

Himanshu Ranjan Das, B.Tech, M.Tech, Ph.D.

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Employment History

- 2022 – 2025 (July) **Faculty**, Department of Electronics and Communication Engg., School of Engineering, Central University of Karnataka, Karnataka, India.
- 2025 (August) – Till Date **Assistant Professor**, Department of Electronics and Communication Engg., Haldia Institute of Technology, Haldia, West Bengal, India.

Education

- 2015 – 2021 **Ph.D. in Electronics and Communication Engineering.**
North-Eastern Hill University (A Central University), India.
Thesis title: *Design of Directional Coupler Based Silicon Optical Modulator.*
- 2013 – 2015 **M.Tech. in Electronics Engineering.**
Pondicherry University (A Central University), India.
Thesis title: *Design and Analysis of Microelectromechanical Tunable Capacitor.*
- 2009 – 2013 **B.Tech. in Electronics and Communication Engineering.**
Dibrugarh University Institute of Engineering and Technology, Dibrugarh University, India.

Research Interest

- 📌 Optical Waveguides.
- 📌 Plasmonics.
- 📌 Electro-absorption Modulators.
- 📌 Silicon Photonics.
- 📌 MEMs.

Research Publications (Only SCI and Scopus indexed)

Journal Articles

- 1 K. K. Ghosh, H. Mondal, **Himanshu R. Das**, B. Saikia, M. Soroosh, and E. Adibnia, "Design and numerical analysis of 4-inputs all-optical XOR gate in optical waveguides," *Journal of Optics*, pp. 1–15, 2025. 🌐 DOI: <https://doi.org/10.1007/s12596-025-02528-7>, (Scopus, IF=2.5).
- 2 K. K. Ghosh, H. Mondal, **Himanshu R. Das**, M. Soroosh, S. Majumder, and B. Saikia, "Power optimization of 1:2 and 1:4 photonic crystal-based optical power splitters/combiners using machine learning algorithms," *Results in Optics*, p. 100 858, 2025. 🌐 DOI: <https://doi.org/10.1016/j.rio.2025.100858>, (Scopus, IF=3.0).
- 3 **Himanshu R. Das** and H. Mondal, "High-speed polymer-buried electro-absorption modulator based on indium-tin-oxide epsilon-near-zero material," *Optical Engineering*, vol. 64, no. 1, pp. 017 103–017 103, 2025. 🌐 DOI: <https://doi.org/10.1117/1.OE.64.1.017103>, (SCI, Scopus, IF=1.2).

