

Chathurika S. Abeykoon

Personal Information

Chathurika S. Abeykoon
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Research Interests Machine Learning Theory, Statistical Foundations of Artificial Intelligence, Trustworthy AI, Generative Models and Synthetic Data, Uncertainty Quantification, Neural Network Theory, Computational Statistics, Mathematical Statistics, and Probability Theory.

Research Laboratory

The Feature Factory: Machine Learning Research Laboratory
An undergraduate research laboratory dedicated to the mathematical and statistical foundations of artificial intelligence. The lab conducts research in machine learning theory, trustworthy AI, synthetic data, uncertainty quantification, and statistical learning while mentoring undergraduate students through collaborative research projects, conference presentations, and publications.

Education

[University of Mississippi](#), Oxford, MS, 38677
Ph.D in Mathematics (concentration in Statistics), May 2023
— Dissertation Title : Double Descent Behavior in a Two Layer Neural Network for a Binary Classification
— Areas of Study : Machine Learning and Deep Learning Theory
— Advisor : Dr. Hailing Sang
— [Newsletter, Spring 2023](#)

[University of Sri Jayewardenepura](#), Nugegoda, Sri Lanka
B.S. in Mathematics, Nov 2015

[University of Colombo School of Computing](#), Colombo, Sri Lanka
Associate in Information Technology, Sep 2014

Professional Experience

2023 -	Assistant Professor Department of Mathematics & Statistics, Rhodes College, Memphis, TN
2018 - 2023	Graduate Teaching Assistant Department of Mathematics, University of Mississippi, Oxford, MS
2016 - 2017	Lecturer Department of Mathematics, Sri Lanka Institute of Information Tech., Sri Lanka
2016	Research Assistant Department of Mathematics, University of Sri Jayewardenepura, Sri Lanka

Publications

■ student coauthor(s)
▲ faculty coauthor(s)

Abeykoon, C.S., Beknazaryan, A., Sang, H. (2025). The double descent behavior in two-layer neural network for binary classification. *Journal of Data Science*, 23(2) : 370 - 388.
[PDF] doi : [10.6339/25-JDS1175](https://doi.org/10.6339/25-JDS1175)

Muia, M. N., Atutey, O., Abeykoon, C. S. (2026). Minimax Lower Bounds for Uniform Estimation of Covariate-Dependent Copula Parameters. *Mathematics*, 14(5), 914.
[PDF] doi : [10.3390/math14050914](https://doi.org/10.3390/math14050914)

Beknazaryan, A. Abeykoon, C.S., Sang, H. (Submitted - August 2025). Shallow Neural Network Representation of Polynomials.

✦ Abeykoon, C.S., Azhar, A., Hisham, G. (Submitted - April 2026). Generative Residual Learning for Noise Resilient Time-Series Forecasting.

✦ Abeykoon, C.S., Muia, M.N., Goldstein, M. (Submitted - June 2026). On the Reliability of Generative Augmentation : A Wasserstein-Based Theoretical and Empirical Study

Hasan, M., Ahsan, M.M., Muia, M.N., Hamadou, M.A., Abeykoon, C.S. (Submitted - July 2026). Generalized Neural Network Mixed Models for Longitudinal Data : Approximation, Consistency, and Prediction

Beknazaryan, A., Abeykoon, C.S., Sang, H (In Review). Expressive Power of Binary and Ternary Neural Networks.

▲ ✦ Abeykoon CS, Deb AP, Xu H. (In Review). A Statistical Study of Synthetic Data Reliability in Deep Generative Models.

Abeykoon CS (In preperation). Distribution-Adaptive Conditional Generative Augmentation via Gini-Guided Augmentation Strength.

Textbooks

Abeykoon, C.S., Advanced Level Combined Mathematics - Year 13 Pure Mathematics, Vidya Publishers, Sri Lanka, 2017.

Abeykoon, C.S., Pallage, H.K., Advanced Level Combined Mathematics - Year 12 Pure Mathematics, Vidya Publishers, Sri Lanka, 2017.

