Indian Institute of Science
Bangalore-560012, India
(+91) 9775967192
subhodipp@iisc.ac.in
Official Website: https:/subhodip123.github.io/

Subhodip Panda

Research Interests

My broader research interest lies in trust-worthy machine learning, especially Differential Privacy, Machine Unlearning, Conformal Prediction, Causal and Fair Learning, Statistical Learning Theory, and Information Theory.

Education

2022–Present **Ph.D in Engineering, Indian Institute of Science**, *Bangalore*, Representation Learning Lab, Department of ECE, Advisor: Dr. Prathosh A.P, GPA: 8.8/10.
Thesis: Privacy and Uncertainty Aware Learning Algorithms

2020–2021 **P.G. Diploma in Statistics, Indian Statistical Institute**, *Chennai*, Statistical Science Unit, Advisor: Dr. Sudheesh Kumar K., Grade: 73% (3^{rd} in Class of 42).
Graduate (Master's) course works on Statistics and Mathematics

2013–2017 **B.Tech in ECE, Indian Institute of Engineering Science and Technology**, *Shibpur, Kolkata*, Advisor: Dr. Monojit Mitra, GPA: 8.54/10 (9^{th} in Class of 48).
Undergraduate course works in electronics and communication engineering

Work & Internships Experience

May,2025–Aug,2025 **Adobe Research**, Ph.D Research Intern, *Bangalore, India*.
- **Data Attribution for VLMs:** The objective of this work is to attribute influence scores to training samples for an inference-time generated image from Vision Language Models (e.g., Stable Diffusion). The primary challenge of this work is to solve the scalability problems of data attribution techniques for large-scale models and datasets.

Aug,2021–Dec,2021 **Oneirix Labs**, Research Associate, *Pune, India*.
- **3D Modeling for Medical Imaging:** 1. Developed several algorithms that are used for 3D modeling of the human heart using Python. 2. Developed an algorithm to detect heart valves from a sequence of ultrasonic images/videos. 3. Created one algorithm that will sample from a small no of ultrasonic heart images to make a longer sequence of images with a smooth transition.
- **Simulation and Modeling**: Implemented the task of determining the kinetics constants of the adsorption reaction in the Langmuir Adsorption Model. This model aims to fit a non-linear curve using Levenberg-Marquardt (LM) Algorithm.

Aug.2017–Aug.2019 **Larsen and Toubro**, Senior Engineer, *Chennai, India*.
- **Nagpur and Jaipur Smart City Project:** Advisory role for the local Government developing action plans that would lead forward a path in curbing pollution and traffic. Time series analysis and data visualization of environmental sensor's data that was captured over one year across different locations of the city.

May,2016–Jul.2016 **Indian Space Research Organization (ISRO)**, Research Intern, *Bangalore, India*.
- **Project: Driving a Charged Coupled Device by the microcontroller for LIBS based applications** CCD (Charged Coupled Device) which had been used for LIBS (Laser Induced Breakdown Spectroscopy) based applications was analyzed in this project. LIBS had been used to generate a high-powered laser beam that was focused on a soil sample and the output was captured by CCD. The CCD was driven by the microcontroller and using a Bluetooth module the soil sample data was stored in a Bluetooth-enabled Android device which was later analyzed for chemical molecule detection. This project has applications for agricultural purposes. ▪ **P.1 is the published paper of this project.**

Publications

P=Published, S=Submitted

P.7 **f-INE: A Hypothesis Testing framework for Estimating Influence under Training Randomness**, *Subhodip Panda, Dhruv Tarsadiya, Shashwat Sourav, Prathosh A.P., Sai Praneeth Karimireddy*, The 14^{th} International Conference on Learning Representations, 2026, Paper link.

P.6 **Partially Blinded Unlearning: Class Unlearning for Deep Networks a Bayesian Perspective**, *Subhodip Panda, Shashwat Sourav, Prathosh A.P.*, The 39^{th} Annual AAAI Conference on Artificial Intelligence, 2025, Paper link.

P.5 **Concept Forgetting via Label Annealing**, *Subhodip Panda, Ananda Theertha Suresh, Atri Guha, Prathosh A.P.*, The 41^{st} Conference on Uncertainty in Artificial Intelligence (UAI), 2025, Paper link.

