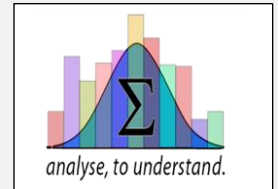# STATS SPACE-6

2022-2023

SIGMA CLUB

DEPARTMENT OF STATISTICS

St. Ann's College for Women
(Autonomous), Affiliated to Osmania University
Re-Accredited 'A+' Grade by NAAC (3rd Cycle), CPE by UGC,
ISO 9001: 2015 & ISO 14001: 2015
Mehdipatnam, Hyderabad-500028

Principal's Message

Dr. Sr. P. Amrutha

*"I congratulate the Department of Statistics on the release of the sixth issue of **Stat-Space**, wishing them all the best and hope this issue will serve as a good source of knowledge and will go a long way in serving the student community and society to a large extent."*

Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write" - **H.G Wells**
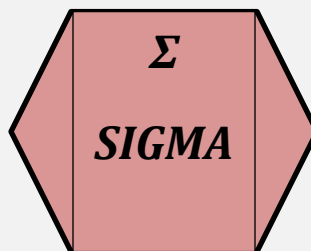
SIGMA CLUB

The constant thought of having a common place to interact, was so entrenched in the young minds that a club has been launched under the department, named **SIGMA.** The name of the club come from the most striking feature of Statistics; ***Study of Variation*** denoted by 'σ'.

The club took its original form on 10th, September 2016 as an encomium to-
THE LIVING LEGEND OF STATISTICS PROFESSOR C.R. RAO, marking his 96th birthday.

CLUB OBJECTIVES

Bridging the gap by conducting workshops and conferences.

Having an open platform to share ideas

Σ

SIGMA

Publishing **STATSPACE** *magazine*

Learning by fun through presenting facts and figures

Department Highlights

- The faculty of the department extends the expertise as consultancy in the area of statistical analysis for research projects, publications, M.Phil. & Ph.D. theses for the faculty, students of the institution and to outside researchers too.
- The Head of the Department Mrs. D. Srikala, HoD has been awarded Doctor of Philosophy by Osmania University.
- Dr. D. Srikala, HoD co-authored curriculums based textbooks in the subject of Statistics for undergraduate programs, published by Kalyani Publishers, and are in wide circulation. Also edited statistics course material for distance education at Osmania University – PGRRCDE.
- The department has an active student club-Sigma Club under which various activities are carried out and it organizes a yearly fest, termed as STATA FEST -numerous academic and fun competitions are organized, which attracts a big number of students from the colleges in twin cities. Also, it brings out an annual department magazine- STAT SPACE which is a compilation of the reports of the mini projects/case studies carried out by students, articles, statistical puzzles, and information on higher education in statistics subject and career prospects.
- The students of the department are encouraged to participate in various inter-collegiate competitions organized in twin cities and many laurels were brought back to the department.
- To cultivate the research temper among the students, the faculty encourages the students to participate in national/international conferences, guides and mentors them to present the papers as well and publish as well.
- The department is proud to have a strong alumni base, doing research in reputed universities/institutes, pursuing careers at different levels in government and private organizations in India and abroad.
- The department has more than 100 students registered in Youth for Seva (YFS) working as volunteers for different activities organized by YFS.

FACULTY AWARDS

Dr. D. Srikala, HoD received St. Ann's Meritorious Teacher Award (SAMTA) on Teacher's Day, 5th, September 2022 with Cash Award of Rs.5000, Gold Medal and Certificate.

STUDENT ACHIEVEMENTS

Ms. Hanvee Reddy of B.Sc. III (Maths, Statistics, Data Science) has completed one semester under Global UGRAD Fellow Program at Austin University, USA.

