Soumya Banerjee

CONTACT INFORMATION

RM - 504, IIT Kanpur, 208016

Email: soumyab@cse.iitk.ac.in, soumyab@iitk.ac.in, soumyab.cse@gmail.com

EXPERIENCE

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

T.A.	Prob. Machine Learning (CS772A)	Dr. Piyush Rai	Jul, 22 - Present
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 Kumar Verma, Toufiq Parag, Maneesh Singh, and Vinay P. Namboodiri. "Class Incremental Online Streaming Learning." arXiv preprint arXiv:2110.10741 (2021).
- 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.
- **Partial Rejection Control for Robust Variational Inference in Sequential Latent Variable Models**: This work aimed to improve performance on tasks involving sequential data, like music data-sets, video modeling, etc. Furthermore, we employed a *greedy* version of the sampling algorithm called *partial* rejection control to get improved results even on large dimensions.
- **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.
- **Computational Analysis Of Scientific Collaboration In South Asia**: The characteristics of Scientific Collaboration in South Asia or SAARC countries during a time span of ten years from 2007 to 2016 have been examined.
- **Design Of A Two - Stage Symmetric Key Cryptographic Technique**: A bit level block cipher based symmetric key cryptographic technique having two - stage encryption mechanism has been proposed.

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 21, 2023

Place: IIT Kanpur, Kanpur, Uttar Pradesh, India

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