

PRITI SAHA

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ABOUT ME

M.Tech (CSE) student specializing in Deep Learning and Pattern Recognition, with a strong foundation in Machine Learning, Artificial Intelligence, DBMS, Data Structures, Operating Systems, and Computer Architecture.

EDUCATION

2024 – 2026 M.Tech in Computer Science and Engineering, University of Kalyani

Research focus: Pattern Recognition.

Marks obtained: 80%

2021 – 2023 M.Sc. in Computer Science, Kalyani University

CGPA: 8.88 / 10

Thesis: Some Studies on the Simulation-Based Approaches for Wireless Sensor Networks using CupCarbon Simulator

2018 – 2021 B.Sc. in Computer Science, Kalyani Mahavidyalaya

CGPA: 8.5 / 10 | Project: Android Application Development

2016 – 2018 Higher Secondary (WBCHSE), Fulia Balika Vidyalaya

Marks: 420 / 500

2014 – 2016 Secondary (WBBSE), Fulia Balika Vidyalaya

Marks: 568 / 700

RESEARCH PROJECT

M.Tech Thesis: Self-Supervised Learning for PolSAR Image Classification using SimMIM and Swin Transformer

- Developed a Self-Supervised Learning (SSL) framework for Polarimetric Synthetic Aperture Radar (PolSAR) image classification to address the challenge of limited labeled training data.
- Implemented the SimMIM (Simple Masked Image Modeling) framework with a Swin Transformer backbone to learn robust visual representations through masked image reconstruction during the pre-training stage.
- Designed a two-stage learning pipeline consisting of self-supervised pre-training on unlabeled images followed by supervised fine-tuning for downstream PolSAR image classification.
- Performed data preprocessing using Pauli decomposition to generate RGB representations from PolSAR data, enabling effective feature extraction from polarimetric information.
- Utilized the San Francisco AIRSAR PolSAR dataset for model training and evaluation, including dataset preparation, preprocessing, and train-validation organization.
- Trained and optimized the deep learning model using PyTorch, leveraging GPU acceleration on an NVIDIA RTX A2000 to improve computational efficiency.
- Applied modern deep learning techniques including masked image modeling, transformer-based feature extraction, transfer learning, and representation learning to improve classification performance.
- Evaluated the proposed framework using standard performance metrics including Accuracy, Precision, Recall, F1-score, Confusion Matrix, and Macro/Weighted Average to assess classification effectiveness.
- Conducted comparative analysis of model performance before and after self-supervised pre-training to demonstrate the benefits of representation learning for remote sensing image classification.

Technologies: Python, PyTorch, OpenCV, NumPy, Scikit-learn, SimMIM, Swin Transformer, CUDA, PolSAR, Deep Learning.

M.Sc Thesis: Some Studies on the Simulation-Based Approaches for Wireless Sensor Networks using CupCarbon Simulator

- Conducted simulation-based research on Wireless Sensor Networks (WSNs) using the CupCarbon IoT simulator for smart city and environmental monitoring applications.
- Designed and implemented SenScript programs to simulate message transmission, routing, broadcasting, and digital/analog sensor data communication in WSNs.

- Developed a forest fire detection framework using distributed sensor nodes, master nodes, mediator nodes, and a base station to monitor temperature events and generate alerts.
- Implemented an API-based notification system integrated with Python to send event alerts generated during simulation.
- Evaluated communication workflows and event detection through simulation-based analysis for Wireless Sensor Network applications.

Technologies: CupCarbon Simulator, SenScript, Python, Wireless Sensor Networks (WSN), IoT.

SKILLS

Languages: English, Bengali, Hindi

Programming: Python, C, C++

Web Development: HTML, CSS

CERTIFICATIONS

2018 Advanced Diploma in Web Technology.

2019 One-Day International Webinar on Advances in Machine Learning — organized by the Department of Computer Science in collaboration with IQAC, West Bengal State University.

2020 One-Day International Webinar on Artificial Intelligence: Emerging Trends of Technology and Its Impact on Business Studies, Employment — organized by the Department of Commerce and IQAC, Chakdaha College.