2009). <https://doi.org/10.1016/j.optcom.2008.12.029>
32. N. A. Riza and **S. A. Reza**, "High-dynamic-range hybrid analog–digital control broadband optical spectral processor using micromirror and acousto-optic devices," *Optics Letters*, 33(11), 1222-1224, (2008). <https://doi.org/10.1364/OL.33.001222>
33. N. A. Riza and **S. A. Reza**, "High-dynamic-range hybrid analog–digital control broadband optical spectral processor using micromirror and acousto-optic devices," *OSA Virtual Journal for Biomedical Optics*, 3(7), (2008). (Reproduced from Optics Letters paper with same title) https://opg.optica.org/vjbo/virtual_issue.cfm?vid=61
34. N. A. Riza and **S. A. Reza**, "Broadband all-digital variable fiber-optic attenuator using digital micromirror device," *IEEE Photonics Technology Letters*, 19(21), 1705-1707, (2007). <https://doi.org/10.1109/LPT.2007.905202>
35. N. A. Riza and **S. A. Reza**, "Smart value-added fiber-optic modules using spatially multiplexed processing," *Applied Optics*, 46(18), 3800-3810, (2007). <https://doi.org/10.1364/AO.46.003800>
36. N. A. Riza and **S. A. Reza**, "Hybrid analog-digital design MEMS spectral processor for simultaneous gain slope and channel equalization controls," *Optical Engineering*, 46(3), 030501, (2007). <https://doi.org/10.1117/1.2717129>

ARTICLES IN CONFERENCE PROCEEDINGS / CONFERENCE PRESENTATIONS

PUBLISHED PAPERS (30)

1. P. D. Miller, and B. Roop, M. Syed, and **S. A. Reza**, "Multi configuration characterization of complex magneto-optic nanoparticle response," in *SPIE Optics + Photonics*, San Diego, 2024. **(Invited Speaker)**
2. M. Kim, A. Imeri, and **S. A. Reza**, "High optical throughput interferometry with engineered diffusers," in *SPIE Optics + Photonics*, San Diego, 2024. (Poster)
3. P. D. Miller, and B. Roop, M. Syed, and **S. A. Reza**, "Higher Harmonic Magnetic Nanoparticle Characterization using AC Faraday Rotation," in *APS March Meeting*, Minnesota 2024. (Poster)
4. B. Roop, P. D. Miller, M. Syed, and **S. A. Reza**, "Magnetic Nanoparticle Characterization using AC Faraday Rotation," in *APS March Meeting*, Minnesota 2024. (Poster)
5. M. Syed, **S. A. Reza**, P. D. Miller, and B. Roop, "Magneto Optical Characterization of TCO Films using Standard and Enhanced Cavity Configurations," in *IEEE Magnetics and Magnetic Materials Conference*, Dallas 2023. (Poster)
6. C. Brelage, M. Syed, and **S.A. Reza**, "Resonant Cavity Design for Enhanced Magneto Optic Measurements," in *SPIE Optics + Photonics*, San Diego, 2023. (Poster)
7. M. Kim, A. Krajecki, A. Imeri, and **S. A. Reza**, "Characterization of collimation quality of Gaussian beams obtained from engineered diffusers," in *SPIE Optics + Photonics*, San Diego, 2023. (Poster)
8. M. Kim, A. Imeri, and **S. A. Reza**, "Fizeau interferometry-based motion-free characterization of surface radius of curvature using actively controlled varifocal optics," in *SPIE Optics + Photonics*, San Diego, 2023. (Oral)
9. C. Joenathan, S. Granieri, A. Siahmakoun, H. Alisafae, and **S. A. Reza**, "35 years of Optics: from optical sciences to optical engineering – 3 cycles of ABET accreditation," in *SPIE ETOP*, Orlanda, 2023. (Oral)
10. A. Imeri, and **S. A. Reza**, "Tunable Twyman-Green Interferometry for Motion-Free Simultaneous Thickness and Refractive Index Measurements," in *IEEE/Optica/APS CLEO*, 2023. (Oral)
11. **S. A. Reza**, and A. Imeri, "An adaptive Twyman-Green interferometer for motion-free characterization of sample thickness or refractive index," in *OSA Adaptive Optics and Applications*, pp. OTh5B-1, Vancouver, 2022. (Oral)