Teaching Materials

Abeykoon, CS., Advanced Level Combined Mathematics - Year 13 Pure Mathematics - Learning Videos, Vidya Publishers, Sri Lanka, 2017. doi : [Playlist](#) | [Project Website](#)

Abeykoon, CS., Pallage, H.K., Advanced Level Combined Mathematics - Year 12 Pure Mathematics - Learning Videos, Vidya Publishers, Sri Lanka, 2017. doi : [Playlist](#) | [Project Website](#)

Grants and Awards

Summer 2026 : Faculty Support Funds for Professional Development, Rhodes College, Memphis, TN.

Funding for registering NISS Writing Workshop for Junior Researchers July 2026 (\$250)

Summer 2026 : Faculty Development Endowment Grant, Rhodes College, Memphis, TN.

Funding for summer research project : A Statistical Study of Synthetic Data Reliability in Deep Generative Models (\$6,000)

Spring 2026 : EAPOST mentor for module implementation by Expanding and assessing the Art and Practice Of Statistical Thinking project (EAPOST) Project supported by NSF IUSE grant : DUE2235355 (\$1,000)

Fall 2025 and Spring 2026 : Student Research Assistant(SRA) funding for a student stipend, Rhodes College, Memphis, TN. (\$550 per semester)

Summer 2025 : Faculty Development Endowment Grant, Rhodes College, Memphis, TN.

Funding for developing new course materials for DATA/MATH 344 Advanced Methods in Data Analytics. (\$1,000)

Fall 2024 : EAPOST Scholar for module implementation by Expanding and assessing the Art and Practice Of Statistical Thinking project (EAPOST) Project supported by NSF IUSE grant : DUE2235355 (\$250)

Summer 2024 : Faculty Development Endowment Grant, Rhodes College, Memphis, TN. Funding for developing new course materials for DATA/MATH 244 Introduction to Data Analytics. (\$5,000)

March 2023 : Double Descent Behavior in Two Layer Neural Network for Binary Classification, Poster Presentation - 1st place Alabama - Mississippi ASA Chapter Annual Conference University of Alabama, Birmingham, AL.

March 2023 : Travel Grant for Alabama - Mississippi ASA Chapter Annual Conference - 2023 Department of Mathematics, The University of Mississippi, Oxford, MS.

Jan 2023 : Dissertation Fellowship for Spring 2023
Graduate School of The University of Mississippi, Oxford, MS. (\$6,000)

November 2022 : Travel Grant for Deep Math Conference - 2022
Department of Mathematics, The University of Mississippi, Oxford, MS.

Aug 2022 : Graduate Fellowship for the Fall 2022
Graduate School of The University of Mississippi, Oxford, MS. (\$8,000)

June 2022 : Research Assistantship for the Summer 2022
Graduate School in The University of Mississippi, Oxford, MS. (\$3,000)

April 2022 : Travel Grant for Alabama - Mississippi ASA Chapter Annual Conference - 2022
Department of Mathematics, The University of Mississippi, Oxford, MS.

September 2016 : Research Grant for Advanced Level Combined Mathematics - Year 12/13
Pure Mathematics video productions, University of Sri Jayawardenepura, Colombo, Sri Lanka.
(LKR 125,000)

Research Presentations

♣ Invited
♠ Refereed

♠ April 2026 : Conditional Generative Augmentation for Imbalanced Classification : Theory and Empirical Validation, Symposium on Statistics and Data Science (SDSS 26), Milwaukee, WI.

March 2026 : Conditional Generative Augmentation for Imbalanced Classification : Theory and Empirical Validation, Junior Faculty Spotlight. Alabama - Mississippi ASA Chapter Annual Conference 2026, University of Mississippi, Oxford, MS.

♠ June 2024 : Double Descent Behavior in two Layer Neural Network for Binary Classification, Symposium on Statistics and Data Science (SDSS 24), Richmond, VA.

♣ April 2024 : Data teach Machines to Imitate Human Behavior, International Scholar Day, Rhodes College, Memphis, TN.

April 2023 : Double Descent Behavior in two Layer Neural Network for Binary Classification, Statistics Seminar, Department of Mathematics, University of Mississippi, Oxford, MS.

