Paramita Koley

Residence/domicile: Cnerg-205, CSE, IIT Kharagpur, 721302
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Place of birth: Kolkata, India ✻ *Date of birth:* 16-06-1988
Web-page Google Scholar DBLP profile

Education

Doctor of Philosophy — *Indian Institute of Technology, Kharagpur*
Computer Science — *July 2018 - current*
***Supervisor**: Prof. Niloy Ganguly and Prof. Sourangshu Bhattacharya.*
***Thesis title**: Robust learning in asynchronous event data and multi-agent team competition [Thesis submitted].*

Master of Engineering — *Indian Institute of Science, Bangalore*
Computer Science — *2011 - 2013*
Grade: 6.4/8

Bachelor of Engineering — *IIEST, Shibpur*
Information Technology — *2006 - 2010*
Percentage: 76.6%

Higher Secondary — *Tarakeswar Mahavidyalaya*
WBBHSE — *2004 - 2006*
Percentage: 95.1%

Research interests

My current research involves solving various challenges in **modeling asynchronous temporal sequences** via the framework of **marked temporal point processes**. Besides, I also explore various learning challenges in **multi-agent team competitions**, for which I employ various tools from the **reinforcement learning** framework.

Peer Reviewed Conference/Journal Publications

- **Differentiable Change-point detection in temporal point process.** Paramita Koley, Harshavardhan Alimi, Shrey Singla, Sourangshu Bhattacharya, Niloy Ganguly, Abir De. AISTATS 2023.
- **Offsetting Unequal Competition Through RL-Assisted Incentive Schemes.** Paramita Koley, Aurghya Maiti, Sourangshu Bhattacharya, and Niloy Ganguly. IEEE Transactions on Computational Social Systems (2022).
- **Demarcating Endogenous and Exogenous Opinion Dynamics: An Experimental Design Approach.** Paramita Koley, Avirup Saha, Sourangshu Bhattacharya, Niloy Ganguly, Abir De. ACM Trans. Knowl. Discov. Data 15(6): 99:1-99:25 (2021)
- **Regression under Human Assistance.** Abir De, Paramita Koley, Niloy Ganguly, Manuel Gomez-Rodriguez. AAAI 2020.
- **Generative Maximum Entropy Learning for Multiclass Classification.** Ambedkar Dukkipati, Gaurav Pandey, Debarghya Ghoshdastidar, Paramita Koley, D. M. V. Satya Sriram. ICDM 2013.

Research experience

MPI-SWS *Kaiserslautern, Germany*
Internship under Prof. Manuel Gomez Rodriguez *May - July 2019*

- Worked on designing algorithms for human-assisted machine learning in linear regression.

IIT Bombay *Bombay, India*
Research Assistant in Machine Learning *July 2013 - Feb 2018*

- Worked on various challenges of kernel-based methods and multi-task active learning techniques.

Projects

Demarcating exogenous events from networked event dynamics
During PhD
Addressed the problem of demarcating externally stimulated events from networked event dynamics, where events are modeled via temporal point process framework and demarcation is performed via subset selection of submodular functions.

Change-point detection in temporal event data
During PhD
Addressed change-point detection problem for continuous-time event data in temporal point process framework by solving a log-likelihood ratio-based differentiable bi-level optimization problem.

Offsetting bias in unequal competition via incentives
During PhD
Addressed the problem of offsetting bias in unequal competition, where inequality stems from agents with different skill levels. In particular, we analyze a bunch of incentive schemes for this purpose using a multi-agent reinforcement learning framework.

Opponent-aware role-oriented learning in team competition
During PhD
Addressed the problem of learning diverse, opponent-aware, role-oriented policies in multi-agent team competition using multi-agent reinforcement learning framework.

Generative Maximum Entropy Learning for Multiclass Classification
ME Thesis at IISc *July 2012 - April 2013*
Addressed the feature selection problem in the multiclass problem with many features like text classification with a huge vocabulary.

Differentiation-based Active Multi-task Learning
Research assistant, IIT Bombay *2018*
Addressed the problem of active sample selection in a multitask learning problem. Proposed a general approach for active selection that can be applied to various multitask learning frameworks, i.e., multitask learning via sharing task relationship matrix or learning shared feature representation.

Academic achievements

- Secured rank 8 in GATE (CS) 2011.
- Secured rank 17 in West Bengal Higher Secondary examination by securing 95% marks.

Technical abilities

Course TA	Machine Learning, Programming and data structure, Information Retreival
Relevant courses	Machine Learning, Graphical Models, Information Retrieval, Scalable Data Mining, Optimization, Algorithms and Data Structures
Programming Languages/Tools	Python, C, MATLAB.
Toolboxes/Frameworks	Pytorch, Scikit-learn, Pandas, numpy, nltk, tick.

Language proficiencies

- English, Bengali, Hindi