Dr. Sajid Muhaimin Choudhury

Associate Professor, Department of EEE, BUET

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Brief Biography

RenderCV is a LaTeX-based CV/resume version-control and maintenance app. It allows you to create a high-quality CV or resume as a PDF file from a YAML file, with **Markdown syntax support** and **complete control over the LaTeX code**.

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Education

Ph.D. — **Purdue University**, West Lafayette, IN, USA — Aug 2013 – Aug 2019
School of Electrical and Computer Engineering

- **Ph.D. Thesis:** WAVEFRONT MANIPULATION WITH META-SURFACES BASED ON NEW MATERIALS
- **Ph.D. Co-supervisor(s):** Alexandra Boltasseva and Alexander Kildishev

M.Sc. — **Bangladesh University of Engineeing and Technology (BUET)** — Aug 2011 – 2013
Department of Electrical and Electronic Engineering

- **M.Sc. Engg. Thesis:** Design of a Fractal Antenna based on Hexaflake Fractal Structure
- **M.Sc. Engg. Supervisor:** Dr. M. A. Matin

B.Sc. — **Bangladesh University of Engineeing and Technology (BUET)** — Dec 2004 – Aug 2010
Department of Electrical and Electronic Engineering

- CGPA: 3.94/4.0
- **Undergraduate Thesis:** Design and Analysis of a Multiband Dual Feed Axially Symmetric Cassegrain Antenna System
- **Undergraduate Supervisor:** Dr. M. A. Matin

H.S.C. — **Notre Dame College**, Dhaka — 2004

- GPA: 5.00/5.00

S.S.C. — **Udayan Uchchya Madhyamic Bidyalaya**, Dhaka — 2002

- GPA: 5.00/5.00

Experience

Associate Professor, Department of Electrical and Electronic Engineering (EEE) — July 2022 – to date
Bangladesh University of Engineering and Technology (BUET)

Assistant Professor, Department of Electrical and Electronic Engineering (EEE) — June 2013 – July 2022
Bangladesh University of Engineering and Technology (BUET)

Lecturer, Department of Electrical and Electronic Engineering (EEE) Jan 2010 – June 2013
Bangladesh University of Engineering and Technology (BUET)

Lecturer, Institute of Information and Communication Technology (IICT) Nov 2011 – Jan 2010
Bangladesh University of Engineering and Technology (BUET)

Publications

Journal Articles

[J24] M. M. Haque, M. R. Islam, and S. M. Choudhury. "Investigation of the physical properties through strain effect of monolayer silicon carbide material: DFT analysis". In: *Physica B: Condensed Matter* 697 (2025), p. 416670. DOI: https://doi.org/10.1016/j.physb.2024.416670. URL: https://www.sciencedirect.com/science/article/pii/S0921452624010111.

[J23] M. E. Karim, M. R. Karim, and S. M. Choudhury. "Synergizing deep learning and phase change materials for four-state broadband multifunctional metasurfaces in the visible range". In: *Optics & Laser Technology* 181 (2025), p. 111730. DOI: https://doi.org/10.1016/j.optlastec.2024.111730. URL: https://www.sciencedirect.com/science/article/pii/S0030399224011885.

[J22] M. A. H. Bhuiyan, P. Das, and S. M. Choudhury. "Polarization insensitive electrically reconfigurable metalens for the 2 µm wavelength". In: *Opt. Mater. Express* 14.12 (Dec. 2024), pp. 2830–2843. DOI: 10.1364/OME.540435. URL: https://opg.optica.org/ome/abstract.cfm?URI=ome-14-12-2830.

[J21] M. E. Karim and S. M. Choudhury. "Sb2S3/AlGaAs based Reconfigurable Metasurface for Dynamic Polarization and Directionality Control of Quantum Emitter Emission". In: *RSC Advances* 40 (2024). URL: https://doi.org/10.1039/D4RA03726J.

[J20] P. Mahmud, K. F. Supti, and S. M. Choudhury. "Lithium niobate photonic topological insulator-based multi-wavelength optical demultiplexer with piezoelectric switch-off". In: *Opt. Express* 32.26 (Dec. 2024), pp. 45786–45800. DOI: 10.1364/OE.541271. URL: https://opg.optica.org/oe/abstract.cfm?URI=oe-32-26-45786.

[J19] M. H. Himel, B. Sikder, T. Ahmed, and S. M. Choudhury. "Biomimicry in Nanotechnology: A Comprehensive Review". In: *NanoScale Advances* 5 (2023), pp. 595–614. URL: https://doi.org/10.1039/D2NA00571A.

