Nabajyoti Das

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nabajyoti-das | ND-PatternHunter

Professional Summary

Ph.D. candidate in Computer Science with a strong background in deep learning for PolSAR image classification. Proven ability to develop novel methodologies and achieve high classification accuracy using machine learning/deep learning models. Authored 3 peer-reviewed publications in top journals and conferences. My 5+ years of professional experience as a freelance software developer has honed my skills in full-stack web development, software engineering, and data science. Proficient in Python, Deep Learning, and Machine Learning technologies.

Research Interest

- Deep learning applications in image processing and analysis
- Machine learning
- PolSAR image analysis
- Pattern recognition
- Remote Sensing image analysis

Education

Ph.D **Computer Science and Engineering**, Tezpur University, Assam, India — 2020 – Present
- Supervisor: Dr. Swarnajyoti Patra

M.Sc **Computer Science**, Gauhati University, Assam, India — 2015 – 2017
- CGPA: 8.06/10

B.Sc **Computer Science**, Cotton College, Assam, India — 2012 – 2015
- CGPA: 9.1/10

Professional Development & Certifications

- Planetary Scale Earth Observation with Google Earth Engine, Completed Feb, 2025
- The Ultimate Guide for Land Surveying with Drones - Part 1 (Udemy) - Currently enrolled
- Two Day Workshop on Data Science and its Applications, Department of Computer Science and Engineering, Tezpur University, 2nd and 3rd March 2023
- Getting started with Data Analystics on AWS (Coursera), Completed Apr 2022
- Deep Learning and its Application (Electronics & ICT Academies), Completed Sep 2021
- Machine Learning (Stanford University, Coursera), Completed Mar 2019

Research Experience

Doctoral Researcher in PolSAR image classification using Deep learning techniques — 2020 – Present
- Conducting research in deep learning techniques to develop novel methodologies for PolSAR image classification.
- Designed and implemented machine learning and deep learning models to enhance classification accuracy of PolSAR images.
- Performed extensive experiments using tools/frameworks like MATLAB, TensorFlow, Keras, Scikit-learn, leveraging real-world PolSAR datasets to derive actionable insights.
- Authored peer-reviewed papers in high ranked Q1 journal and conference like IEEE Transactions and ICPR and currently preparing 2 more manuscripts for submission.

Publications

- Das, N., Patra, S., Bortiew, A. (2025). **"PolSAR Image Classification Using Superpixel Profile and CNN"** in Pattern Recognition. ICPR 2024. Lecture Notes in Computer Science, vol 15302. Springer, Cham. doi: 10.1007/978-3-031-78166-7$_2$1
- N. Das, A. Bortiew, S. Patra and L. Bruzzone, **"Dual-Branch CNN Incorporating Multiscale SVD Profile for PolSAR Image Classification"** in IEEE Transactions on Geoscience and Remote Sensing, vol. 62, pp. 1-12, 2024, Art no. 5223612, doi: 10.1109/TGRS.2024.3465849
- N. Das, K. Pradhan and S. Patra, **"Classification of Polarimetric SAR Image using JS-Divergence Profile"** 2022 IEEE Calcutta Conference (CALCON), Kolkata, India, 2022, pp. 20-24, doi: 10.1109/CALCON56258.2022.10060487

Professional Experience

Teaching Assistant 2021 – Present

- TA for CS416 - Object Oriented Programming and Data Structures
- TA for CS201 - Data Structure & Operating System (DSOS)
- TA for CO104 - Computing Laboratory
- TA for CS543 - Advanced Programming Lab

Freelance Software Developer 2017 – Present

- Developed Python scripts for data extraction from PubMed, Semantic Scholar, and OpenAlex APIs, utilizing relevant Python libraries like pandas, numpy, psycopg2.
- Developed Airflow DAGs to orchestrate the data extraction and processing workflows.
- Implemented CI/CD pipeline using Github Actions to automate code testing, building, and deployment.
- Utilized Django Rest Framework for web APIs.
- Developed Stored procedures and AWS lambda functions to connect with AWS MWAA and orchestrate the workflows.
- Developed a Python Django based website having online user-enrolment and utilizing third-party payment gateway.