12. A. Imeri, and **S. A. Reza**, "Low-loss tunable beam magnification with a light-shaping diffuser and an adaptive lens," *OSA 3D Image Acquisition and Display: Technology, Perception and Applications*, pp. JTh2A-4, Vancouver, 2022. (Poster)
13. A. Imeri, and **S. A. Reza**, "Upgrading Interferometric focal length measurement techniques with adaptive optics," in *OSA Adaptive Optics and Applications*, pp. JTh2A-5, Vancouver, 2022. (Poster)
14. **S. A. Reza**, M. La Manna, S. Bauer, and A. Velten. "Experimental validation of phasor field properties for non-line-of-sight imaging," in *OSA Computational Optical Sensing and Imaging*, pp. CTh5C-5, Virtual 2020. (Oral)
15. **S. A. Reza**, S. Bauer, and A. Velten. "A statistical treatment of phasor fields for a partially-coherent optical carrier." in *OSA Computational Optical Sensing and Imaging*, pp. CTh4C-4, Virtual 2020. (Oral)
16. J. Lee, J. Chacko, B. Dai, **S. A. Reza**, A. Sagar, K. Eliceiri, A. Velten, and M. Gupta, "Coding scheme optimization for fast fluorescence lifetime imaging," *ACM Siggraph*, Los Angeles, CA, 2019. (Poster)
17. F. Gutierrez, **S. A. Reza**, A. Velten and M. Gupta, "Practical coding function design for time-of-flight imaging," *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pp. 1566-1574, 2019. (Poster)
18. M. Sheikh, H. Rathore, S. A. Rehman, U. Javid, H. Ahmed and **S. A. Reza**, "High efficiency Laguerre-Gauss (LG) spectrum measurement using variable focus lenses," in *OSA Adaptive Optics: Analysis, Methods & Systems*, pp. OW3JI-3, Orlando, FL, U.S.A, (2018). (Oral)
19. **S. A. Reza**, M. La Manna and A. Velten, "Imaging with phasor fields for non-line-of sight applications," in *OSA Computational Optical Sensing and Imaging*, pp. CM2E-7, Orlando, FL, U.S.A, (2018). (Oral)
20. T. S. Khwaja, M. A. Mazhar, H. K. Niazi and **S. A. Reza**, "A high-resolution optical rangefinder using tunable focus optics and spatial photonic signal processing," *SPIE Digital Technologies Conference*, Paper No.10335-27, Munich, Germany, (2017). (Oral)
21. M. A. Arshad, M. Ahsan and **S. A. Reza**, "An efficient method to improve speed-of-focus of electronically tunable lenses for optical systems using Gaussian beams," *SPIE Digital Technologies Conference*, Paper No.10335-68, Munich, Germany, (2017). (Poster)
22. T. S. Khwaja, H. Suleman and **S. A. Reza**, "MEMS and agile optics-based dual-mode variable optical power splitter with no moving parts," *SPIE Digital Technologies Conference*, Paper No.10335-69, Munich, Germany, (2017). (Poster)
23. M. A. Arshad, **S. A. Reza**, and M. Ahsan, "Data transfer through beam steering using agile lensing," *SPIE Photonics Europe, Optical Modeling and Design IV*, Proc. of the SPIE, Vol.9889, pp.988929, Brussels, Belgium, (2016). (Oral)
24. A. Cordes, G. Mueller, D. B. Tanner, P. Arsenovic, J. Livas, A. Preston, J. Sanjuan, **S. A. Reza**, S. Mitryk, J. Eichholz, A. Spector, D. Donelan, R. Spannagel and D. Korytov, "Laser stabilization and material studies for the laser interferometer space antenna (LISA)," *American Astronomical Society AAS Meeting 218* 331.04, Bulletin of the American Astronomical Society, Vol.43, (2011). (Poster)
25. Y. Yu, S. Mitryk, D. Sweeney, A. Spector, J. Eichholz, D. Donelan, A. Preston, J. S. Munoz, **S. A. Reza**, D. Tanner and G. Mueller, "Laser noise stabilization, processing, and extraction simulations for the LISA mission at the University of Florida," *American Astronomical Society, AAS Meeting 218* 331.10, Bulletin of the American Astronomical Society, Vol.43, (2011). (Poster)
26. D. Donelan, S. Mitryk, **S. A. Reza**, J. Sanjuan and G. Mueller, "Development and analysis of micro-cycle phase measurements for LISA," *American Physical Society, 77th Annual Meeting of the Southeastern Section of the APS*, October 20-23, (2010). (Poster)
27. N. A. Riza and **S. A. Reza**, "Non-contact opto-fluidic liquid level sensor for harsh environments," *Photonics in the Transportation Industry: Auto to Aerospace III.*, Proceedings of the SPIE, Volume 7675, pp. 767504-767504-7, Orlando, U.S.A, (2010). (Oral)

