

# CURRICULUM VITAE

Dr. SAEBUGARI BALASWAMY  
Assistant Professor  
Department of Statistics  
Indira Gandhi National Tribal University  
(A Central University)  
Amarkantak – 484 886  
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## Career Objective

To be a part of an organization that will offer challenging opportunities both in teaching as well as research that will enable me to use my knowledge and technical skills to bring forth fruitful research in the field of Statistics.

## Educational Qualification

COURSE	SCHOOL / COLLEGE	BOARD / UNIVERSITY	YEAR OF PASSING	PERCENTAGE / CGPA
Ph.D. (Statistics)	Pondicherry University Puducherry	Pondicherry University	2016	-
M.Sc. (Statistics)	Pondicherry University Puducherry	Pondicherry University	2012	9.5
B.Sc. (M.St.Cs)	R.K. Degree College, Kamareddy	Osmania University	2010	74.60%
Intermediate (M.P.C)	Sandeepani Junior College, Kamareddy	Board of Intermediate	2007	81.00%
S.S.C	Z.P.H School, Kachapoor	Board of Secondary Education	2005	77.66%

## Awards Received

1. Received **Prof. B. K. Kale Award** in *Young Statistician Award Competition* held at International Conference on Statistics and Information Technology for a growing Nation in conjunction with 34<sup>th</sup> Annual Convection of Indian Society for Probability and Statistics, organized by Department of Statistics, Sri Venkateswara University, Tirupati during 30<sup>th</sup> November – 2<sup>nd</sup> December, 2014.

## Areas of Research Interest

- ✓ Biostatistics
- ✓ Classification
- ✓ Statistical Computing
- ✓ Multivariate Statistical Analysis

### Life Memberships:

1. Indian Society for Probability and Statistics
2. Member, Dept. BoS, IGNTU, Amarkantak.
3. Doctoral Committee Member for Ph.D. Students of other disciplines.

### Title of the Ph.D. thesis and Research Supervisor

**Ph.D. Thesis Title:** ON THE CLASS OF HYBRID ROC CURVES IN THE CONTEXT OF SKEWED DISTRIBUTIONS

**Description:** ROC Curve is a tool used to assess the performance of a binary classifier where an object is classified into one of the pre-defined groups (H and D populations). The statistical distributions underlying these populations lead to the formulation of theoretical models of ROC Curves. Bi-normal and Bi-Exponential are two known cases of such models. When the distributions are different these models will not produce reliable output. In this context we have examined Hybrid ROC Curves to accommodate different distributions in pair.

**Ph.D. Research Supervisor:** **Dr. R. Vishnu Vardhan**  
Assistant Professor, Department of Statistics  
Pondicherry University, Puducherry – 605 014  
Email id: rvvrr@gmail.com

### Details of M.Sc. Project (December 2011 - April 2012)

**Degree :** M.Sc. Statistics

**Project Title:** Some Aspects of Survival Techniques for Breast Cancer Data – An R Programming Approach

**Description:** Missing data analysis is an important aspect that needs attention in the domain of medical research. Two concepts in this regard namely, Missing Completely At Random (MCAR) and Missing At Random (MAR) have been incorporated to compute the missing values in Breast Cancer Data. The techniques involve the use of Expectation Maximization algorithm and regression methods. Following this, the influential factors associated with Cancer are identified using Kaplan-Meier and Cox Proportional hazard models.

## Book Publications

1. A Class of Hybrid ROC Curves for Skewed Distributions. **S. Balaswamy**, R. Vishnu Vardhan. Lap Lambert Academic Publishing, 2023, ISBN: 978-620-6-15615-4, India.
2. Calyampudi Radhakrishna Rao: A Legend in Statistics. R. Vishnu Vardhan, **S. Balaswamy**. Descendents of Kanada, Scientific Publishers, 2023, ISBN: 978-81-962465-1-8 (H/B), India.