♣ April 2023 : Reaching the end. What is next, AMS Graduate Student Chapter, Department of Mathematics, University of Mississippi, Oxford, MS.

March 2023 : Double Descent Behavior in two Layer Neural Network for Binary Classification, Podium Presentation, Graduate Student Council Research and Creative Achievement Symposium at The University of Mississippi, Oxford, MS.

♣ April 2016 : History of Metric System, Physics Day 2016, University of Sri Jayewardenepura, Sri Lanka.

Posters
♣ student coauthor(s)

♣ April 2026 : Noise-Resilient Time-Series Forecasting : A Regression WGAN Approach, Symposium on Statistics and Data Science (SDSS 26), Milwaukee, WI. Coauthors : Aleem Azhar, Golam Hisham.

♣ April 2026 : Synthetic Feature Augmentation Using Conditional and Wasserstein GANs for Improved Seed Classification, Rhodes Symposium, Rhodes Collage, Memphis, TN. Coauthor : Mallory Goldstein.

♣ April 2024 : Evaluating The Effectiveness of Classification Algorithms to Predict The Presence of Breast Cancer, Rhodes Symposium, Rhodes Collage, Memphis, TN. Coauthor : Sambhavi Lohani.

March 2023 : Double Descent Behavior in Two Layer Neural Network for Binary Classification, 1st place. Alabama - Mississippi ASA Chapter Annual Conference 2023, University of Alabama, Birmingham, AL, USA. [Chapter Summer 23 Issue](#)

June 2016 : Using audio visual technology to teach Advanced Level Mathematics in Sri Lanka, International Industrial Mathematics Conference 2016, Colombo Sri Lanka.

Teaching
Experience

2023 - Present, Assistant Professor, Rhodes College, Memphis, TN.

MATH 112 - Pre Calculus and Differential Calculus (Spring 2024, Fall 2025, 2026)

MATH 211 - Applied Statistics (Spring 2024 - 2 sections, Fall 2024 - 2 sections)

MATH 212 - Applied Regression (Fall 2023, Fall 2025)

MATH 244 - Introduction to Data Analytics and Visualization (Spring 2026)

MATH 312 - Mathematical Statistics (Fall 2024)

MATH 344 - Advanced Data Analytics (Fall 2025, Fall 2026)

MATH 465/335 - Special Topics - Stochastic Processes (Fall 2023, Spring 2026)

2018 - 2023, Graduate Teaching Assistant, University of Mississippi, Oxford, MS.

MATH 125 - Basic Mathematics for Science and Engineering (Fall 2022)

MATH 261 - Unified Calculus and analytic geometry (Spring 2022)

MATH 155 - Elementary Statistics (Fall 2021, Spring 2021, Fall 2020, Spring 2020, Fall 2019)

2017, Lecturer, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka.

IT 1030 - Mathematics for Computing (Spring 2017, 2 Sections)

MA 220 - Probability and Statistics for undergraduate students (Spring 2017, 2 Sections)

Summer 2026 : NISS Writing Workshop for Junior Researchers, National Institute of Statistical Sciences (NISS), July 2026. [Certificate](#)

Spring 2026 : AI-Powered Scientific Writing with LaTeX, Featured Seminar. Instats Inc.
website : [Instats](#)

Spring 2026 : EAPOST mentor for module implementation by Expanding and assessing the Art and Practice Of Statistical Thinking project (EAPOST) Project supported by NSF IUSE grant : DUE2235355. website : [EAPOST](#)

Spring 2025 : Ethical AI Principles for Statistical Practitioners : Experiences and Challenges, Webinar by ASA

Spring 2025 : Efficient Programming in R (Free Seminar). Instats Inc..
website : [Instats](#)

Fall 2024 : EAPOST Scholar for module implementation by Expanding and assessing the Art and Practice Of Statistical Thinking project (EAPOST) Project supported by NSF IUSE grant : DUE2235355. website : [EAPOST](#)

2024 July 16-17 : Virtual workshop on "Multivariable Thinking in Introductory and Intermediate Statistics Courses" by Expanding and assessing the Art and Practice Of Statistical Thinking project (EAPOST).

