Anirban Bhattacharjee

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Education

August 2018 – present
Ph.D. Systems Science, Tata Institute of Fundamental Research (TIFR), Mumbai

August 2016 – April 2018
M.Sc. Applications of Mathematics, Chennai Mathematical Institute (CMI)
(Specialization in Data Analytics)
CGPA - 8.31

July 2012 – May 2015
B.Sc. Mathematics (Hons.), St. Xavier's College, Kolkata
Percentage - 76.31

Publications

- Best Arm Identification in Rare Events. Proceedings of the Thirty-Ninth Conference on Uncertainty in Artificial Intelligence, PMLR 216:163-172 (2023)
  A. Bhattacharjee, S. Vijayan and S. Juneja
  (https://arxiv.org/pdf/2303.07627)
- CityScale Agent-Based Simulators for the Study of Non-Pharmaceutical Interventions in the Context of the COVID-19 Epidemic. Journal of the Indian Institute of Science, 1-39. (2020)
  S. Agrawal, S. Bhandari, A. Bhattacharjee, A. Deo, N. Dixit, P. Harsha, S. Juneja, P. Kesarwani, A. Swamy, P. Patil, N. Rathod, R. Saptharishi, S. Shriram, P. Srivastava, R. Sundaresan, N. K. Vaidhiyan, and S. Yasodharan
  (https://arxiv.org/pdf/1602.04589)

Research Projects

- Using Machine Learning Models for Simulated Data in varying train-test domains (March 2021-present)
  Advisor: Dr. Sandeep Juneja, TIFR

- Bandit Algorithms for Rare Events and Non-Homogeneous Arms (November 2019-present)
  Advisor: Dr. Sandeep Juneja, TIFR

- Categorizing Songs by Artist - an Application of K-means Clustering, Support Vector Machines and Principal Component Analysis to Voice Recognition (May 2017 - August 2017)
  Advisor: Dr. Sourish Das, CMI

- Image Compression Techniques - A Comparative Study (February 2017-April 2017)
  Advisor: Dr. Kavita Sutar Deshpande, CMI

Research Interests

- Machine Learning
  Specialization in Reinforcement Learning and Bandit algorithms
- Applied Probability
- Simulation Methods

Internship

- Research Intern, Chennai Mathematical Institute (May 2017 - July 2017)

Conferences/Workshops/Seminars

March 2022 — Attended "Workshop on Learning and Data Science" hosted by Ashoka University, Mumbai

June 2021 — Attended "INFORMS Simulation Summer School" virtually hosted by Penn State University

December 2020 — Attended "Program on Advances in Applied Probability 2" virtually hosted by International Centre for Theoretical Sciences (ICTS), Bengaluru

February 2020 — Attended "Workshop on Learning Theory 2" at TIFR, Mumbai

August 2019 — Attended "Program on Advances in Applied Probability" at ICTS, Bengaluru

January 2019 — Attended "Workshop on Learning Theory" at TIFR, Mumbai

Experience as Teaching Assistant

September-December 2021 — Course titled "Machine Learning in Practice"
School of Technology and Computer Science (STCS), TIFR

June 2021 — The STCS Vigyan Vidushi programme, a summer school intended to introduce undergraduate and postgraduate women students to advanced topics in theoretical computer science and systems science
School of Technology and Computer Science (STCS), TIFR

January-April 2018 — Course titled "Numerical Linear Algebra"
CMI

Programming Languages Known

- R (extensive usage in bandit simulation, data analysis and machine learning)
- Python (developing machine learning tools via numpy; implementation of Graph Algorithms)
- Basic level experience with MATLAB, C and Java

Coursework Highlights

- Miscellaneous Machine Learning Topics: *Decision Trees; Naive Bayesian Classifiers; Classifier evaluation; Suppport Vector Machines; Perceptron algorithm; VC-dimension; K-means and Hierarchical classification; Density-based Clustering; Expectation-Maximization; Linear Regression; PageRank; Neural Networks*
- Data Analysis and Predictive Modeling with R *(basic data analysis, regression analysis, time series modeling and forecasting, neural networks)*
- Bandit Algorithms
- Measure Theory; Theory of Martingales; Extreme Value Theory; Optimal Transport Problem; Weak Convergence
- Parametric and non-parametric statistical inference; Bayesian inference
- Convex Optimization
- Algorithms with Python *(sorting, tree algorithms, dynamic programming, graph algorithms, network flow problems)*

Miscellaneous Achievements

Awards and Achievements

2016 — All India Rank 23 in IITJAM.

2014 — Recipient of Ram Ghosh Encouragement Award, St. Xavier's College, Kolkata.

2012–15 — Recipient of INSPIRE Scholarship (Department of Science and Technology, Govt. of India).

Certification

2016 — **Machine Learning**, Certification course offered by Stanford University via coursera.org.

Big Data and Hadoop Developer, Certification course offered by simplilearn.com.

Co-curricular

- Hindustani Classical Music (Violin): *Rank holder in multiple music competitions; Recipient of "Young Artist Award" from Amir Khusro Sangeet Academy, Chennai; Completed Sangeet Visharad Diploma from Bhatkhande Sangeet Vidyapith, Lucknow; Experience of playing in advertisements for reputed brands like Air Asia and Honda; Regularly working in independent film and music projects in Mumbai and Kolkata; Regular performer in the Hindustani Classical Music scenario*

Languages Known

- English *(fluent)*
- Bengali *(fluent)*
- Hindi *(fluent)*
- Assamese *(fluent)*
- French *(elementary)*