## Research Publications

1. Assessing ecological sustainability of the Narmada River using the macrophyte river index. Sandhya Saini, Tarun Kumar Thakur, **Saebugari Balaswamy**, Amit Kumar, Ramesh Raj Pant, Rupesh Kumar and Mohammad Rafe Hasthan. Physics and Chemistry of the Earth, Parts AB/C, 139 (103931), 2025.
2. Determining Optimal Threshold and some Inferential Procedures for a Skewed ROC model in the Binary Classification Framework. Sandhya Singh, **Saebugari Balaswamy** and R.Vishnu Vardhan. Statistics and Applications, 23 (01), 2025, 303-320.
3. AUC Estimation and ROC Model Comparison in the Perspective of Generalized Exponential Distribution. **S. Balaswamy**, R. Vishnu Vardhan. International Journal of Statistics and Reliability Engineering, 10 (02), 2023.
4. Estimation of the area under the ROC curve for non-normal data. **S. Balaswamy**, R.V. Vardhan. Communications in Statistics: Case Studies, Data Analysis and Applications, 8(3), 2022, <https://doi.org/10.1080/23737484.2022.2072410>.
5. *Application of ROC Curve in Research and Statistics*. **S. Balaswamy**. Research journal - Mekal Mimansa, 13 (02), 2021, 68-75.
6. *Estimating the Area under the ROC Curve in the Framework of Lindley Centered Distributions*. **S. Balaswamy**, R.V. Vardhan. Statistics and Applications, 19 (02), 2021, 231-240.
7. *A Straight Forward Approach in Understanding the Improperness of ROC Curve*. R.V. Vardhan, Sameera G, and **S. Balaswamy**. Special Proceeding of the 22<sup>nd</sup> Annual Conference of SSCA held at S.P. Pune University during January 02-04, 2020 pp 59-71.
8. *Improper Multivariate Receiver Operating Characteristic (iMROC) Curve*. **S. Balaswamy**, R.V. Vardhan and Sameera G. Statistics, Optimization and Information Computing. 2021, 9(2), 492-501.
9. *Transmuted Half Normal Distribution*. **S. Balaswamy**. International Journal of Scientific Research in Mathematical and Statistical Sciences. 2018, 5(4), 163-170.

10. *Interval Estimation and Inferential Procedures of the Measures of Hybrid ROC (HROC) Curve*. **S. Balaswamy** and R. Vishnu Vardhan. *Biostatistics and Biometrics Open Access Journal*. 2017, 3(4), 1-10.
11. *ROC Curve Estimation using the Combination of Generalized Half Normal and Weibull Distributions*. **S. Balaswamy** and R. Vishnu Vardhan. *Journal of the Indian Society for Probability and Statistics*, Springer. **2016**, 17(1), 11-23.
12. *An Anthology of Parametric ROC Models*. **S. Balaswamy** and R. Vishnu Vardhan. *Research & Reviews: Journal of Statistics*. **2016**, 5(2), 32-46.
13. *Comparing Several Diagnostic Procedures using the Intrinsic Measures of ROC Curve*. R. Vishnu Vardhan and **S. Balaswamy**. *Indian Journal of Medical Research and Pharmaceutical Sciences*. **2016**, 3(3), 48-55.
14. *Influence of shape and scale parameters in estimating the measures of ROC Curve*. **S. Balaswamy** and R. Vishnu Vardhan. *Journal of Applied Probability and Statistics*. **2016**, 11(1), 121-127.
15. *Transmuted New Modified Weibull Distribution*. R. Vishnu Vardhan and **S. Balaswamy**. *Journal of Mathematical Sciences and Applications: E-Notes*. **2016**, 4(1), 125-135.
16. *Functional Relationship between Brier Score and Area under the Hybrid ROC Curve*. R. Vishnu Vardhan and **S. Balaswamy**. *Proceedings of National Conference on Emerging Trends in Statistical Research: NAROSA Publication*. **2016**, 133-141.
17. *Estimation of Confidence Intervals of a GHROC Curve in the presence of Scale and Shape parameters*. **S. Balaswamy** and R. Vishnu Vardhan. *Research Journal of Mathematical and Statistical Sciences*. **2015**, 3(10), 4-11.
18. *Intervals Estimation for the Measures of ROC Curve underlying Half Normal and Rayleigh Distributions*. **S. Balaswamy** and R. Vishnu Vardhan. *Journal of the Indian Association for Productivity, Quality and Reliability*. **2015**, 40(1), 19-32.
19. *Interface between the ratio  $\beta$  with Area under the ROC Curve and Kullback-Leibler Divergence under the combination of Half Normal and Rayleigh distributions*. **S. Balaswamy** and R. Vishnu Vardhan. *American Journal of Biostatistics*. **2015**, 5(2), 69-77.
20. *Confidence Interval Estimation of an ROC curve: An application of Generalized Half Normal and Weibull distributions*. **S. Balaswamy** and R. Vishnu Vardhan. *Journal of Probability and Statistics*. **2015**, Article ID 934362, 8 pages.
21. *The Hybrid ROC Curve and its Divergence Measures for Binary Classification*. **S. Balaswamy**, R. Vishnu Vardhan and K.V.S. Sarma. *International Journal of Statistics in Medical Research*. **2015**, 4(1), 94 – 102.