P.4 **Adapt Then Unlearn: Exploiting Parameter Space Semantics For Unlearning In Generative Adversarial Networks**, *Piyush Tiwari, Atri Guha, Subhodip Panda, Prathosh A.P.*, Transactions on Machine Learning Research (TMLR), 2025, Paper link.

P.3 **FAST: Feature Aware Similarity Thresholding for weak unlearning in black-box generative models**, *Subhodip Panda and Prathosh A.P.*, IEEE Transaction on Artificial Intelligence (TAI), 2024, Paper link.

P.2 **Variational Diffusion Unlearning: a variational inference framework for unlearning in diffusion Models**, *Subhodip Panda, MS Varun, Shreyans Jain, Sarthak Maharana, Prathosh A.P.*, NeurIPS Safe Generative AI Workshop, 2024, Paper link.
[Full paper in Submission]

P.1 **Driving a Charged Coupled Device (CCD) by micro-controller for LIBS based application**, *Avijit Mandal, Subhodip Panda, Adwaita Goswami*, IEEE International Symposium on Devices, Circuits, and Systems (ISDCS), 2018, Paper link.

S.1 **Regret Tail Characterization of Optimal Bandit Algorithms with Generic Rewards**, *Subhodip Panda, Shubhada Agrawal*, 2026, [In Submission].

Projects and Certifications

Ongoing Projects **Information Theoretic Interpretation of Unlearning:** Machine Unlearning plays a crucial role in enabling trained models to forget harmful or unnecessary information. However, existing formulations of unlearning—particularly those derived from (ϵ, δ)-Differential Privacy tend to be restrictive and may not fully capture the informational aspects of the forgetting process. The objective of this project is to study unlearning through the lens of Mutual Information and to develop practical algorithms grounded in this perspective.

Ph.D Course Project **Online Changepoint Detection Algorithms:** Change Point Detection refers to the task of identifying abrupt changes or shifts in time series data. This project investigates the sequential hypothesis testing framework to analyze traditional CUSUM statistic–based change point detection algorithms. Furthermore, it conducts a comparative study of neural change point detection methods to evaluate their effectiveness and performance relative to classical approaches.

Master's Project **Automatic categorization and segmentation of land cover using satellite images for Sustainable Urban Development:** Automatic categorization and segmentation of land cover is of great importance for sustainable development, autonomous agriculture, and urban planning. In this project, different image segmentation-based architectures have been explored and used for land cover image segmentation. Specifically, DeepLab-V3 is used as the final model for the segmentation task.

Online Certifications Coursera DeepLearning.AI specialization: Neural Networks, CNN, Sequence Models, Coursera Mathematics for Machine Learning specialization, Coursera SQL for Data Science

Skills

Programming	Python, R, SQL
ML Libraries	Pytorch(Preferred), Tensorflow, Keras, Scikit-learn
Scripting	LaTeX, MS Word, MS PowerPoint
Other Tools	Github/Gitlab, Arduino, Atmel-ATMEGA, Linux

Academic Services

Reviewer	NeurIPS(2023), ICLR(2024), ICML(2024), AAAI(2025)
Teaching	Teaching Assistant for Graduate Courses: 1.Pattern Recognition and Neural Network(E2-233) 2.Advanced Deep Representation Learning(E2-333)
Graduate Courses Taken	Real Analysis, Linear Algebra, Multi-variable Calculus, Probability Theory, Detection and Estimation theory, Advanced Image Processing, Pattern Recongnition and Neural Networks, Advanced Deep Representation Learning, Online Prediction and Learning, Concentration Inequality, Measure theory

Awards and Achievements

- Recipient of VeARC PhD Fellowship for research excellence (Top 3 at IISc) in the academic year 2024-25.
- Recipient of GABESU Scholarship for academic excellence (Top 10 in Department) at IIEST, Shibpur.
- Secured AIR-10 in Indian Statistical Institute's PGDSMA entrance examination.
- Scored 99 percentile (State Rank: 432) in JEE MAINS, 2013 examination.
- Ranked top 0.6 percent (Rank: 830) in State Engineering entrance exam (WBJEE), 2013.