28. **S. A. Reza** and N. A. Riza, “Variable fiber-optic attenuator using optofluidics,” *Enabling Photonics Technologies for Defense, Security, and Aerospace Applications V*, Proceedings of the SPIE, Volume 7339, pp. 73390C-73390C-5, Orlando, U.S.A., (2009). (Oral)
29. N. A. Riza and **S. A. Reza**, “Programmable fiber optic splitters using distributed optical MEMS”, *Enabling Photonics Technologies for Defense, Security, and Aerospace Applications III.*, Proceedings of the SPIE, Volume 6572, pp. 65720P, Orlando, U.S.A., (2007). (Oral)
30. **S. A. Reza** and O. Kouete, “System realizing the TD-PSOLA algorithm for low level speech synthesis for real-time applications”, *FIT Frontiers of Information Technology*, Islamabad, Pakistan, (2004). (Oral)

RESEARCH ADVISING AND MENTORING

PhD ADVISOR

- Tariq S. Khwaja, ‘Adaptive Optical Beam Control for Rangefinders and Delay Lines’. (LUMS 2013 – 2018)

MS ADVISOR

- Cody Brelage, ‘Design of a Resonant Optical Cavity for Imaging Magneto-Optically Active Thin Film Samples’. (RHIT 2022 - 23)
- Minjae Kim, ‘Optical Metrology and Beam Shaping using Active Lenses and Engineered Diffusers’. (RHIT 2022-23)
(RHIT Outstanding MS Thesis Award)

DISSERTATION COMMITTEE MEMBER

Alfred Moore, MSc Thesis, “Engineering Silicon Metalenses in Wide Field Reverse-Telephoto Optical Systems for Long-Wave Infrared Thermal Imaging,” RHIT, 2024.

UNDERGRADUATE RESEARCH STUDENTS

- William Amory RHIT 2023 – Present
- Haoxiang Lu RHIT 2023 – Present
- Andy Krajecki RHIT 2023
- Elijah Johnson RHIT 2023
- Bryce Roop RHIT 2023 – 2024
- Arjent Imeri RHIT 2021 – 2024 (PhD student at the University of Central Florida)
- Peyton Miller | RHIT 2022 – 2024 (PhD student at the University of Illinois and Urbana-Champaign)
- Cody Brelage | RHIT 2021 – 2023 (CRANE Naval Support)
- Elizabeth Canon | RHIT 2021 – 2022 (Last Known: MIT Lincoln Labs)
- Assad Arshad | LUMS 2015-2016 (PhD Friedrich Schiller University, Jena, Germany)
- Haris Khan Niazi | LUMS 2015 – 2016 (MS in Optics from University of Arizona)
- Rahma Nawab | LUMS 2015 – 2016 (PhD in Optical Science from UNC-Charlotte)
- Mohsin Ali Mazhar | LUMS 2015 – 2016 (PhD from University College Cork, Ireland)
- Arslan Anjum | LUMS 2013-2015 (MS in Photonics from McGill University, Canada)
- Muhammad Qasim | LUMS 2014-2015 (PhD Fellow at Max Planck Institute of Quantum Optics)

