DR. SILADITTYA MANNA

National Post-Doctoral Fellow, Dept. of CDS, Indian Institute of Science, Bangalore

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WORK EXPERIENCE

National Post-Doctoral Fellow
Indian Institute of Science, Bengaluru — Sept, 2026 - Ongoing
Research Area: Vulnerabilities in Federated Learning Frameworks

Research Associate-I
Indian Institute of Science, Bengaluru — Nov, 2025 - August, 2026
Research Area: Vulnerabilities in Federated Learning Frameworks

Senior Research Assistant
Department of Computer Science, Hong Kong Baptist University, Hong Kong — Oct 2024 - Oct 2025
Research Area: Federated learning with applications in medical image analysis

EDUCATION

Doctor of Philosophy (Ph.D.) in Computer Science
Indian Statistical Institute, Kolkata
Thesis Title: Self-Supervised Learning and Its Applications in Medical Image Analysis — Awarded 2019-2025

M. Tech (Under Dual Degree B.Tech.-M.Tech Programme)
Specialization : VLSI and Micro-Electronics — 2018 - 2019
Indian Institute of Engineering Science and Technology, Shibpur
First Class with Honours (CGPA 8.9, Silver Medallist)

B. Tech (Under Dual Degree B.Tech.-M.Tech Programme)
Electronics and Telecommunication Engineering — 2014 - 2018
Indian Institute of Engineering Science and Technology, Shibpur
First Class with Honors (CGPA 8.8)

RESEARCH INTERESTS

Self-Supervised Learning, Few-Shot Learning, Computer Vision, Medical Image Classification and Segmentation, Visual Prompt Tuning, Privacy Attacks and Defence Mechanisms, Federated Learning

ROLES OF RESPONSIBILITIES

- Mentored several graduate and post-graduate students for their dissertations, primarily on topics like self-supervised learning for medical image analysis and writer identification.
- Collaborated with several interns and researchers from multiple institutes for successful publications, for research on topics like document analysis, signature verification, and class incremental learning for medical image segmentation.

TEACHING EXPERIENCE

- Assisted in teaching advanced machine learning concepts like object detection, tracking and segmentation, and evaluated student projects on deep learning and computer vision at the ISI, Kolkata.
- Conducted tutorial sessions on machine learning algorithms for the first semester students of M.Tech (ETCE) at IIEST, Shibpur.

GRANT WRITING EXPERIENCE

National Post-Doctoral Fellowship

- Awarded grant for research proposal on exploring vulnerabilities in federated learning framework.

GCP Research Credits Program

- Contributed to the successful grant application (awarded to Prof. Umapada Pal)
- Involved in writing the grant applications, estimating the project budget, and computing resources.

JOURNAL PUBLICATIONS

- **S. Manna**, S. Chatterjee, R. Dey, S. Bhattacharya, and U. Pal (2024). **Dynamically Scaled Temperature for Self-supervised Contrastive Learning**, in IEEE Transactions on Artificial Intelligence, vol. 1, no. 01, pp. 1-10, Aug. 2025, doi: 10.1109/TAI.2024.3524979. (**Q1**)
- **S. Manna**, S. Bhattacharya and U. Pal. **Self-Supervised Representation Learning for Knee Injury Diagnosis from Magnetic Resonance Data**, in **IEEE Transactions on Artificial Intelligence**, Vol. 5, Issue 4, pp. 1613-1623, 2024 (doi: 10.1109/TAI.2023.3299883). (**Q1**)
- **S. Manna***, D. Das*, S. Bhattacharya, U. Pal and S. Chanda, **PLSM: A Parallelized Liquid State Machine for Unintentional Action Detection**, in IEEE Transactions on Emerging Topics in Computing, vol. 11, no. 2, pp. 474-484, 2023, (doi: 10.1109/TETC.2022.3211011). (**Q1**)
- **S. Manna**, S. Bhattacharya and U. Pal, **Self-supervised representation learning for detection of ACL tear injury in knee MR videos**, Pattern Recognition Letters, Volume 154, Pages 37-43, 2022. (**Q1**)
- S. Das, P. Sanki, **S. Manna**, S. Mondal, S. Bhattacharya, S. Ghosh. **Residual Dense Blocks for Extreme Foreground Imbalance in Brachytherapy Applicator Segmentation**, in Springer Nature Computer Science, 7, 30 (2026). doi: 10.1007/s42979-025-04641-7 (**Q2**)
- A. Maitra, S. Mitra, **S. Manna**, S. Bhattacharya, U. Pal (2025). **Decorrelation-Based Self-Supervised Visual Representation Learning for Writer Identification**, in ACM Transactions on Asian and Low-Resource Language Information Processing, 24(7), Article No.: 68, Pages 1 - 17, doi: 10.1145/3746062 (**Q2**)
- **S. Manna**, S. Bhattacharya, and U. Pal, **Self-Supervised Visual Representation Learning for Medical Image Analysis: A Comprehensive Survey**, Transactions on Machine Learning Research, Volume 2024, URL: https://openreview.net/forum?id=3Wg1oErMcJ. (**Q2**)