22. *A Divergence Measure for STROC Curve in Binary Classification*. **S. Balaswamy**, R. Vishnu Vardhan and M.B. Rao. Journal of Advanced Computing, **2014**, Vol. 3 No. 2, pp. 68 - 81.
23. *A Study on the Summary ROC (SROC) Curve using Probit link function*. **S. Balaswamy** and R. Vishnu Vardhan. International Journal of Mathematics and Computer Applications Research. **2013**, Vol. 3, Issue 2, 155 - 160.
24. *Improved Methods for Estimating Areas under the Receiver Operating Characteristic Curves: A Confidence Interval Approach*. R. Vishnu Vardhan, **S. Balaswamy**. International Journal of Green Computing. **2013**, Vol. 4, Issue 2, 58 – 75.
25. *Missing Value Analysis and its Implications in Survival Analysis using Breast Cancer Data*. N. Chandra, **S. Balaswamy**, R. Vishnu Vardhan. Applications of Reliability Theory and Survival Analysis. **2012**: 105 - 113. Bonfring Publication.

### **Paper Presentations / Participation in Conferences**

1. Presented a research paper entitled **Importance of Statistics in Educational Research** in the National Seminar on Dreams and Opportunities in Higher Education organized by Department of Education, Indira Gandhi National Tribal University, Amarkantak during 13<sup>th</sup> to 14<sup>th</sup> February, 2023.
2. Presented a research paper entitled **Proper versus Improper Receiver Operating Characteristic Curve** in 35th M.P. Young Scientist Congress 2020 organized by Madhya Pradesh Council of Science and Technology during 28<sup>th</sup> to 29<sup>th</sup> February, 2020.
3. Presented a research paper entitled **Improper Multivariate Receiver Operating Characteristic (iMROC) Curve** in an International Conference on Changing Paradigms and Emerging Challenges in Statistical Sciences organized by Dept. of Statistics, Pondicherry Central University, Puducherry during 29<sup>th</sup> to 31<sup>st</sup> January, 2018.
4. Presented a research paper entitled **“A Divergence Measure for STROC Curve in Binary Classification”** in *“National Conference on Emerging Trends in Statistical Research: Issues and Challenges”*, organized by Department of Statistics, Pondicherry University, Puducherry during 16<sup>th</sup> February – 17<sup>th</sup> February 2015.
5. Presented a research paper entitled **“Confidence Interval Estimation and Inferential Procedures of the Measures of Hybrid ROC (HROC) Curve”** for contesting in **ISPS Young Statistician Award Competition** in *XXXIV Annual Convention of Indian Society for Probability and Statistics and International Conference on Statistics and Information Technology for a Growing Nation* which is to be held at Department of Statistics, Sri Venkateswara University, Tirupati during 30<sup>th</sup> November – 2<sup>nd</sup> December 2014.
6. Presented a research paper entitled **“On the use of Scale parameters of two populations in estimating Brier score”** in *“International Conference on Statistics and Information Technology for a Growing Nation”*, organized by Department of Statistics, Sri Venkateswara University, Tirupati during 30<sup>th</sup> November – 2<sup>nd</sup> December 2014.
7. Presented a research paper entitled **“Regression Based Procedures for Estimating Summary ROC Curves and its Measures”** in *“International Conference on Recent Advances in Statistics*