UNDERGRADUATE SENIOR YEAR PROJECT (CAPSTONE DESIGN) ADVISING

- *Ophthalmic Measurements using Machine Learning* | RHIT 2023 - 24 (Client: Innovations Foresight LLC)
- *Improved SNR in Near IR Interferometric Measurements* | RHIT 2023-2024 (Client: CRANE Naval Support)
- *Optical Range Finding with Homographic PIDAR* | RHIT 2022 - 23 (Client: LHP LLC)
- *Optical Plaque Design and Illumination Testing Device* | RHIT 2022 - 23 (Client: Valeo)
- *Variable Optical Collimator* | RHIT 2021 – 22 (Client: ZOOX)
- *Measuring Veinous Doppler Pressure in the Human Eye* | RHIT 2020 - 21 (Client: Univ. of Nebraska Medical Center)
- *Optical Power Splitters using Agile Optics and Digital MEMS* | LUMS, 2016-2017
- *A Hybrid Target Ranging Method using Tunable Optics and Conventional Triangulation* | LUMS, 2015-2016
- *Super Resolution Microscopy using Random Media* | LUMS 2014-2015
- *Optical Irradiance Modulation using Agile and Tunable Optics* | LUMS, 2014-2015

- *Super-Resolution Microscopy using Random Media* | LUMS, 2013-2014
- *Complex Terrain Mapping and Ranging using Tunable Optics* | LUMS, 2013-2014.
- *An Optical Delay Line Analysis using Agile Optics* | LUMS, 2013-2014

TEACHING EXPERIENCE

UNDERGRADUATE TEACHING

- Photonic Devices and Systems, RHIT
- Linear Optical Systems, RHIT
- Introductory Physics, RHIT
- Electromagnetic Fields and Waves, LUMS
- Optical Engineering, LUMS
- Principles of Optics, LUMS
- Junior Capstone Design, RHIT
- Senior Capstone Design, RHIT

GRADUATE TEACHING

- Optical Metrology Labs, RHIT
- Optical Communications, LUMS
- Opto-Electronic Devices, LUMS
- Interference and Diffraction, TA, UCF

LABORATORY DEVELOPMENT EXPERIENCE

- **Lahore University of Management Sciences**
Developed the Applied Optics Laboratory at the Department of Electrical Engineering at LUMS, Pakistan. The lab was one of the first optics research laboratory in a private Pakistani educational institution.
- **Rose-Hulman Institute of Technology**
I have developed the Rose Imaging and Metrological Systems (RIMS) Lab at RHIT. This lab is equipped with modern optical equipment and tools geared toward research in optical sensing and metrological systems.

AWARDS AND HONORS

- Recipient of the SPIE Graduate Student Award for potential impact in future optical engineering, 2010.
- Recipient of the CREOL Fellowship at the College of Optics & Photonics, UCF, U.S.A.
- Recipient of the Graduate Student Scholarship for entire duration of doctoral studies at UCF, U.S.A.

PRESENTATIONS AND INVITED TALKS

- Invited Speaker at the SPIE Optics + Photonics, San Diego, August 2024.
- Presenter at the SPIE Optics + Photonics, San Diego, August 2023.
- Speaker at the SPIE ETOP conference, Orlando, Florida, May 2023.
- Speaker at the OSA Applied Optics Congress, Vancouver, Canada, June 2020. (Held Virtually)
- Speaker at the OSA Applied Optics Congress, Orlando, Florida, June 2018.
- Benazir Bhutto Chair Speaker at the Lahore College for Women University, 2016.
- Distinguished Bol Speaker at Faiz Gher, Lahore, 2016.
- Invited Colloquium Speaker at National University of Science and Technology (NUST), December 2015.
- Speaker at Akhuwat (an NGO for social welfare), Lahore 2013.
- Seminar Speaker at Lahore University of Management Sciences (LUMS), July 2011.
- Speaker at the SPIE Defense and Security Symposium, Orlando, Florida, April 2010.
- Speaker at the Department of Physics, University of Florida, January 2010.
- Speaker at the SPIE Defense and Security Symposium, Orlando, Florida, April 2009.
- Speaker at the SPIE Defense and Security Symposium, Orlando, Florida, April 2007.

PROFESSIONAL SERVICE

JOURNAL REVIEWER

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| <ul style="list-style-type: none">• Applied Optics• Optics Express• Optics Letters• AIP Review of Scientific Instruments• IEEE Sensors Journal | <ul style="list-style-type: none">• Elsevier Optics Communications• Elsevier Measurement• IEEE Photonics Journal• IEEE Access• Springer Journal of Sensing and Imaging |
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