[J18] M. E. Karim and S. M. Choudhury. "Reconfigurable Broadband Metasurface with Switchable Functionalities in the Visible Range". In: *Optical Materials Express* 13.5 (2023), pp. 1409–1423. URL: https://doi.org/10.1364/OME.489981.

[J17] M. A. H. Bhuiyan, S. A. Mitu, and S. M. Choudhury. "TiN-GST-TiN all-optical reflection modulator for the 2µm wave band reaching 85% efficiency". In: *Applied Optics* 61 (2022), pp. 9262–9270. URL: https://doi.org/10.1364/AO.470247.

[J16] H. Roy, E. Karim, S. Mondal, and S. M. Choudhury. "Custom Gold-Patterned Rewritable Optical Disc based Plasmonic Sensor for Blood Hemoglobin Detection". In: *Optics Continuum* 1.10 (2022). URL: https://doi.org/10.1364/OPTCON.473106.

[J15] Y. F. Abed, M. A. H. Bhuiyan, and S. M. Choudhury. "T Grating on Nano-Cavity Array based Refractive Index Sensor". In: *J. Opt. Soc. Am. B* 39.9 (2021). URL: https://doi.org/10.1364/JOSAB.426526.

[J14] M. M. Hassan, F. S. Sium, F. Islam, and S. M. Choudhury. "A Review on Plasmonic Nano-biosensors for Virus Detection with a Focus on Coronavirus". In: *Sensing and Biosensing Research* 33 (2021), p. 100429. URL: https://doi.org/10.1016/j.sbsr.2021.100429.

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[J12] H. Jiang, S. Choudhury, Z. A. Kudyshev, D. Wang, P. Xiao, Y. Jiang, and A. V. Kildishev. "Enhancing sensitivity to ambient refractive index with tunable few-layer graphene/hBN nanoribbons". In: *Photonics Research* 7.7 (2019), pp. 815–822. URL: https://doi.org/10.1364/PRJ.7.000815.

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[J7] S. Choudhury, U. Guler, A. Shaltout, V. M. Shalaev, A. V. Kildishev, and A. Boltasseva. "Pancharatnam–Berry Phase Manipulating Metasurface for Visible Color Hologram Based on Low Loss Silver Thin Film". In: *Advanced Optical Materials* 5 (2017), p. 1700196. URL: https://doi.org/10.1002/adom.201700196.

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Conference Proceedings

[C23] M. T. Alam, Y. Mahmud, Z. J. Nikita, and S. M. Choudhury. "Gesture Controlled Bot with Temperature & Humidity (TH) Sensing Features". In: *2024 2nd International Conference on Information and Communication Technology (ICICT)*. 2024, pp. 36–40. DOI: 10.1109/ICICT64387.2024.10839649.

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[C21] S. A. Khan, S. T. Azad, T. Mondal, A. J. Bin Iqbal, and S. M. Choudhury. "Development of an Internet of Things based Bangla Calendar Clock". In: *2023 26th International Conference on Computer and Information Technology (ICCIT)*. 2023, pp. 1–6. DOI: 10.1109/ICCIT60459.2023.10441436.

[C20] A. Mukit, M. S. H. Bijoy, S. M. Choudhury, and M. T. Mahmud. "Discrete Modulated Continuous-Variable Quantum Key Distribution: Security and Noise Tolerance Enhanced by Decoy States and Effective Error Correction Protocol Integration". In: *2023 IEEE International Conference on Telecommunications and Photonics (ICTP)*. 2023, pp. 1–5. DOI: 10.1109/ICTP60248.2023.10490525.

[C19] K. R. Pritom, M. E. Karim, and S. M. Choudhury. "A Polarization Insensitive Achromatic Metalens Operating at Two Wavelengths in Visible Regime". In: *2023 IEEE International Conference on Telecommunications and Photonics (ICTP)*. 2023, pp. 01–05. DOI: 10.1109/ICTP60248.2023.10491019.

[C18] S. Sarkar and S. M. Choudhury. "Design and Performance Analysis of a c-Si Thin-Film Solar Cell Using Plasmonic Ag Nanostructures". In: *2023 IEEE International Conference on Telecommunications and Photonics (ICTP)*. 2023, pp. 01–05. DOI: 10.1109/ICTP60248.2023.10490886.

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[C16] Z. A. Kudyshev, L. J. Prokopeva, M. Song, S. Choudhury, and A. V. Kildishev. "Bi-anisotropic homogenization for efficient metasurface design (invited)". In: *2018 International Applied Computational Electromagnetics Society Symposium (ACES)*. 2018, pp. 1–2. DOI: 10.23919/ROPACES.2018.8364134.