*and their Applications*”, organized by Department of Statistics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad during December 26 - 28, 2013.

8. Presented a research paper entitled **“A Study of the Properties of Summary ROC (SROC) Curve using Probit Analysis”** in *“Statistics, Science and Society: New Challenges and Opportunities”*, organized by Dept. of Statistics, University of Madras, Chennai during January 02 - 05, 2013.
9. Presented a research paper entitled **“The Statistical Analysis of Handling Metadata – A Study on SROC Curve”** in a *“International Conference on Frontiers of Statistics and its Applications”*, organized by Department of Statistics, Pondicherry University, Puducherry during Dec 21-23, 2012.
10. Participated in a **“National Conference on Fuzzy Soft Computing Mathematical Analysis”** organized by Department of Mathematics, Pondicherry University during October 04 – 05, 2012.
11. Presented a research paper entitled **“Missing Value Analysis and its Implications in Survival Analysis using Breast Cancer Data”** in a *“National Conference on Applications of Reliability Theory and Survival Analysis”*, organized by Department of Statistics, Pondicherry University, Puducherry during Feb 02-03, 2012.
12. Participated a seminar organized by the Indian Statistical Institute, Chennai to celebrate the International Year of Statistics (2013) on 23rd March 2013 from 10am-5pm at SETS Auditorium, SETS Campus, MGR Knowledge City, CIT Campus, Taramani, Chennai 600-113.
13. Presented a research paper entitled **“On Some Test Indicators used in Diagnostic Medicine”** in a *“National Seminar on Stochastic Modeling and Analysis”* at Cochin University of Science and Technology, Cochin during March 24 – 25, 2011.

#### **Delivered Lectures as a Resource Person**

1. Delivered A lecturer on Programming in R as resource person in Two Week Capacity Building Programme For Young Social Science, Commerce and Management Faculty on 19<sup>th</sup> March, 2018 organized by Dept. of Business Management, IGNTU, Amarkantak from 06<sup>th</sup> to 19<sup>th</sup> March, 2018.
2. Delivered a lecture on Multivariate Statistical Techniques and their Significance in Research in a Ten Days Workshop on Statistical Tools and their Significance in Research organized by Dept. of Statistics, IGNTU, Amarkantak from 18<sup>th</sup> to 27<sup>th</sup> April, 2018.
3. Delivered a lecture on Multivariate Statistical Techniques and their Significance in Research using R as a resource person in the Workshop on Data Science with R organized by Dept. of Statistics, IGNTU, Amarkantak during 11<sup>th</sup> to 17<sup>th</sup> March, 2019.
4. Delivered a lecture on Importance of Non Parametric Statistics in Research through R as a resource person in the Workshop on Data Science with R organized by Dept. of Statistics, IGNTU, Amarkantak during 11<sup>th</sup> to 17<sup>th</sup> March, 2019.
5. Delivered a lecture on Applications of Statistics in Social Sciences using SPSS as resource person in a Two Week Capacity Building Programme for Faculty in Social Sciences organized by Dept. of Journalism and Mass Communication, IGNTU, Amarkantak during 30<sup>th</sup> April to 11<sup>th</sup> May, 2019.
6. Delivered a lecture on Introduction to Data Science in R as a resource person in the Faculty Development Program on Data Science and Big Data Analytics organized by Dept. of Business Management, IGNTU, Amarkantak during 26/08/2019 to 06/09/2019.