- 4 **Himanshu R. Das** and H. Mondal, "Plasmonic integrated electro-absorption modulator on an SiO₂ platform for advanced photonic systems," *Applied Optics*, vol. 64, no. 24, pp. 7262–7270, 2025.  DOI: <https://doi.org/10.1364/AO.568374>, (SCIE, Scopus, IF=1.7).
- 5 **Himanshu R. Das** and H. Mondal, "Plasmonic switch based on polymer buried indium-tin-oxide utilizing surface plasmon polariton transmission for PICs," *Materials Science and Engineering: B*, vol. 313, p. 117 963, 2025.  DOI: <https://doi.org/10.1016/j.mseb.2024.117963>, (SCIE, Scopus, IF=4.6).
- 6 **Himanshu R. Das**, H. Mondal, S. Bhattarai, M. Soroosh, and E. Adibnia, "Analysis of dual layer plasmonic switch utilizing ITO and graphene for photonic integrated circuits," *Plasmonics*, 2025.  DOI: <https://doi.org/10.1007/s11468-025-03120-2>, (SCIE, Scopus, IF=4.3).
- 7 **Himanshu R. Das**, H. Mondal, and R. Kumar, "Realization of compact high-performance eam based on numerical analysis of ITO, VO₂ and graphene on SiO₂ platform," *IEEE Transactions on Nanotechnology*, 2025.  DOI: 10.1109/TNANO.2025.3552525, (SCIE, Scopus, IF=2.5).
- 8 A. Sultana, H. Mondal, **Himanshu R. Das**, M. Soroosh, and S. Bhattarai, "A review on photonic crystal based components of all-optical ALU," *Journal of Optics*, 2025.  DOI: <https://doi.org/10.1007/s12596-025-02794-5>, (Scopus, IF=2.5).
- 9 A. Sultana, H. Mondal, **Himanshu R. Das**, M. Soroosh, and S. Bhattarai, "Recent advances in photonic crystal-based encoder and decoder designs: A comprehensive review," *The European Physical Journal Plus*, 2025.  DOI: <https://doi.org/10.1140/epjp/s13360-025-06495-7>, (SCIE, Scopus, IF=2.9).
- 10 **Himanshu R. Das**, "Investigation of dual-layer Si-ITO-dielectric based hybrid plasmonic electro-absorption modulator at 1.55 μm wavelength," *Fiber and Integrated Optics*, vol. 43, no. 4, pp. 162–177, 2024.  DOI: <https://doi.org/10.1080/01468030.2024.2392099>, (SCIE, Scopus, IF=2.3).
- 11 **Himanshu R. Das**, "Plasmonic-based electro-absorption modulator integrated with different dielectric materials at 1.55 μm wavelength," *e-Prime-Advances in Electrical Engineering, Electronics and Energy*, vol. 9, p. 100 706, 2024.  DOI: <https://doi.org/10.1016/j.prime.2024.100706>, (Scopus, CiteScore=4.2).
- 12 **Himanshu R. Das** and H. Mondal, "Graphene-integrated ITO-based hybrid plasmonic electro-absorption modulator at 1.55 μm wavelength," *Journal of Modern Optics*, vol. 71, no. 19-21, pp. 771–780, 2024.  DOI: <https://doi.org/10.1080/09500340.2025.2456976>, (SCI, Scopus, IF=1.2).
- 13 **Himanshu R. Das** and H. Mondal, "Investigation of plasmonic material-based T-shaped high extinction ratio electro-absorption modulator with different dielectric materials," *Optik*, vol. 313, p. 171 985, 2024.  DOI: <https://doi.org/10.1016/j.ijleo.2024.171985>, (Scopus, CiteScore=8.3).
- 14 **Himanshu R. Das** and S. C. Arya, "Investigation of a V-shaped ITO-plasmonic material based electro-absorption modulator for PIC and high-speed optical communication systems," *Journal of Modern Optics*, vol. 68, no. 8, pp. 440–449, 2021.  DOI: <https://doi.org/10.1080/09500340.2021.1909158>, (SCI, Scopus, IF=1.2).
- 15 **Himanshu R. Das** and S. C. Arya, "Performance improvement of VO₂ and ITO based plasmonic electro-absorption modulators at 1550 nm application wavelength," *Optics Communications*, vol. 479, p. 126 455, 2021.  DOI: <https://doi.org/10.1016/j.optcom.2020.126455>, (SCIE, Scopus, IF=2.5).
- 16 **Himanshu R. Das** and S. C. Arya, "Modified sidewall angled silicon waveguide for enhanced performance of ITO-assisted electro-absorption modulator at 1550 nm wavelength," *Optik*, vol. 202, p. 163 694, 2020.  DOI: <https://doi.org/10.1016/j.ijleo.2019.163694>, (Scopus, CiteScore=8.3).

Conference Proceedings

- 1 **Himanshu R. Das** and S. C. Arya, "Design of si based cross-slot waveguide," in *Proceedings of International Conference on Recent Trend in Photonics*, NPS, CUSAT, Cochin, India, 2021.

- 2 **Himanshu R. Das** and S. C. Arya, "Ito/hfo₂ based hybrid silicon electro-optical modulator," in *Proceedings of 2nd International Conference on Advances in Electrical, Electronic and System Engineering (ICAEESE)*, Guwahati University, Guwahati, India, 2019.
- 3 **Himanshu R. Das** and S. C. Arya, "Design of ITO based hybrid silicon optical modulator," in *3rd International Conference on Microwave and Photonics (ICMAP), IIT (ISM) Dhanbad*, IEEE, 2018.
- 4 **Himanshu R. Das** and S. C. Arya, "Design and analysis of silicon optical modulator based on two-core hybrid plasmonic directional coupler," in *Proceedings of 3rd International Conference on Opto-Electronics and Applied Optics (OPTRONIX)*, Institute of Engineering and Management, Kolkata, India, 2016.
- 5 **Himanshu R. Das** and S. C. Arya, "Design of silicon optical modulator based on tunable hybrid plasmonic directional coupler," in *Proceedings of National Conference on Recent Advances in Nanoscience and Nanotechnology (NCRANNT)*, NEHU, Shillong, India, 2016.
- 6 **Himanshu R. Das** and S. C. Arya, "Characterization of mems electrostatic comb drive with six movable comb fingers using different structural parameters," in *International Conference on Electronic Devices, Circuits, Applied Electronics and Communication Technology (EDCAECT)*, Guwahati University, Guwahati, India, 2015.
- 7 **Himanshu R. Das** and R. Nakkeeran, "Analysis of MEMS electrostatic comb drive with polysilicon as the structural material," in *2015 International Conference on Computing and Communications Technologies (ICCCCT)*, IEEE, 2015, pp. 233–236.

