



Somen Nayak

Assistant Professor

 ORCID iD: 0000-0002-7291-0965

Scopus ID: 57193072113

IcfaiTech, Faculty of Science & Technology

The ICFAI University, Jaipur

snayak@iujaipur.edu.in

Profile

Somen Nayak is an Assistant Professor at IcfaiTech, Faculty of Science and Technology, The ICFAI University, Jaipur, where he has been a member of the faculty since February 2025, teaching students of B.Tech, BCA, and MCA. With thirteen years of experience spanning teaching, academic administration, and research, he has built a career centred on computer applications and, more recently, on the application of nature-inspired optimization techniques to biomedical image analysis.

Mr. Nayak's academic foundation began with a Bachelor of Computer Application from AMEX, West Bengal, affiliated to the University of Burdwan (2006–2009), followed by a Master of Computer Application from the Institute of Engineering & Management, West Bengal, affiliated to PTU, Punjab (2010–2013). He subsequently earned a Master of Technology in Computer Science & Engineering from Bankura Unnayani Institute of Engineering, West Bengal, affiliated to MAKAUT, West Bengal (2019–2021), securing a CGPA of 9.27. He is currently pursuing his Doctor of Philosophy in Computer Science & Engineering at the National Institute of Technology, Arunachal Pradesh, with his thesis submitted in 2024, reflecting his sustained commitment to original research.

His teaching career began in August 2012 at the University of Engineering & Management (UEM), Jaipur, where he served for nearly twelve years as Assistant Professor, including a tenure as Head of the Department of Computer Application from August 2021 to December 2023 and as Convener of several international conferences hosted by the university. He went on to serve at Chandigarh University from June 2024 to February 2025, teaching students of the Department of Computer Application, before joining The ICFAI University, Jaipur in February 2025, where he currently teaches.

The core of Mr. Nayak's research lies in medical image registration using nature-inspired metaheuristic optimization algorithms. His recent work, “A chaotic partial centroid opposition-based Gorilla Troops Optimizer approach for solving breast DCE MRI registration problem for breast tumor progression,” published in *Biomedical Signal Processing and Control* (2025), proposes a novel optimizer for tracking tumour progression through breast imaging. His paper in *SN Computer Science* (2025), “Registration of Lung CT-Images Affected with Covid-19 Using Centroid Opposition-Based Multiverse Optimizer,” applies similar principles to pulmonary imaging affected by COVID-19. He has also contributed to the methodological foundations of this field through “PCOBL: A Novel Opposition-Based Learning Strategy to Improve Metaheuristics Exploration and Exploitation for Solving Global Optimization Problems,” published in *IEEE Access* (2023), co-authored with T. Si, D. Bhattacharya, and others.

Beyond these journal contributions, Mr. Nayak maintains an extensive and active conference publication record, largely through Springer's Communications in Computer and Information Science and Smart Innovation, Systems and Technologies series, arising from the AAIDS, ICHCSC, and ICDPN conferences. These works apply a wide range of

metaheuristic algorithms — including the Fireworks Algorithm, Student Psychology-Based Optimization, the Whale Optimization Algorithm, the Red Kite Optimizer, and the Adaptive Opposition Slime Mould Algorithm — to problems in breast MRI, brain MRI, and kidney MRI registration and segmentation. Earlier in his career, between 2016 and 2018, he co-authored a series of conference papers at IEMCON and UEMCON on IoT-based smart power management, secure routing protocols, home automation, and cryptographic data security, reflecting a broad technical grounding that preceded his current specialization in medical image analysis.

Mr. Nayak has also taken on significant academic administrative and organizational responsibilities. He served as Head of the Department of Computer Application at UEM, Jaipur from August 2021 to December 2023, and has been Convener of the Global Conference on Artificial Intelligence and Applications (GCAIA, 2020–2021), Convener of the Global Conference on Applications of Artificial Intelligence and Data Science (AAIDS, 2022–2024), and Convener of the International Conference on Human-Centric Smart Computing (IHCSC, 2021–2024), later serving as its Publication Chair (2025). His technical foundation is further supported by NPTEL certifications in Digital Image Processing and Deep Learning.