EVENTS ORGANIZED

Celebration of 102nd Birthday of the Living Legend Prof. C.R. RAO (Guest Lecture and Quiz Competition and JAM)

Date and Time : 10th September 2022
Venue : St Ann's College for Women, Mehdipatnam
Resource Person: Guest Lecture by Dr.V V Haragopal, Prof.(Retd.)
Title: Analytics through Textual Data Mining
Number of students Participated: 62
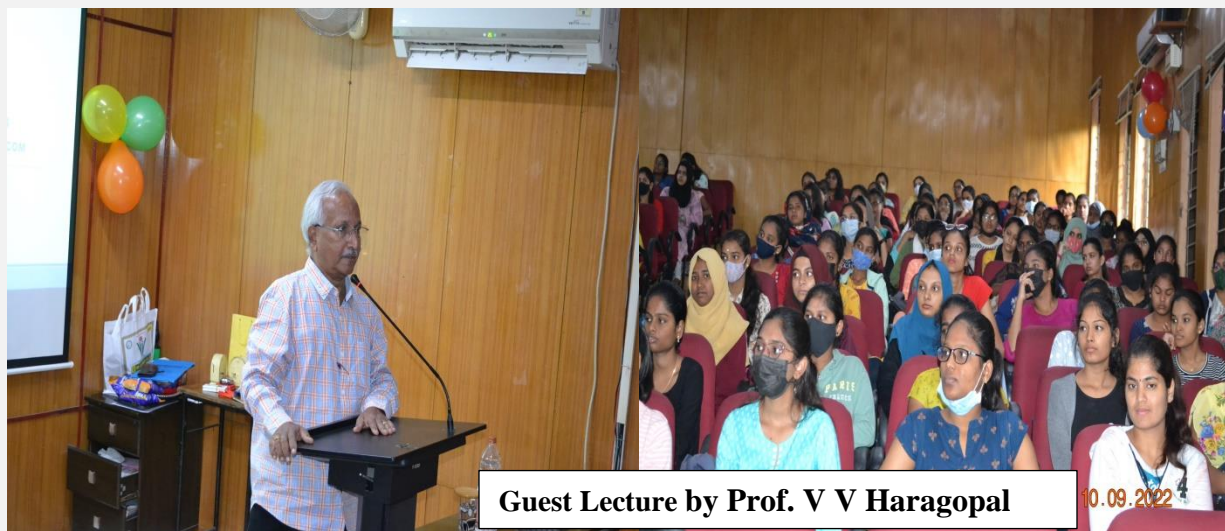
Winners of competition:
- **Quiz**

1st Prize - Nabila Fatima & Ayesha Nooreen, B.Sc. (MSCS)-I from St. Ann's College for Women

2nd Prize - N. Kiranmayee, B.Sc. (MSDS)-III & Beena Fatima, B.Sc.(MSCS)-I from St. Ann's College for Women

- **Jam**

1st Prize - Beena Fatima from B.Sc. (MSCS)-I from St Ann's College for Women
2nd Prize - Madhav B.Sc. (MSDS) from Aurora Degree College

Guest Lecture by Prof. V V Haragopal
10.09.2022

Prize distribution by Prof. V V Haragopal

SIGMA QUEST

Date: 31st Jan, 2023   **Time:** 1:30 p.m. - 3:00 p.m.

Target Audience: All the students from different streams (Stats/Non-Stats)

No. of teams: 26 teams (team of 2 each).

Venue: Seminar Hall (47)

Faculty In-charges: Ms. Deepika, Ms. M.Monika Sai

The Sigma Quest competition was organized by SIGMA club of the Department of Statistics.

Objective:

1. Making the students to learn the introductory statistics through activities.
2. Developing an interactive learning mode for all the participants.

Competition:

The event was a great success, with 26 teams from the entire college participating. Throughout the club's unique event, all of the participants, from various streams, have been forced to think statistically.

In the competition, three rounds were held, including a treasure hunt, quiz, and Knock-out round.