CONFERENCE PUBLICATIONS

- S. Maity, S. Biswas, **S. Manna**, A. Banerjee, S. Bhattacharya, J. Llados, U. Pal (2023). **SelfDocSeg: A Self-supervised vision-based approach towards Document segmentation**, Proceedings of the International Conference on Document Analysis and Recognition 2023. Lecture Notes in Computer Science, vol. 14187, (doi: 10.1007/978-3-031-41676-7_20). (**CORE A**)
- A. Bairagi, R. Dey, S. Manna, U. Pal (2026). **Reliability-Aware Weighted Multi-Scale Spatio-Temporal Maps for Heart Rate Monitoring**, IEEE International Conference on Image Processing (ICIP), 2026, (**Accepted**), arXiv preprint arXiv:2603.26836. (**CORE B**)
- **S. Manna**, S. Bhattacharya, and U. Pal (2024). **Correlation Weighted Prototype-based Self-Supervised One-Shot Segmentation of Medical Images**, Pattern Recognition. ICPR 2024. Lecture Notes in Computer Science, vol 15310, pp 16-33, Springer, Cham. (doi: 10.1007/978-3-031-78192-6_2). (**CORE B**)
- S. Chattopadhyay, **S. Manna**, S. Bhattacharya, and U. Pal, **SURDS: Self-Supervised Attention-guided Reconstruction and Dual Triplet Loss for Writer Independent Offline Signature Verification**, 26th International Conference on Pattern Recognition (ICPR) 2022, pp. 1600-1606. (**CORE B**)
- **S. Manna**, S. Chattopadhyay, S. Bhattacharya and U. Pal, **SWIS: Self-Supervised Representation Learning for Writer Independent Offline Signature Verification**, IEEE International Conference on Image Processing (ICIP), 2022, pp. 1411-1415, (doi: 10.1109/ICIP46576.2022.9897562). (**CORE B**)
- **S. Manna**, S. Bhattacharya, and U. Pal. 2021. **Interpretive self-supervised pre-training: boosting performance on visual medical data**, In Proceedings of the Twelfth Indian Conference on Computer Vision, Graphics, and Image Processing (ICVGIP '21). Article 15, 1–9. (doi: 10.1145/3490035.3490273)

SKILLS

Technical Skills	PyTorch, TensorFlow, Machine Learning, Computer Vision, Privacy-preserving AI, Microsoft Word, Microsoft Excel, LaTeX, SLURM
Soft Skills	Presentation, Project management, Teamwork, Critical thinking, Project collaboration

REFERENCES

- Ph.D. Supervisor: Prof. Umapada Pal
- PostDoc Advisor: Dr. Anirban Chakraborty
- PostDoc Advisor: Prof. Yiu-Ming Cheung
- Ph.D. Mentor: Dr. Saumik Bhattacharya
- Research Collaborator: Dr. Sayantari Ghosh
- Research Collaborator: Dr. Rajkumar Saini
- Research Collaborator: Dr. Tanmoy Mondal