Computer Faculty/Resource Person 2017 – 2022

- Provided training on “Introduction to Python Programming and its Applications” on Feb, 2022, organised by EICT Academy, IIT-Guwahati in association with Mantra Associates and NERIST.
- Provided training on “Using ICT Tools for Teaching in Blended Learning Process” on Mar, 2022, organised by EICT Academy, IIT-Guwahati in association with Mantra Associates and IQAC Cell, Khowang College, Dibrugarh.
- Provided training on “Online FDP on Introduction to Google Quiz” on June, 2021, organised by EICT Academy, IIT-Guwahati and Mantra Associates.
- Conducted training on “Online FDP on Introduction to Latex” on Nov, 2020, organised by EICT Academy, IIT-Guwahati in association with Mantra Associates.
- Taught Python as programming language for a Winter Training Programme organized by Mantra Associates in collaboration with EICT Academy, IIT-Guwahati in the year 2019.
- Provided training on “Use of ICT Tools for classroom delivery of Faculty” at Gauhati University on December, 2018, organised by EICT Academy, IIT-Guwahati in association with Mantra Associates.
- Provided training on “Use of ICT Tools for classroom delivery of Teachers” at Nalbari College on December, 2018, organised by EICT Academy, IIT-Guwahati in association with Mantra Associates.
- Received excellent feedback from the participants after the completion of the training programmes.

Projects

Canopy Northeast www.canopytravels.com

- Developed this site from start to finish. Used Django as a backend framework. Integrated with third party SMS gateway (MSG91) for OTP based customer registration and login and also to notify customers about successful bookings. Also implemented automatic inventory management for vehicle bookings and vehicle stock management.
- Tools used: Python, Django, HTML, Bootstrap CSS, PostgreSQL, Google Compute Engine

Gauhati University Economics Department Climate Change Programme Project gueconomics.co.in

- Developed using bootstrap template and backend framework used was Django. Finally, the project is deployed in Google Cloud Platform in VM instance.
- Tools Used: Python, Django, HTML, Bootstrap CSS, PostgreSQL, Google Compute Engine

The Bar Council of Assam, Nagaland, Mizoram, Arunachal Pradesh & Sikkim barcouncilofassametc.in

- Designed, developed, and deployed a comprehensive web application for the Bar Council using the Python Django framework, facilitating improved digital services for lawyers and stakeholders.Built dynamic modules for user registration, authentication, and information management, ensuring seamless user experience and secure data handling. Implemented a robust backend integrated with a responsive front-end design using modern web technologies. Deployed the application on a GCP Compute Engine instance, optimizing for reliability, scalability, and cost-efficiency.
- Tools Used: Python, Django, Google Cloud Platform (GCP), HTML, CSS, JavaScript

Awards & Achievements

- Second Rank position in M.Sc Computer Science: I secured second rank for my Master's degree in Computer Science by securing CGPA 8.06 out of 10
- Topper of the College in B.Sc Computer Science: I achieved the highest grade for my Bachelor's degree in Computer Science by securing CGPA 9.1 out of 10
- Semi-finalist in TechGig Code Gladiator 2015 contest: I participated in the Online Coding Contest during which I solved two coding problems using JAVA and was chosen as the semi-finalist among 120,000 candidates.
- Active StackOverflow, Medium and Quora user: I also like to write about computer science and programming stuff in sites like Medium, StackOverflow and Quora and have a reputation of 500+ with 7 silver and 11 bronze badges in StackOverflow.
- National Eligibility Test (NET) - 2018 Qualified
- University Grants Commission(UGC)-Junior Research Fellowship(JRF)-2019 Qualified
- Graduate Aptitude Test in Engineering(GATE)-2020 Qualified
- Completed Machine Learning Course by Stanford University on Coursera by securing a grade of 97.3
- Selected to present my Ph.D. research at the prestigious inaugural ICPR 2024 Doctoral Consortium

Technologies

Languages: Python, Java, C++, C, SQL, JavaScript,

Technologies: Tensorflow, Keras, MATLAB, PolSARpro, ESA SNAP, ENVI, Google Cloud Platform, AWS Lambda, Apache Airflow, AWS MWAA, Jira, Confluence, CI/CD, GitHub Actions