The winners of Sigma Quest event—

Winner team- Rabi-Ul-Arfa and Zunerah Fatima from MSDS II

1st Runner up team- Soni Kumari and Ramjyothi from MSCS II

2nd Runner up team- K.Kaveri and B.Nikitha from MSCS II

Winner team

Rabi-Ul-Arfa, Zunerah Fatima

STATASTIC (That's Fantastic)

National Level Project Report Presentation Competition

(Online Mode)

Jointly Organized by

Departments of Statistics
St. Ann's College for Women, Hyderabad
&
Patna Women's College, Patna

Date: Feb 9th & 10th, 2023

Target Audience: UG, PG students, Research Scholars

Resource Person: Mr. K. Manoj

The major goal of the event STATASTIC (That's Fantastic) is to spark interest in the subject Statistics, real world applications of Statistics among all UG, PG students, Research Scholars and to make them understand the importance of Statistics in Analytics.

Students are given the following indicative topics for project presentations-

UG	PG
Machine learning Regression Analysis Tests of SignificanceDesign of Experiments Operations Research Time Series	Machine Learning Deep Learning Text Analytics Prescriptive Analytics Predictive Analytics

A total of 74 students from different colleges and 5 different states took part in the competition.

Under UG category 22 teams (40 students) and under PG& Research Scholars category 19 teams (34 students) took part in the event.

Under each category, 3 cash prizes were awarded- Rs.3000, Rs.2000, Rs.1000 to the winners.
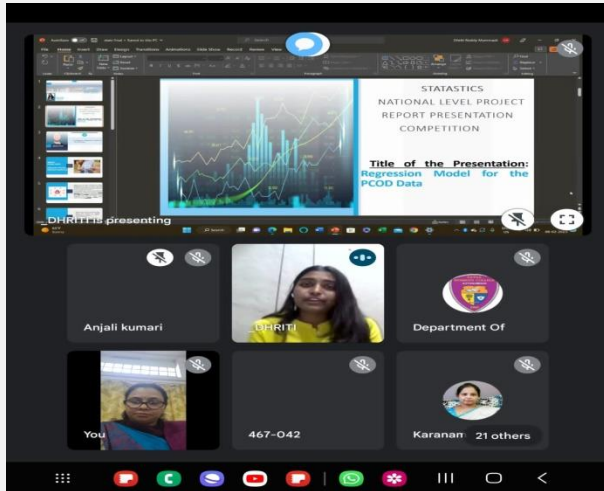
Winners List - UG

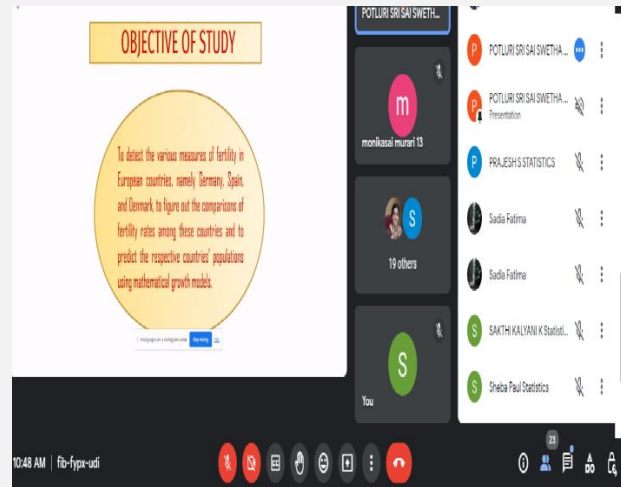| Prize	Name/s	Program of Study, College Name & Place	Title of the Project
I	Rion Dsilva & Sarthak Sawant	B.Sc.,St Xavier's College,Mumbai Maharashtra	Statistical Analysis of the Big 6 Priemer League
II	Syeda AsfahMahreen	B.Sc. II, St. Ann's College for Women, Hyderabad, TS	Sentiment Analysis using Text Mining
III	Amradhi Srujana Reddy & Archita Chaitri	B.Sc. III, St. Ann's College for Women, Hyderabad, TS	Diabetes prediction using Machine Learning
III	Fiza Parween	B.Sc. III ,Patna Women's College, Patna, Bihar	Impact of the use of Social Media on Student's Academic Performance

