List of publications: Dr. Indranil SenGupta

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1. *Stochastic volatility modeling of high-frequency CSI 300 index and dynamic jump prediction driven by machine learning*, Electronic Research Archive, Vol. 31, Issue 3, 2023, pp. 1365-1386 (with X. Hui, B. Sun, Y. Zhou, and H. Jiang). [click here]

2. *Analysis of stock index with a generalized BN-S model: an approach based on machine learning and fuzzy parameters*, Stochastic Analysis and Applications, Vol. 41, Issue 5, 2023, pp. 938-957 (with X. Hui[1], B. Sun, and H. Jiang). [click here]

3. *Machine learning and neural network based model predictions of soybean export shares from US Gulf to China*, Statistical Analysis and Data Mining: The ASA Data Science Journal, Vol. 15, Issue 6, 2022, pp. 707-721 (with S. Awasthi[1], W. Wilson, and P. Lakkakula). [click here]

4. *A novel implementation of Siamese type neural networks in predicting rare fluctuations in financial time series*, Risks, Vol. 10, No. 2: 39, 2022 (16 pages) (with T. Basu, O. Menzer, and J. Ward). [click here]

5. *Analysis of optimal portfolio on finite and small time horizons for a stochastic volatility market model*, SIAM Journal on Financial Mathematics, Vol. 12, No. 4, 2021, pp. 1596-1624 (with M. Lin[1]). [click here]

6. *Fractional Barndorff-Nielsen and Shephard model: applications in variance and volatility swaps, and hedging*, Annals of Finance, Vol. 17, 2021, pp. 529–558 (with N. Salmon[1]). [click here] or for full-text (view-only version) [click here]

7. *Hedging and machine learning driven crude oil data analysis using a refined Barndorff-Nielsen and Shephard model*, International Journal of Financial Engineering, Vol. 8, No. 4, 2021, pp. 2150015 (29 pages) (with H. Shoshi[1]). [click here]

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11. *Sequential hypothesis testing in machine learning, and crude oil price jump size detection*, Applied Mathematical Finance, Vol. 27, No. 5, 2020, pp. 374-395 (with M. Roberts[1]). [click here]

[1]Graduate student (during the time when this paper is written) supervised by Dr. SenGupta

12. *Multi-asset generalised variance swaps in Barndorff-Nielsen and Shephard model*, International Journal of Financial Engineering, Vol. 7, No. 4, 2020, pp. 2050051 (36 pages) (with S. Biswas and D. Mukherjee). [click here]

13. *Infinitesimal generators for two-dimensional Lévy process-driven hypothesis testing*, Annals of Finance, Vol. 16, No. 1, 2020, pp. 121-139 (with M. Roberts[1]). [click here] or for full-text (view-only version) [click here]

14. *Barndorff-Nielsen and Shephard model for hedging energy with quantity risk*, High Frequency, Vol. 2, Issue 3-4, 2019, pp. 202-214 (with W. Wilson, W. Nganje, and S. Gebresilasie). [click here]

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18. *A new analysis of VIX using mixture of regressions: examination and short-term forecasting for the S&P 500 market*, High Frequency, Vol. 1, Issue 1, 2018, pp. 53-65 (with T. Miljkovic). [click here]

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20. *Feynman path integrals and asymptotic expansions for transition probability densities of some Lévy driven financial markets*, Journal of Applied Mathematics and Computing, Vol. 54, Issue 1, 2017, pp. 159-182, (with A. Issaka[1]). [click here]

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45. *Differential operator related to the generalized superradiance integral equation*, Journal of Mathematical Analysis and Applications, Vol. 369, 2010, pp. 101-111. [click here]

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50. *Broadband tuning limits on UWB antennas based on Fano's formulation*, Proceedings of IEEE Antennas and Propagation International Symposium, Albuquerque, NM., July 9-14, 2006, pp. 171-174, (with M. C. Villalobos, H. D. Foltz and J. S. McLean). [click here]

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Submitted papers

1. *Analysis of optimal portfolio on finite and small-time horizons for a stochastic volatility model with multiple correlated assets*, (with M. Lin). [arXiv link]

2. *Estimation of VaR with jump process: application in corn and soybean markets*, (with M. Lin and W. Wilson). [arXiv link]

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4. *From pixels to profits: a novel approach to identify rare events for a group of US equities*, (with L. Mondal, K. Chandak, and G. Chakrabarty).

5. *Implications of the Dirichlet processes mixture model on U.S. crop yield predictions in the presence of random shocks*, (with K. A. Addey, S. Shaik, and W. Nganje).

6. *A data-science-driven short-term analysis of Amazon, Apple, Google, and Microsoft stocks*, submitted, (with S. Ekapure, N. Jiruwala, and S. Patnaik). *[Summer REU paper. Co-authors are undergraduate students from Indian Institute of Technology (IIT)- Kharagpur, India.]* [arXiv link]

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1. *Analysis of Strategic Market Management in Light of Stochastic Processes, Recurrence Relation, Abelian Group and Expectation*, Advances in Artificial Intelligence and Data Engineering, (part of the Advances in Intelligent Systems and Computing book series), N. Chiplunkar, T. Fukao (eds), Springer, 2021, Singapore, pp. 701-710 (with P. Chakrabarti, T. Chakrabarti, S. Bane, B. Satpathy, and J. A. Ware). [click here]

2. *Study of volatility structures in geophysics and finance using GARCH models*, Handbook of High-Frequency Trading and Modeling in Finance; I. Florescu, M. C. Mariani, H. E. Stanley, F. G. Viens (eds), Wiley, 2016, ISBN: 978-1118443989, New York, pp. 295-340, (with M. C. Mariani and F. Biney). [click here]

3. *Scale invariance and Lévy models applied to earthquakes and financial high-frequency data*, Handbook of High-Frequency Trading and Modeling in Finance; I. Florescu, M. C. Mariani, H. E. Stanley, F. G. Viens (eds), Wiley, 2016, ISBN: 978-1118443989, New York, pp. 341-370, (with M-P. Beccar-Varela and I. Florescu). [click here]

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5. *Solutions to integro-differential parabolic problem arising on financial mathematics*, Handbook of Modeling High-Frequency Data in Finance; F. G. Viens, M. C. Mariani, I. Florescu (eds), Wiley, 2011, ISBN: 978-0470876886, New York, pp. 347-382, (with M.C. Mariani and M. Salas). [click here]

6. *Existence of solutions for financial models with transaction costs and stochastic volatility*, Handbook of Modeling High-Frequency Data in Finance; F. G. Viens, M. C. Mariani, I. Florescu (eds), Wiley, 2011, ISBN: 978-047087688-6, New York, pp. 383-419, (with M.C. Mariani and E.K. Ncheuguim). [click here]

7. *Broadband tuning limits on UWB antennas based on Fano's formulation*, Ultra Wideband, Short Pulse Electromagnetics, Vol. 8, 2007, C.E. Baum, A.P. Stone, J.S. Tyo (Eds.), pp. 83-87, (with M. C. Villalobos, H. D. Foltz, and J. S. McLean). [click here]

Doctoral dissertation

- *Analysis of the three-dimensional superradiance problem and some generalizations*, Texas A&M University, 2010. [click here]