



Meet our Research Faculty

Dr Tanujit Chakraborty

Assistant Professor



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Name: Tanujit Chakraborty

Title: Assistant Professor of Mathematics (Statistics)

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Research Interests

Statistical Machine Learning
Applied Time Series Forecasting
Statistical Analysis of Networks

Education

Doctor of Philosophy from Indian Statistical Institute, Kolkata, India (Date of Defense: November 27, 2020).

Awards and Grants

May, 2021 - April, 2024 : Mphasis Research Grant in Cognitive Computing; Role: Co-PI, Funding: 30 lakhs INR, Duration: 3 years.

Best Paper Award Winner at ACM International Conference on Data Sciences and Management of Data (CODS-COMAD) in Jan, 2021.

Best Student Paper Award (Application Category) at the International Conference held at IIM Ahmedabad in December 2019.

B.G. Raghavendra Memorial Award from Operational Research Society of India (ORSI) in December 2017

Publications

Books

Chakraborty, Tanujit. "Some Nonparametric Hybrid Predictive Models: Asymptotic Properties and Applications." (2020), Link: <http://library.isical.ac.in:8080/jspui/handle/10263/7076>

Book chapters

Chakraborty, T., Ghosh, I., Mahajan, T., Arora, T. (2021). Nowcasting of COVID-19 confirmed cases: Foundations, trends, and challenges. In Modelling, Control and Drug Development for COVID-19 Outbreak Prevention, Springer
Link: https://link.springer.com/chapter/10.1007/978-3-030-72834-2_29

Journal Articles

[16] Chakraborty, T., Kamat, G., Chakraborty, A. K. (2022). Bayesian Neural Tree Models for Nonparametric Regression. Australian & New Zealand Journal of Statistics, Accepted for Publication.

[15] Bhattacharyya, A., Chakraborty, T., & Rai, S. N. (2022). Stochastic forecasting of COVID-19 daily new cases across countries with a novel hybrid time series model. Nonlinear Dynamics, Accepted for Publication.

[14] Chakraborty, T., Das, S., & Chattopadhyay, S. (2022). A New Method for Generalizing Burr and Related Distributions. Mathematica Slovaca, Accepted for Publication.

[13] Ray, A., Chakraborty, T., & Ghosh, D. (2021). Optimized ensemble deep learning framework for scalable forecasting of dynamics containing extreme events. Chaos: An Interdisciplinary Journal of Nonlinear Science, 31, 111105, Link: <https://doi.org/10.1063/5.0074213>

[12] Chattopadhyay, S., Chakraborty, T., Ghosh, K., Das, A. K. (2021). Modified Lomax Model: A heavy-tailed distribution

- for fitting large-scale real-world complex networks. *Social Network Analysis and Mining*, Vol. 11, pg. 1-24, Link: <https://doi.org/10.1007/s13278-021-00751-1>
- [11] Chakraborty, T., Chakraborty, A. K., Biswas, M., Banerjee, S., & Bhattacharya, S. (2021). Unemployment Rate Forecasting: A Hybrid Approach. *Computational Economics*, Vol. 57, pg. 183-201, Link: <https://doi.org/10.1007/s10614-020-10040-2>
- [10] Ghosh, I., Chakraborty, T. (2021). An integrated deterministic-stochastic approach for forecasting the long-term trajectories of COVID-19. *International Journal of Modeling, Simulation, and Scientific Computing*, Vol. 12, pg. 1-15, Link: <https://doi.org/10.1142/S1793962321410014>
- [9] Chakraborty, T., Chakraborty, A. K. (2020). Hellinger Net : A Hybrid Imbalance Learning Model to Improve Software Defect Prediction. *IEEE Transactions on Reliability*, Vol. 70, pg. 481-494, Link: <https://ieeexplore.ieee.org/document/9194340>
- [8] Chakraborty, T., & Chattopadhyay, S., & Chakraborty, A. K. (2020). Radial basis neural tree model for improving waste recovery process in a paper industry. *Applied Stochastic Models in Business and Industry*, Vol. 36, pg. 49-61, Link: <https://doi.org/10.1002/asmb.2473>
- [7] Chakraborty, T., Chakraborty, A. K. (2020). Superensemble classifier for improving predictions in imbalanced data sets. *Communications in Statistics - Case Studies and Data Analysis*, Vol. 6, pg. 123-141, Link: <https://doi.org/10.1080/23737484.2020.1740065>
- [6] Chakraborty, T., Ghosh, I. (2020). Real-time forecasts and risk assessment of novel coronavirus (COVID-19) cases: A data-driven analysis. *Chaos, Solitons & Fractals*, Vol. 135, pg. 1-10, Link: <https://doi.org/10.1016/j.chaos.2020.109850>
- [5] Chakraborty, T., Chakraborty, A. K., & Chattopadhyay, S. (2019). A novel distribution-free hybrid regression model for manufacturing process efficiency improvement. *Journal of Computational and Applied Mathematics*, Vol. 362, pg. 130-142, Link: <https://doi.org/10.1016/j.cam.2019.05.013>
- [4] Chakraborty, T., Chakraborty, A. K., & Murthy, C. A. (2019). A nonparametric ensemble binary classifier and its statistical properties. *Statistics & Probability Letters*, Vol. 149, pg. 16-23, Link: <https://doi.org/10.1016/j.spl.2019.01.021>
- [3] Chakraborty, T., Chakraborty, A. K., & Mansoor, Z. (2019). A hybrid regression model for water quality prediction. *Opsearch*, Vol. 56, pg. 1167-1178, Link: <https://doi.org/10.1007/s12597-019-00386-z>
- [2] Chakraborty, T., Chattopadhyay, S., & Ghosh, I. (2019). Forecasting dengue epidemics using a hybrid methodology. *Physica A: Statistical Mechanics and its Applications*, Vol. 527, pg. 1-8, Link: <https://doi.org/10.1016/j.physa.2019.121266>
- [1] Chakraborty, T., Chattopadhyay, S., & Chakraborty, A. K. (2018). A novel hybridization of classification trees and artificial neural networks for selection of students in a business school. *Opsearch*, Vol. 55, pg. 434-446, Link: <https://doi.org/10.1007/s12597-017-0329-2>

Conference Articles

- [2] Bhattacharyya, A., Pattnaik, M., Chattopadhyay, S., & Chakraborty, T. (2021). Theta Autoregressive Neural Network: A Hybrid Time Series Model for Pandemic Forecasting. *IEEE International Joint Conference on Neural Networks (IJCNN)*. Link: <https://ieeexplore.ieee.org/document/9533747>
- [1] Chattopadhyay, S., Chakraborty, T., Ghosh, K., Das, A. K. (2021). Uncovering patterns in heavy-tailed networks : A journey beyond scale-free. In *8th ACM IKDD CODS and 26th COMAD*. Link: <https://dl.acm.org/doi/10.1145/3430984.3431021>

Refereed for Journals and Conferences

I have worked as a reviewer for the following Journals: *Reliability Engineering & System Safety*, *Journal of Applied Statistics*, *Journal of Computational and Applied Mathematics*, *Nature Scientific Reports*, *Stochastic Environmental Research and Risk Assessment*, *Computational Economics*, *EAAI*, *ICMLA*, *Evolutionary Intelligence*, *Neuroscience Informatics OPSEARCH*, *Sadhana*, *Clinical Epidemiology*, *Frontiers in Medicine*, and *Frontiers in Public Health*.