Suman Mahapatra

VISITING SCIENTIST, INDIAN STATISTICAL INSTITUTE

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Current Affiliation

Machine Intelligence Unit, Indian Statistical Institute *Kolkata, India*

VISITING SCIENTIST *Jan, 2025 - Ongoing*

Education

Indian Statistical Institute *Kolkata, India*

PH.D. IN COMPUTER SCIENCE *2018 - 2024*

- Thesis - **Nuclei Segmentation and Color Normalization of Histological Images: Rough-Fuzzy Circular Clustering to Deep Generative Modeling**
  Supervisor: **Prof. Pradipta Maji**, Machine Intelligence Unit, Indian Statistical Institute
- Relevant Courseworks: Advanced Image Processing, Computer Vision, Neural Networks and Applications

University of Kalyani *Kalyani, India*

M.TECH. IN COMPUTER SCIENCE AND ENGINEERING *2013 - 2015*

- Thesis - Design and Implementation of Authentication Technique in Higher Region of Convergence of Z Transformation
  Supervisor: Prof. Jyotsna Kumar Mandal, Department of Computer Science & Engineering, University of Kalyani
- Marks - **89.2%**, Grade - **First Class**

University Institute of Technology, The University of Burdwan *Burdwan, India*

B.E. IN COMPUTER SCIENCE AND ENGINEERING *2009 - 2013*

- Marks - **82.7%**, Grade - **First Class (Honours)**

Work Experience

Indian Statistical Institute *Kolkata, India*

RESEARCH FELLOW *2015 - 2018*

- Project Title - Medical Image Analysis for Diagnosis and Prognosis of Cancer
- Funded by - Council of Scientific & Industrial Research (CSIR), Government of India

Research Interest

- Biomedical Image Analysis
- Deep Generative Modeling
- Computer Vision
- Machine Learning

Publications

International Journals:

- **Suman Mahapatra** and Pradipta Maji, "Truncated Normal Mixture Prior Based Deep Latent Model for Color Normalization of Histology Images", *IEEE Transactions on Medical Imaging*, vol. 42, no. 6, pp. 1746-1757, 2023.
- Pradipta Maji and **Suman Mahapatra**, "Circular Clustering in Fuzzy Approximation Spaces for Color Normalization of Histological Images", *IEEE Transactions on Medical Imaging*, vol. 39, no. 5, pp. 1735-1745, 2020.
- Pradipta Maji and **Suman Mahapatra**, "Rough-Fuzzy Circular Clustering for Color Normalization of Histological Images", *Fundamenta Informaticae*, vol. 164, no. 1, pp. 103-117, 2019.

Journals Under Review:

- **Suman Mahapatra** and Pradipta Maji, "SiliCoN: Simultaneous Nuclei Segmentation and Color Normalization of Histological Images" in *IEEE Journal of Biomedical and Health Informatics*, pp. 1-10, Manuscript ID: JBHI-02699-2025.
- **Suman Mahapatra** and Pradipta Maji, "Optimal Transport Driven Asymmetric Image-to-Image Translation for Nuclei Segmentation of Histological Images" in *Pattern Recognition (Elsevier)*, pp. 1-34, Manuscript ID: PR-D-25-03197.

International Conferences:

- Jyotsna Kumar Mandal and **Suman Mahapatra**, "Z Transformation Based High Payload Authentication Technique with Higher Region of Convergence Value (ZATHRoc)", Proceedings of 2nd *International Conference on Computer and Communication Technologies*, Hyderabad, India, pp. 529-537, 2015.
- Sukalyan Som, Sayani Sen, **Suman Mahapatra** and Sarbani Palit, "A Selective Bitplane Based Encryption of Grayscale Images with Tamper Detection, Localization and Recovery Based on Watermark", Proceedings of 2nd *International Conference on Information Systems Design and Intelligent Applications*, Kalyani, India, pp. 793-802, 2015.
- Sukalyan Som, **Suman Mahapatra** and Sayani Sen, "A No Reference Image Authentication Scheme Based On Digital Watermark", Proceedings of 2nd *International Conference on Information Systems Design and Intelligent Applications*, Kalyani, India, pp. 741-749, 2015.
- **Suman Mahapatra**, Jyotsna Kumar Mandal and Madhumita Sengupta, "Authentication in Higher Region of Convergence of Z Transform Domain (AHRocZ)", Proceedings of 2nd *International Conference on Information Systems Design and Intelligent Applications*, Kalyani, India, pp. 787-795, 2015.

Peer Review Activities

- IEEE Transactions on Medical Imaging
- Pattern Recognition (Elsevier)
- Frontiers in Oncology

Skills

Programming	Python (Numpy, Scikit-image, Scikit-learn, PyTorch), C/C++, MATLAB, R, LaTeX
Web	HTML, CSS
Languages	English, Bengali, Hindi
Mentoring	Mentored two M.Tech. students of Indian Statistical Institute for final year dissertation

Awards & Recognition

2014	**All India Rank 259,** Engineering Sciences, Council of Scientific & Industrial Research (CSIR) fellowship scheme, Government of India	*India*
2021	**3rd Prize**, 11th IDRBT Doctoral Colloquium for the paper entitled "**Color Normalization of Histological Images Using Rough-Fuzzy Circular Clustering**"	*Hyderabad, India*

Teaching & Tutorials

2024-25	**Teaching Assistant**, **Image Processing - I** for Master of Technology in Computer Science (Ongoing)	*Kolkata, India*
2024-25	**Teaching Assistant**, **Computer Vision** for Master of Technology in Computer Science	*Kolkata, India*
2023-24	**Teaching Assistant**, **Image Processing - I** for Master of Technology in Computer Science	*Kolkata, India*
2019-20	**Teaching Assistant**, **Programming and Data Structure** for Bachelor of Statistics	*Kolkata, India*

References

- **Prof. Pradipta Maji (Ph.D. Supervisor)**
  Machine Intelligence Unit
  Indian Statistical Institute
  email: pmaji@isical.ac.in
  Web: `https://www.isical.ac.in/~pmaji/`

- **Prof. Pabitra Mitra**
  Department of Computer Science & Engineering
  Indian Institute of Technology, Kharagpur
  email: pabitra@cse.iitkgp.ac.in
  Web: `https://cse.iitkgp.ac.in/~pabitra/`

- **Prof. Sanjoy Kumar Saha**
  Department of Computer Science and Engineering
  Jadavpur University
  email: sks_ju@yahoo.co.in
  Web: `https://cse.jadavpuruniversity.in/faculty/sanjoy-kumar-saha/`