Books and Chapters

- 1 **Himanshu R. Das**, I. Daimary, and S. C. Arya, *Coupling Characteristic of Silicon-Based Optical Directional Coupler*. Singapore: Lecture Notes in Networks and Systems, Springer, 2018, ISBN: 978-981-10-6890-4.

Skills

Coding	■ C, C++, VHDL, Verilog, $\LaTeX$.
Softwares	■ COMSOL Multiphysics, Xilinx, Matlab, Vivado.
Misc.	■ Academic research, teaching, training, consultation, $\LaTeX$ typesetting and publishing.

Miscellaneous Experience

Awards and Achievements

- 2017 ■ **RGNF Fellowship**, Rajiv Gandhi National Fellowship by UGC for Ph.D.
- 2016 ■ **Best Paper Award**, 3rd International Conference on Opto-Electronics and Applied Optics (OPTRONIX-2016).

Seminar/Workshop/FDP Attended

- 2025 ■ 7 Days (Online) Faculty Development Programme on **Empowering Innovations: Advancing Knowledge and Practices in Intellectual Property Rights**. Organised by Department of Law, Central University of Karnataka.
- 2023 ■ Five days workshop entitled **Next Generation Wireless and Biological (Wi-Bi) Communications**. Organized by IIIT Sri City, Andhra Pradesh.

Miscellaneous Experience (continued)

- Five days online Faculty Development Program (FDP) on **Research Trends in Optical Technologies and its Applications (RTOTA- 2023)**. Organized by the School of Electronics Engineering, Vellore Institute of Technology, Chennai.
- 2021 ■ Participated in the **Short Term Course on Recent Advances in RF and Photonics**, conducted by Department of Electronics and Electrical Engineering, IIT Guwahati under the Technical Education Quality Improvement Programme (TEQIP) sponsored by the Ministry of Human Resource Development, Government of India, held on 22-26 February.
- 2020 ■ Attended the Five-Day Faculty Development Program on **Recent Trends in Nanoelectronics and Optoelectronics (RNO-2020)**, conducted by Department of Electronics and Communication Engineering, National Institute of Technology (NIT) Karnataka, TEQIP-III Sponsored, during 12- 16th October.
- Attended the Short-term course on **Photonics and Photovoltaics: Devices, Circuits, and Metrology**, conducted by Department of Electronics and Electrical Engineering, IIT Guwahati under the Quality Improvement Programme (QIP) sponsored by AICTE / Ministry of Human Resource Development, Government of India, during December 11-24th.
- 2019 ■ Attended the **Advance Training Program on Nanofabrication and Characterization Techniques**, conducted by Indian Nanoelectronics Users Programme (INUP) held in IISc Bangalore, 03-13th December.
- 2020 ■ Attended the **3D Printing and Design** workshop, organized by the department of Biomedical Engg., NEHU, Shillong, 02-06th March.
- 2017 ■ Attended the **Internet of Things: It's Inside-Out** workshop, organized by the department of Information Technology, NEHU, Shillong, 12-13th May.
- 2016 ■ Attended the **COMSOL Multiphysics Intensive Training** workshop, organized at the department of Electronics and Communication Engg., NEHU, Shillong, 07-11th Nov.

References

Prof. Subhash C. Arya (Ph.D, IIT Dhanbad)
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Declaration

I do hereby declare that the information given above is true to the best of my knowledge and belief.

Dr Himanshu Ranjan Das
Date: 25.08.2025