Winners List - PG

Prize	Name/s	Program of Study, College Name & Place	Title of the Project
I	Syeda Quadri & Kavitha	PG Diploma in Data Analytics, St.Ann's College for Women, Hyderabad,TS	Real time object detection with Open CV
II	Yuvanthica R & Prithviraj	M.Sc . (Statistics), Madras Christian College,Chennai, TN	Disease free survival analysis of pediatric Hct patients – Traditional Statistics Vs ML
III	Nainshee Raina & Lovely	MCA, Patna Women's College, Patna, Bihar	A Study On Cyber Crime Trend in Smart Cites Using Big Data Analytics

Guest Lecture by Prof.K.Manoj
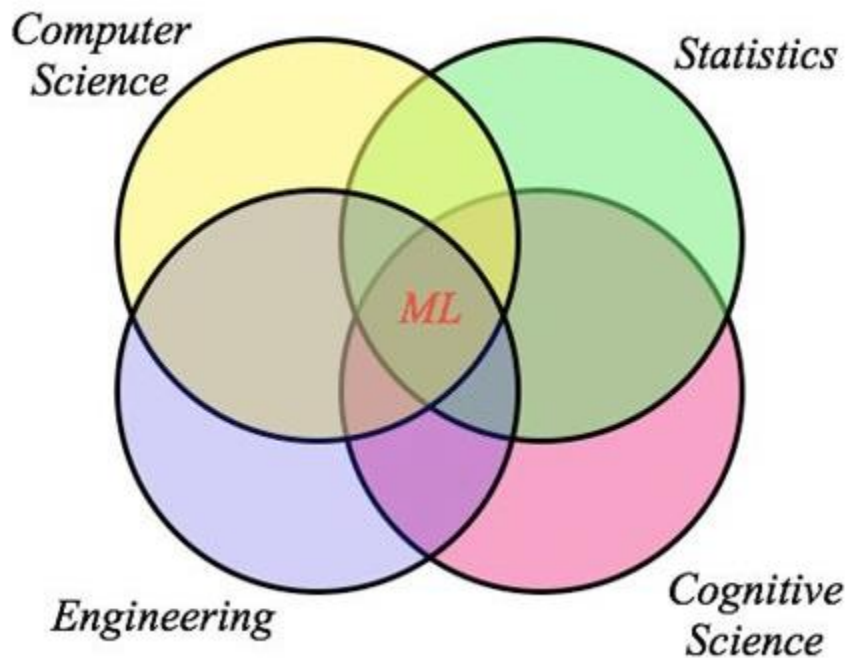

UG Student Presentation

PG Student Presentation

Prize distribution by Sr. P. Amrutha

<u>ARTICLES</u>

Why is Statistics important in Data Science and Machine Learning?

Statistics is an integral part of Data Science and Machine Learning, providing a framework for collecting, analyzing, and interpreting data. In today's data-driven world, businesses and organizations require the insights provided by data to make informed decisions. Statistics helps to transform raw data into actionable insights, allowing businesses to optimize their operations, improve customer satisfaction, and increase revenue.

Statistics is an integral part of Data Science and Machine Learning

One way in which statistics is crucial to data science is in the process of data cleaning. Data cleaning involves identifying and correcting errors, filling in missing values, and transforming data into a usable format. This process is essential because machine learning algorithms require clean and structured

data to produce accurate results. By using statistical methods to clean data, businesses can reduce the risk of erroneous insights and make more informed decisions.

Another critical application of statistics in data science and machine learning is predictive modeling. Predictive modeling involves using data to predict future outcomes, enabling businesses to anticipate and plan for potential risks or opportunities. One example of predictive modeling in action is Netflix's recommendation algorithm. Netflix's algorithm uses data from users' viewing histories and ratings to make personalized recommendations. The algorithm uses statistical methods to identify patterns in the data and predict which movies or TV shows users are likely to enjoy.