7. Delivered a lecture on Advanced Statistical Analysis using R as a resource person in the Faculty Development Program on Data Science and Big Data Analytics organized by Dept. of Business Management, IGNTU, Amarkantak during 26/08/2019 to 06/09/2019.
8. Delivered lectures as a resource person in the Workshop on R and R Studio organized by Department of Psychology, Christ University, Bangalore during 10<sup>th</sup> – 14<sup>th</sup> May, 2021.
9. Delivered a lecture on Statistical Analysis using R and SPSS as a resource person at the Two Days Online Workshop “STATISTICAL ANALYSIS USING ‘R’ AND ‘SPSS’(SARS-2022)”, organized by PG & Research Department of Mathematics, Periyar Government Arts College, Tamil Nadu, held on 08<sup>th</sup> & 09<sup>th</sup>, April 2022.
10. Delivered two lectures as a resource person on SPSS and Quantitative Methods – Statistical Tools and techniques for the Research Scholars of Centre for Media and Studies, Jawaharlal Nehru University, New Delhi on 12/04/2022.
11. Delivered a lecture on Data Analysis using R Language as a resource person at the ICSSR Sponsored Ten Days Research Methodology Course on Advanced Data Analytics in Multidisciplinary Research using R Language organized by Department of Education, Department of Statistics, Department of Tourism Management, Indira Gandhi National Tribal University, Amarkantak during 1<sup>st</sup> – 11<sup>th</sup> August, 2023.
12. Delivered a lecture as a resource person on R Software in a Two Week Capacity Building Programme on Academic research and Teaching for Faculty Members organized by Department of Management Studies, MNIT, Bhopal on 15/01/2024.
13. Delivered a lecture as a resource person on Statistical Analysis using SPSS in an Orientation program organized by Malaviya Mission Teacher Training Education, Indira Gandhi National Tribal University, Amarkantak on 23/02/2024.
14. Delivered a lecture as a resource person on Quantitative Analysis by using SPSS in a Refresher Course in Community based Curriculum, Pedagogy and Research (Interdisciplinary) organized by Malaviya Mission Teacher Training Education, Indira Gandhi National Tribal University, Amarkantak during 18/01/2025 to 31/01/2025.

#### **Participation in Orientation / Refresher / FDP**

1. Participated and successfully completed a Refresher Course in Multidisciplinary Research (Interdisciplinary) conducted by MMTTC at Indira Gandhi National Tribal University, Amarkantak during 15/03/2024 to 30/03/2024.
2. Participated and successfully completed a Refresher Course in Research Methodology (Inter/Multi-disciplinary) conducted by UGC-HRDC at University of Madras during 08/07/2022 to 21/07/2022.
3. Participated and successfully completed a Refresher Course in Data Analytics and Machine Learning conducted by UGC-HRDC at University of Kerala during 23/02/2021 to 08/03/2021.
4. Participated and successfully completed One Week online International Faculty Development Programme “Statistical Trends and Practices in Science and Technology” organized by Dept. of Basic Sciences and Humanities (Mathematics), Aditya Institute of Technology and Management, Srikakulam, Andhra Pradesh during 04/07/2020 to 08/07/2020.
5. Participated and successfully completed Five Days Faculty Development Program on Python organized by DRBCCC Hindu College, Chennai in collaboration with Spoken Tutorial Project,

IIT Bombay, funded by National Mission of Education through ICT, MHRD, Govt. of India during 10/06/2020 to 15/06/2020.

6. Participated and successfully completed a Two Week Faculty Development Program on "Application of Digital Tools and Technology in Teaching and Learning" organized by Faculty of Social Sciences, IGNTU during 16/06/2020 to 29/06/2020.
7. Participated and successfully completed an Orientation Program conducted by UGC-HRDC at Pondicherry University during 25/07/2019 to 14/08/2019.
8. Participated in One Week Faculty Development Program on MOOC organized by Indira Gandhi National Tribal University, Amarkantak during 12th to 18th March, 2018.