[C15] S. Choudhury, V. A. Zenin, S. Saha, V. M. Shalaev, S. Bozhevolnyi, and A. Boltasseva. "Novel Hard Mask Fabrication Method for Hybrid Plasmonic Waveguide and Metasurfaces". In: *Frontiers in Optics 2017*. Optica Publishing Group, 2017, JTu2A.12. DOI: 10.1364/FIO.2017.JTu2A.12. URL: https://opg.optica.org/abstract.cfm?URI=FiO-2017-JTu2A.12.

[C14] S. M. Choudhury, A. Shaltout, V. M. Shalaev, A. V. Kildishev, and A. Boltasseva. "Experimental Realization of Color Hologram Using Pancharatnam-Berry Phase Manipulating Metasurface". In: *Conference on Lasers and Electro-Optics*. Optica Publishing Group, 2016, FF1D.8. DOI: 10.1364/CLEO_QELS.2016.FF1D.8. URL: https://opg.optica.org/abstract.cfm?URI=CLEO_QELS-2016-FF1D.8.

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[C12] P. Ahmmed, Z. Ahmed, M. I. J. Rafee, M. A. Awal, and S. M. Choudhury. "Self-localization of a mobile robot using monocular vision of a chessboard pattern". In: *8th International Conference on Electrical and Computer Engineering*. 2014, pp. 753–756. DOI: 10.1109/ICECE.2014.7026828.

[C11] J. Kim, B. Memarzadeh, A. Dutta, S. M. Choudhury, A. V. Kildishev, H. Mosallaei, and A. Boltasseva. "GZO/ZnO Multilayered nanodisk metasurface to engineer the plasma frequency". In: *CLEO: 2014*. Optica Publishing Group, 2014, FW1K.4. DOI: 10.1364/CLEO_QELS.2014.FW1K.4. URL: https://opg.optica.org/abstract.cfm?URI=CLEO_QELS-2014-FW1K.4.

[C10] J. Kim, Y. Zhao, A. Dutta, S. M. Choudhury, A. V. Kildishev, A. Alu, and A. Boltasseva. "Nanostructured Transparent Conducting Oxide Films for Polarization Control with Plasmonic Metasurfaces". In: *CLEO: 2014*. Optica Publishing Group, 2014, FF2C.2. DOI: 10.1364/CLEO_QELS.2014.FF2C.2. URL: https://opg.optica.org/abstract.cfm?URI=CLEO_QELS-2014-FF2C.2.

[C9] S. M. Choudhury and M. A. Matin. "Effect of FSS ground plane on second iteration of hexaflake fractal patch antenna". In: *2012 7th International Conference on Electrical and Computer Engineering*. 2012, pp. 694–697. DOI: 10.1109/ICECE.2012.6471645.

[C8] S. M. L. Kabir, M. S. Hussain, S. M. Choudhury, and A. H. Chowdhury. "Developing A Low-Cost Multiple Motor Switched Photovoltaic Powered Irrigation System". In: *Proceedings of the 3rd International Conference on Water and Flood Management (ICWFM-2011)*. Vol. 2. 2011, pp. 577–581.

[C7] S. M. Choudhury, M. A. Zaman, M. Gaffar, and M. A. Matin. "A Novel Approach for Changing Bandwidth of FSS Filter Using Gradual Circumferential Variation of Loaded Elements". In: *Proceedings of Progress in Electromagnetic Research Symposium PIERS, Cambridge, USA*. 2010.

[C6] S. M. Choudhury, M. Gaffar, M. A. Zaman, and M. A. Matin. "Design of an X band aperture matched horn antenna by optimization of back-lobe and cross-polarization level". In: *International Conference on Electrical & Computer Engineering (ICECE 2010)*. 2010, pp. 550–553. DOI: 10.1109/ICELCE.2010.5700751.

[C5] M. Gaffar, S. M. Choudhury, M. A. Zaman, M. I. Momtaz, M. S. Alam, and M. A. Matin. "Sensitivity analysis of a circularly polarized U-slot microstrip antenna". In: *International Conference on Electrical & Computer Engineering (ICECE 2010)*. 2010, pp. 546–549. DOI: 10.1109/ICELCE.2010.5700750.

[C4] M. A. Zaman, M. Gaffar, S. M. Choudhury, and M. A. Matin. "Optimization and analysis of a Ka band Pickett Potter horn antenna with low cross polarization". In: *International Conference on Electrical & Computer Engineering (ICECE 2010)*. 2010, pp. 542–545. DOI: 10.1109/ICELCE.2010.5700749.