Netflix's recommendation algorithm

Additionally, statistics is essential in the field of A/B testing, which involves testing different versions of a product or service to determine which one is most effective. For example, a company may use A/B testing to determine the most effective marketing campaign. A/B testing involves splitting a sample group into two groups, with one group exposed to the new marketing campaign and the other group exposed to the existing campaign. Statistical methods are then used to analyze the data and determine which campaign performed better.

One case study where statistics played a crucial role in data science and machine learning is the use of data analysis in the 2020 US Presidential election. Data scientists used statistical methods to analyze the results of the election, identifying patterns in voting behavior and predicting the outcome of the election. This analysis was used by news organizations and political campaigns to inform their reporting and strategy.

Another example is the use of machine learning in healthcare. Machine learning algorithms can analyze patient data to predict disease progression and identify the most effective treatments. Statistical methods are used to analyze large datasets and identify patterns that can help doctors make more informed decisions about patient care.

Statistics concepts

Statistics concepts form the foundation of Data Science and Machine Learning. They are used to collect, analyze, and interpret data to derive insights and

make informed decisions. In this essay, we will discuss some of the most important statistics concepts used in Data Science and Machine Learning.

1. **Probability**: Probability is a fundamental concept in statistics, and it is used to quantify uncertainty. In Data Science and Machine Learning, probability is used to model random variables and make predictions based on the likelihood of an event occurring. For example, a weather forecasting model may use probability to predict the likelihood of rain.

2. **Descriptive Statistics**: Descriptive statistics are used to describe and summarize a dataset. This includes measures of central tendency, such as the mean, median, and mode, as well as measures of dispersion, such as standard deviation and variance. Descriptive statistics are used to provide insights into the characteristics of a dataset and identify any outliers or anomalies.

3. **Inferential Statistics**: Inferential statistics are used to draw conclusions about a population based on a sample. This involves using statistical models and hypothesis testing to make inferences about a population based on a sample of data. Inferential statistics are commonly used in A/B testing and predictive modeling.

4. **Regression Analysis**: Regression analysis is used to model the relationship between two or more variables. It involves fitting a regression model to a dataset to identify the relationship between the dependent and independent variables. Regression analysis is commonly used in predicting future outcomes based on historical data.

5. **Hypothesis Testing**: Hypothesis testing is used to test a hypothesis about a population based on a sample of data. This involves defining a null hypothesis and an alternative hypothesis and using statistical tests to determine whether to reject or fail to reject the null hypothesis. Hypothesis testing is commonly used in A/B testing and in testing the effectiveness of a marketing campaign.

6. **Bayesian Statistics**: Bayesian statistics is a framework for updating probabilities based on new information. It involves using prior knowledge and data to update the probability of an event occurring. Bayesian statistics is commonly used in predictive modeling and in making decisions under uncertainty.

Overall, statistics concepts provide a framework for collecting, analyzing, and interpreting data to derive insights and make informed decisions. Probability, descriptive and inferential statistics, regression analysis, hypothesis testing, and Bayesian statistics are some of the most important statistics concepts used in Data Science and Machine Learning. By understanding these concepts, data scientists can build accurate models, make predictions, and derive meaningful insights from data. In conclusion, statistics plays a vital role in Data Science and Machine Learning. It helps businesses and organizations to turn data into insights, enabling them to make informed decisions, optimize operations, and increase revenue. With the help of statistical methods, data can be transformed into meaningful information, which is crucial in today's data-driven world. From data cleaning to predictive modeling to A/B testing, statistics has a broad range of applications in data science and machine learning.

DEPARTMENT OF STATISTICS

Faculty
Dr. D. Srikala, HoD
Mrs. V. Sai Sri Kishore
Mrs. B. Deepika
Ms. K. Anjanee Gayatri
Ms. M. Monika Sai