

SAJAL CHAKROBORTY

Department of Mathematics and Statistics, Texas Tech University, USA

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- EDUCATION**
- Ph.D. in Mathematics* August 2024
Texas Tech University, USA
 - M.S. in Statistics* August 2022
Texas Tech University, USA
 - M.S. in Mathematics* May 2015
University of Dhaka, Bangladesh
 - B.S. in Mathematics* September 2013
University of Dhaka, Bangladesh
- EMPLOYMENT**
- Postdoctoral Scholar* August 2024 to present
Worcester Polytechnic Institute, Massachusetts, USA
 - Graduate Part-Time Instructor* September 2018 to August 2024
Texas Tech University, USA
 - Lecturer* September 2015 to September 2018
East West University, Dhaka, Bangladesh
 - Lecturer* January 2015 to August 2015
United International University, Dhaka, Bangladesh
- AWARDS**
- Helen DeVitt Jones Excellence in Graduate Teaching Award, Texas Tech University, USA.
 - SIAM Teaching Award, Texas Tech University, USA.
 - SIAM TTU Student Chapter Graduate Student Research Day Award, Texas Tech University, USA.
 - Dr. Shelby Hildebrand Graduate Math Fellowship, Texas Tech University, USA. Amount: \$10,000.
 - AT and T Chancellor's fellowship, Texas Tech university, USA. Amount: \$16,000.
 - Graduate Teaching Assistantship, Texas Tech University, USA.
 - Best Paper Award, 18th International Mathematics Conference, Independent University, Dhaka, Bangladesh.
 - Dean's award of Science faculty, University of Dhaka, Bangladesh.
 - National Science and Technology (NST) fellowship, Ministry of Science and Technology Bangladesh.
- PUBLICATIONS**
- Sajal Chakroborty, Ram Iyer, and Alex Trindade, **On the use of the M-quantiles for outlier detection in multivariate data** (<https://arxiv.org/pdf/2401.01628.pdf>).

- Leonardo Wei, Sudeesh Subramanian, Felipe Santos, **Sajal Chakroborty**, Suman Chowdhury, **A Comprehensive Methodological Framework for Anthropometric Head Shape Modeling** (<https://www.biorxiv.org/content/10.1101/2024.06.02.597069v1>).
- **Sajal Chakroborty** and M. Babul Hasan, **A Parametric Approach to Solve Bounded-Variable LFP by Converting into LP**, *International Journal of Operations Research*, Vol. 13, No. 2, (2016), P. 47-57.
- **Sajal Chakroborty** and M. Babul Hasan, **A Proposed Technique for Solving Scenario Based Multi-Period Stochastic Optimization Problems with Computer Application**, *International Journal of Mathematical Sciences and Computing*, Vol. 2, No. 4, (2016), P. 12-23.
- H. K. Das and **Sajal Chakroborty**, **Analyzing on the Decomposition Based Pricing Procedure for Solving Two Person Zero Sum Game Problems Through Computer Algebra**, *International Journal of Computer Applications*, Vol. 156, No. 12, (2016), P. 37-47.

PRESENTATIONS

- **On the use of the M-quantiles for outlier detection in multivariate data**, 6th SIAM Texas-Louisiana sectional meeting, University of Louisiana at Lafayette, 03-05 November 2023.
- **On the use of the percentiles in machine learning**, three minute thesis (3MT) competition, Texas Tech University, 06 October 2023.
- **On the use of the Koltchinskii transform for outlier detection in multivariate data**, SIAM Graduate Student Research Day, Texas Tech University, USA, 14 April 2023.
- **On the use of Koltchinskii transform for quantile calculations**, 22nd Graduate Student Research Poster Competition, Texas Tech University, USA, 30 March 2023.
- **Solving 0-1 Integer Programming Problems by using Improved Decomposition Technique**, International Conference on Advances in Computational Mathematics, University of Dhaka, Bangladesh, 27-28 May 2017.
- **An Impeccable Solution Procedure of Stochastic Programming Problems by Inserting Scenarios in Deterministic Case**, 2nd International Bose Conference, University of Dhaka, Bangladesh, 3-4 December 2015.
- **An Application of Set Covering Problem for Installing Minimum Number of Police Check Posts: A case study for Shabag Police Station Area**, 18th International Mathematics Conference, Independent University Bangladesh (IUB), Dhaka, 20-22 March 2014.

RESEARCH EXPERIENCE

- **Dissertation: Some New Tools for Multivariate Statistics and Machine Learning from Potential Theory**
Advisor: Dr. Ram Iyer, Texas Tech University, USA.

- M.S. thesis: **Gross-Gauss Measure on Infinite-Dimensional Reproducing Kernel Hilbert Spaces.**
Advisor: Dr. Ram Iyer, Texas Tech University, USA.
- M.S. thesis: **Solution Procedure of Stochastic Programming Problems by Using Decomposition and Pricing Techniques.**
Advisor : Dr. Md. Babul hasan, University of Dhaka, Bangladesh.
- Honor's project: **Modeling Combinatorial Optimization Problems.**
Advisor : Md. Rajib Arefin, University of Dhaka, Bangladesh.

COURSES TAUGHT

As Instructor of Record at Texas Tech University

- MATH 2450 Calculus III with Applications Summer 2022
- MATH 2300 Statistical Methods Summer 2021, Fall 2021
- MATH 1550 Precalculus Spring 2020
- MATH 1452 Calculus II with Applications Spring 2023
- MATH 1451 Calculus I with Applications Spring 2022, Fall 2022,2020
- MATH 1331 Introductory Mathematical Analysis II Spring 2021
- MATH 1330 Introductory Mathematical Analysis I Spring 2019
- MATH 1320 College Algebra Fall 2019

As a Lecturer at East West University, Dhaka, Bangladesh

- MATH 104: Co-ordinate Geometry and Vector Analysis
- MATH 102: Differential Equations and Special Functions
- MATH 101: Differential and Integral Calculus

As a Lecturer at United International University, Dhaka, Bangladesh

- MATH 203: Linear Algebra and Matrices
- MATH 153: Complex Variables
- MATH 003: Elementary Calculus

TECHNICAL SKILLS

- Programming Languages: MATLAB, R, Python, FORTRAN.
- Software: Latex, Microsoft Word, PowerPoint, and Excel.

PROFESSIONAL DEVELOPMENT

- **The teaching effectiveness and career enhancement (TEACH) program**, Texas Tech University, USA.
- **Groundwork Program**, Texas Tech University, USA.
- **International Teaching Assistant (ITA) Workshop**, Texas Tech University, USA.
- **Integer Programming and Combinatorial Optimization (IPCO) Summer School 2021**, Georgia Tech University, USA.

PROFESSIONAL AFFILIATIONS

- American Mathematical Society.
- Bangladesh Mathematical Society.
- Society for Industrial and Applied Mathematics, Student Chapter, Texas Tech University.