[C3] M. Matin, M. A. Zaman, S. M. Choudhury, and M. Gaffar. "Analysis of a conical corrugated horn operating in the K-band with low cross-polarization and high aperture efficiency, and observing its radiation patterns". In: *2009 IEEE Antennas and Propagation Society International Symposium*. 2009, pp. 1–4. DOI: 10.1109/APS.2009.5171493.

[C2] M. A. Zaman, S. M. Choudhury, M. Gaffar, and M. A. Matin. "Modeling the illumination function of a cassegrain reflector for a corrugated horn feed and calculation of the far field pattern". In: *2009 Loughborough Antennas & Propagation Conference*. 2009, pp. 101–104. DOI: 10.1109/LAPC.2009.5352533.

[C1] S. M. Choudhury. "Design and implementation of a low cost Power Factor Improvement device". In: *TENCON 2008 - 2008 IEEE Region 10 Conference*. 2008, pp. 1–4. DOI: 10.1109/TENCON.2008.4766529.

Patents

[P2] E. Marinero-Caceres, A. Toppo, S. Choudhury, U. Guler, Z. Kudyshev, J. Pekny, S. Pol, H. Reddy, and V. Shalaev. "Thermophotovoltaic system and method of making the same". US20210234498A1. July 29, 2021. URL: https://patents.google.com/patent/US20210234498A1/en.

[P1] A. Shaltout, S. Choudhury, A. V. Kildishev, A. Boltasseva, and V. M. Shalaev. "System for producing ultra-thin color phase hologram with metasurfaces". US9952557B2. Apr. 24, 2018. URL: https://patents.google.com/patent/US9952557B2/en.

Preprint / Manuscript Under Preparation

[X3] M. M. Haque and S. M. Choudhury. "Design of Silicon-Carbide Based Single-Quantum-Well White LED". Under review in *Heliyon*. 2024.

[X2] A. Sarker and S. M. Choudhury. "Design of Dual-Band Plasmonic Absorber for Biomedical Sensing and Environmental Monitoring". Submitted to Optics and Laser Technology. 2024. arXiv: 2411.12356 [physics.optics]. URL: https://arxiv.org/abs/2411.12356.

[X1] S. Sarker and S. M. Choudhury. "Efficiency Enhancement of c-Si/TiO2 Heterojunction Thin Film Solar Cell Using Hybrid Metal-Dielectric Nanostructures". Under review in *Solar Energy*. 2024.

Membership / Fellowship of Learned Societies, Professional Institutions and Other Noteworthy Affiliations

Senior Member, Institute of Electrical and Electronic Engineers (IEEE)

- Secretary, IEEE Bangladesh Section (July 2021 - May 2022)
- Chair, IEEE Young Professionals Bangladesh (Mar 2020 - Apr 2022)
- Chair, IEEE Graduates of the Last Decade (Jan 2013 - Dec 2013)
- Vice -Chair, IEEE Graduates of the Last Decade (Jan 2011 - Dec 2012)
- Student Activities Coordinator, IEEE Bangladesh Section (Jan 2011 - Dec 2012)
- Chair, IEEE BUET Student Branch (Jan 2008 - Aug 2009)
- Treasurer, IEEE BUET Student Branch (Jan 2007 - Dec 2008)

Member, IEEE Photonics Society

- Vice Chair, IEEE Photonics Society Bangladesh (April 2022 – to date)
- Founding Chair, IEEE Photonics Society Bangladesh (Mar 2021 – Apr 2022)

Member, The Optica

- Founding President, Optica Bangladesh Section May 2022 – to date

- Founding Moderator, BUET Optical and Photonics Society July 2022 – to date
- Treasurer, OSA Purdue Chapter, USA Jun 2016 – May 2017

Member, National Young Academy of Bangladesh (NYAB), April 2021 – to date
Life Member, American Alumni Association of Bangladesh (AAAB) , April 2024 – to date
Life Member, Association of BUET Alumni, April 2021 – to date

Student Activities at Purdue University, West Lafayette, IN, USA

- President, **Nanotechnology Student Advisory Council (NSAC)** (Jun 2017 – May 2018)
- Vice-President, **Nanotechnology Student Advisory Council (NSAC)** (Jun 2016 – May 2017)
- Treasurer, SPIE Purdue Chapter, USA (Jun 2015 – May 2016)
- President, Bangladesh Students Association (**Purdue BDSA**), USA (Jul 2017 – Jun 2018)
- Treasurer, Bangladesh Students Association (**Purdue BDSA**), USA (Jul 2015 – Jun 2017)

References

Available upon request