#### **Conferences / Workshops Organized**

1. Conducted an ICSSR Sponsored Ten Days Research Methodology Course on Advanced Data Analytics in Multidisciplinary Research using R Language during 1<sup>st</sup> – 11<sup>th</sup> August, 2023 organized by Department of Education, Department of Statistics, Department of Tourism Management, Indira Gandhi National Tribal University, Amarkantak as a Co-Course Director.
2. Conducted a National Webinar on Data and its Relevance in the era of Global Pandemic on 20<sup>th</sup> October, 2020 on the eve of 3<sup>rd</sup> World Statistics Day celebrations organized by the Department of Statistics, Indira Gandhi National Tribal University, Amarkantak as a Co-Convener.
3. Conducted a Online Webinar on Introduction to Data Science on the occasion of National Statistics Day 2020 organized by Dept. of Statistics, IGNTU, Amarkantak on 30<sup>th</sup> June 2020 as an organizing secretary.
4. Conducted a Workshop on Data Science with R in Dept. of Statistics, IGNTU, Amarkantak during 11<sup>th</sup> to 17<sup>th</sup> March, 2019 as an organizing secretary.
5. Conducted a Ten Days Workshop on Statistical Tools and their Significance in Research in the Dept. during 18<sup>th</sup> to 27<sup>th</sup> April, 2018 as an organizing secretary.

#### **Participation in Workshops**

1. Attended the International Workshop on "***Integrated Approaches of Stochastic Modelling and Data Science for Sustainable Development***" organized by Department of Statistics, SV University, Tirupati and Indian Society for Probability and Statistics during September 7-11, 2022.
2. Attended the National Workshop on "***National Level Orientation Program in Statistics***" organized by Department of Statistics, S.D.N.B. Vaishnav College for Women, Chennai, during August 18-22, 2014.
3. Attended "***Statistics Day***" celebrations for the year 2014, conducted by National Sample Survey Office (Field Operations Division), Ministry of Statistics & Programme Implementation, Government of India, Sub-Regional Office, Puducherry.
4. Attended "***Author Workshop jointly organized by Springer and Ananda Rangapillai Library***" organized by Pondicherry University during February 6, 2014.
5. Made a presentation in "***Workshop on Census Data Dissemination***" organized by Department of Statistics, Pondicherry University on the title "***A Statistical Report on Household Sizes of Andhra Pradesh***" held on 29<sup>th</sup> January 2014.
6. Attended the National Workshop on "***Simulation Techniques and Resampling Procedures***" organized by Department of Statistics, Pondicherry University during December 11-13, 2013.

7. Attended the National Workshop on “*Statistical Analysis of Time Series Data with Applications*” organized by Department of Statistics, Cochin University of Science and Technology during January 14 - 16, 2013.
8. Attended the National Workshop on “*Geo-Statistics and Spatial Data Analysis*” organized by Department of Statistics, Pondicherry University during December 19 - 21, 2012.
9. Attended the Workshop on “*Biostatistical Inference*” organized by Department of Statistics, Madras Christian College during February 25, 2012.
10. Acted as a student representative in organizing the “*National Workshop on Computational methodologies in Statistics*”.

### **Participation in Summer School**

Successfully completed *SERB School on Matrix Methods & Fractional Calculus – 2014* held at Centre for Mathematical and Statistical Sciences (CMSS), Peechi, Kerala during 28<sup>th</sup> April – 23<sup>rd</sup> May 2014.

### **Technical Skills**

1. Good Working Knowledge in Office Applications
2. LATEX, Mathematica, C
3. R language, Python, IBM SPSS, SYSTAT and Minitab
4. Software exposure regarding the statistical data analysis part dealing with real datasets of medical, engineering, life and social sciences.

### **Declaration**

I do hereby declare that the above mentioned information and particulars are true and correct to the best of my knowledge and belief.

Place: Amarkantak

**Dr. S. Balaswamy**