2024 March 7-8 : Women in Data Science WiDS 9th Conference, Stanford, CA . A Technical conference that features outstanding women discussing their exceptional work in data science, AI, and related fields, across a wide range of domains.

2024 February 2 - March 1 : Direct Experiences with Student Activities for Learning Statistical Concepts. A workshop series for faculty professional development through intensive workshops, sustained interactions, formative assessment, and support materials to dramatically improve students' statistical education.

2023 - 2024 : Rhodes Scholarship Mentoring Program for junior faculty members. The program designed to provide motivation and proper guidance towards the scholarship expectations.

Service

Service to Rhodes College and the Department of Mathematics and Statistics

- 2025 - 2026 : Faculty Member for Data Analytics program
- 2025 Spring : Rhodes AI Summit, Faculty representation in the panel discussion.
- 2024 Fall : Computer Science Department tenure-track search for a Computer Scientist (external committee member).
- 2024 Fall : Affiliated Faculty Member for Data Analytics program.
- 2024 Fall : Faculty representative for Mathematics and Statistics, and Data Analytics at the faculty perspective sessions at Rhodes admission events. (Nov 4th and 11th).
- 2023 - 2026 : Mathematics and Statistics Community Building Committee. Planning and coordination.

Advising

- Liberal Arts Advisees - Fall 2024 (4 students)
- Liberal Arts Advisees - Fall 2025 (4 students)
- Major Advisees - Spring 2026 (4 students)

Accompanied Rhodes students to Mathematics, Statistics, Data Analytics and Machine Learning conferences :

- Symposium on Statistics and Data Science (SDSS 26), Milwaukee, WI. (2 students)
- Alabama - Mississippi ASA Chapter Annual Conference 2026, University of Mississippi, Oxford, MS. (2 students)

Guided, mentored and accompanied 5 Rhodes students to compete in Tennessee DataFest 2026 held at Freed-Hardeman University, Henderson April 24-26. The students won the Best Data Visualization award. [Rhodes News](#), [FHU News](#)

Service to the wider Mathematics and Statistics Communities

- Served as an [EAPOST](#) mentor for Spring 2026 class module implementations.
- Resource Reviewer for NIH Data Management and Sharing Plan template Spring 2026 [Link](#)
- Served as a scoring judge for the Undergraduate Statistics Project Competition ([USPROC](#)) 2024 and 2025 (June and December) Intermediate Statistics Class Project round 2026 (June and December) Undergraduate Statistics Research Project round
- [ASA Statistics Project Competition](#) 2024, Served as a scoring judge for all the 4 rounds.
- 2024 March 7-8 : Women in Data Science WiDS 9th Conference, Stanford, CA. Poster session coordinator.

Professional Memberships

- American Mathematical Society (AMS)
- American Statistical Association (ASA)
- Women in Data Science (WiDS)

Advised Student Research
★ Resulted in a publication

Fall 2026

- Dwip Saumitro Shaun (2 credits)
- Beldon Partson (0 credits, Senior Seminar)
From Birdsongs to Human Music : Exploring the Analogousness in Animal Vocalizations Through Fourier and Wavelet Analysis

Summer 2026

- Ayaan Pratim Debb (0 credits)
★ A Statistical Study of Synthetic Data Reliability in Deep Generative Models.

Spring 2026

- Aleem Azhar and Golam Hisham (0 credits)
★ Noise-Resilient Time-Series Forecasting Regression-WGAN approach
- Beldon Partson (0 credits, Senior Seminar)
From Birdsongs to Human Music : Exploring the Analogousness in Animal Vocalizations Through Fourier and Wavelet Analysis

Fall 2025

- Mallory Goldstein (0 credits, ENVS 451/452)
★ Synthetic Seed Features for Classification Augmentation using Generative Adversarial Networks (GANs)
- Aleem Azhar and Golam Hisham (0 credits)
★ Noise-Resilient Time-Series Forecasting Regression-WGAN approach

Fall 2023

— Sambhavi Lohani (0 credits)

Evaluating The Effectiveness of Classification Algorithms to Predict The Presence of Breast Cancer
