

Soumya Banerjee

CONTACT INFORMATION

RM - 504, IIT Kanpur, 208016

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EXPERIENCE

Teaching Assistant, Indian Institute Of Technology Kanpur, Kanpur, Uttar Pradesh, India

T.A.	Prob. Machine Learning (CS772A)	Dr. Piyush Rai	Jul, 22 - May, 23
Tutor	Fundamentals of Comp. (ESC101)	Dr. Modi & Dr. Malakar	May, 22 - Jun, 22
T.A.	DL for Computer Vision (CS776A)	Dr. Priyanka Bagade	Jan, 22 - May, 22
T.A.	Prob. Machine Learning (CS698X)	Dr. Piyush Rai	Jan, 21 - May, 21
T.A.	Intro to Machine Learning (CS771)	Dr. Piyush Rai	Aug, 20 - Dec, 20
T.A.	Intro to Machine Learning (CS771)	Dr. Purushottam Kar	Jul, 19 - Jun, 20
T.A.	Parallel Computing (CS633)	Dr. Preeti Malakar	Jan, 19 - May, 19
Grader	Fundamentals of Computing (ESC101)	Dr. Purushottam Kar	Jul, 18 - Dec, 18

Indian Institute Of Technology Kanpur, Kanpur, Uttar Pradesh, India

Senior Student Research Associate June, 2022 - Present

Verisk Analytics, Hyderabad, Telangana, India

AI / Machine Learning Intern May, 2021 - Nov, 2021

EDUCATION

Indian Institute Of Technology Kanpur, Kanpur, Uttar Pradesh, India

PhD in Computer Science and Engineering, July, 2018 - Present

- Thesis Topic: LifeLong Learning in Deep Neural Networks
- Advisor: Dr. Piyush Rai and Dr. Vinay P. Namboodiri
- CPI: 7.33 (On CourseWork)

Banaras Hindu University, Varanasi, Uttar Pradesh, India

MSc in Computer Science, July, 2016 - May, 2018

- Dissertation Topic: Computational Analysis of Scientific Collaboration in South Asia
- Advisor: Dr. Vivek Kumar Singh
- Division: First (CGPA 8.51)

Ramakrishna Mission Vidyamandira (An autonomous degree college affiliated with the University of Calcutta), Howrah, West Bengal, India

Bachelor of Science, July 2013 - May, 2016

- Honours: Computer Science
- Minors: Mathematics and Electronics
- Final Semester Project: Design of A Two - Stage Symmetric Key Cryptographic Technique
- Advisor: Sarbajit Manna

- Division: First (80.875 %)

RESEARCH INTERESTS Continual Learning, Active Learning, Domain Adaptation, Computer Vision, Machine Learning, Deep Learning

PROGRAMMING SKILLS Python, Pytorch, Tensorflow, Keras, Scikit-learn, C, C++, MATLAB, Java, LaTeX

- PUBLICATIONS
- ❑ **Banerjee, Soumya**, Vinay K. Verma, Vinay P. Namboodiri, and Piyush Rai. “DIGIMON: Semi-supervised Active Learning via Self-Ensemble Distillation” (Under Review)
 - ❑ **Banerjee, Soumya**, Vinay K. Verma, Vinay P. Namboodiri, and Piyush Rai. “ADROIT: A Self-Supervised Framework for Learning Robust Representations for Active Learning” (Under Review)
 - ❑ Tripathi, Sachchida, Vaishali Jain, Avideep Mukherjee, **Soumya Banerjee**, Sandeep Madhwal, Michael H. Bergin, Prakash Bhave, David Carlson, Ziyang Jiang, Piyush Rai. “A hybrid approach for integrating micro-satellite images and sensors network-based ground measurements using deep learning for high-resolution prediction of fine particulate matter (PM2.5) over an Indian city, Lucknow.” (Under Review)
 - ❑ **Banerjee, Soumya**, Vinay K. Verma, Avideep Mukherjee, Deepak Gupta, Vinay P. Namboodiri, and Piyush Rai. “Verse: Virtual-gradient aware streaming lifelong learning with anytime inference.” IEEE International Conference on Robotics and Automation (ICRA) 2024.
 - ❑ Tripathi, Sachchida, Vaishali Jain, Avideep Mukherjee, **Soumya Banerjee**, Piyush Rai, and Sandeep Madhwal. “Predicting PM2.5 based on micro-satellite imagery and low-cost sensor network using CNN-RT-RF Joint Model.” No. EGU23-12426. Copernicus Meetings, 2023.
 - ❑ **Banerjee, Soumya**, Vinay Kumar Verma, and Vinay P. Namboodiri. “Streaming LifeLong Learning With Any-Time Inference”. IEEE International Conference on Robotics and Automation (ICRA) 2023.
 - ❑ Sharma, Rahul, **Soumya Banerjee**, Dootika Vats, and Piyush Rai. “Variational Rejection Particle Filtering.” arXiv preprint arXiv:2103.15343 (2021).
 - ❑ Manna, Sarbajit, **Soumya Banerjee**, Prantik Panja, Ramkrishna Das, and Saurabh Dutta. “Secure Symmetric Key Transmission of Messages Using Random Shuffling of Spiral Matrix and Multiplicative Inverse (RSSMMI).” In Advanced Computational and Communication Paradigms, pp. 135-143. Springer, Singapore, 2018.

- PROJECT WORKS
- **Predicting PM2.5 concentration from satellite images and meteorological features:** The project aims to develop algorithms to predict particulate concentration in areas such as Delhi, Lucknow or Beijing using satellite images and meteorological features like air temperature, pressure or relative humidity.
 - **Drone Swarm Development for Humanitarian Assistance and Disaster Relief:** Worked on the vision team that detects person(s) from a height between 50 and 80 metres in real-time, and delivers a payload within a threshold radius.
 - **Assisting Disaster Recovery by Analyzing Microblogs:** A course project for the course CS685A: Data Mining.
 - **Empirical Evaluation/Comparison of ML Algorithms:** A course project for the course CS771A: Introduction to Machine Learning.

RELEVANT
COURSES TAKEN

- **IIT Kanpur**
CS601A: Mathematics For Computer Science, CS685A: Data Mining, CS771A: Introduction To Machine Learning, CS783A: Visual Recognition, CS797A: Special Topics In Computer Science, CS727A: Topics In Internet Technologies
- **BHU**
CS207: Theory Of Computation, CS208: Artificial Intelligence, CS209: Advanced Course In Data Structures & Algorithms, CS302: Information Retrieval, CS303: Data Mining, CS314: Information Security, GRM206M: Fundamentals Of Remote Sensing, CS304: Machine Learning, CS319T: Compiler Design, STM309M: Sampling Theory & Design Of Experiments

RELEVANT
ACHIEVEMENTS

- Topper, Gold Medalist in M.Sc Computer Science
- Topper, Gold Medalist in B.Sc Computer Science(H)

PERSONAL
INFORMATION

Date of Birth: January 01, 1996
Sex: Male
Citizenship: Indian
Languages Known: English, Bengali, Hindi

DATE: JANUARY 29, 2024

PLACE: IIT KANPUR,
KANPUR, UTTAR PRADESH,
INDIA

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