

PRISM

A NMIMS Navi Mumbai Newsletter

SCHOOL OF MATHEMATICS, APPLIED STATISTICS & ANALYTICS
SCHOOL OF SCIENCE



In the Spotlight

VISHLESHAN 1.0

We intended to include as much of the broad field of science as it is as a whole as possible into an enjoyable activity. As a result, we chose the name techno-cultural to describe the fusion of technology and something new—our very own culture. The students at the School of Science set off on a voyage known as Vishleshan 1.0 with a lot of vigour and zeal, in search of fresh chances and new insights.

~ by Student Council



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VISHLESHAN 1.0

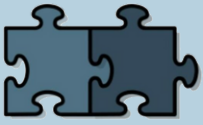
Vishleshan, a Sanskrit word meaning "amalgamation", 1.0 is a techno-cultural fest organized by the students of the School of Science and the School of Mathematics, Applied Statistics and Analytics.



Being the very first event held by the School of Science, all students undertook the responsibility of giving their best and making it the leading event in the college. A two-day festival was planned with two opposing visions in mind: science and culture. The fest included 7 events: Datathon, Visuality, Ratatouille-The Chef, Mindflix, Cyber Gamer, Bella Ciao, and Unsolved Mysteries.

Each event was designed to cater to all the fields of science, i.e. data science, psychology etc., and alter them to give the project a "science made fun" perspective. To add to the celebration, both days ended with a blast of thrilling activities like DJ Nights, Influencers Talks, Stand Up Comedians, Musical Nights etc. for both students and faculty. A set of Techno-Villages were built to house the diverse number of stalls in the arena which included accessories, mouth-watering cuisine, and natural juices to beat the heat. There were philanthropic activities inclusive of NGOs spreading awareness; and support for local businesses was garnered.





DAY 1

The first day blasted off with the banner drop event, followed by the inauguration programme and some very moving speech deliveries by our beloved director, Dr Parthasarathi N. Mukherjee, the dean of Sunandan Divatia School of Science, Dr Neetin Desai, Dr Jyoti Verma and our Guest of Honor, Mr. Ankit Arora, Derzerv, CTO.



Day 1 events included Cyber Gamer, Datathon, Visuality, and the grandest of all, Bella Ciao-The Heist. Cyber Gamer was a gaming-centric event that featured everything from FIFA 22 to Mortal Kombat 11k Live, all of which were played on campus.



The day included a treasure hunt, a hacking competition, and a full-house treasure hunt. More than 80 participants took part in Bella Ciao, a campus treasure hunt with 80+ participants. After this tiring day of running around as the others ran their minds, the music committee, enthralled the audience with a scintillating and soothing performance series to ameliorate the exhaustion and end the day on a sweet note.



DAY 2

The next day resumed with the final rounds of Bella Ciao-The Heist while the other participants were busy debating in the moot court in an event called 'Unsolved Mysteries'. 'Ratatouille-The Chef' was a significant event, magical one for sure, a baking contest to flaunt the participants' compatibility with the Fahrenheit. As the Heisters ran around, the participants of 'Mindflix' sweated to press their business ventures to a team of faculty trying to fetch a brilliant but unique idea, a spinoff to the popular show Shark Tank. 'Concluding just another exhausting day of brainstorming and twists.



The faculty and students enjoyed an exceptional rock performance by 'The Rumours' to let off the burnout. Following that, a comedy night and the appearance of a viral influencer, Jake Sithlani, were just the perfect combination of a stressbuster. The night got even more happening as it came to an end when the Zumba band ended up busting their moves with the DJ 2Souls as the crowd waved and jumped to their beats.



It was an exhilarating experience for all the students who put this entire project together piece by piece. It stands as an extremely proud moment to see this entire event come together live. We couldn't thank our Director and the Dean sir, enough for all the fruitful opportunities, support, and guidance they provided to us at every step. Vishleshan 1.0 surely has given not only the students but also the faculty countless delightful memories to look forward to and cherish.



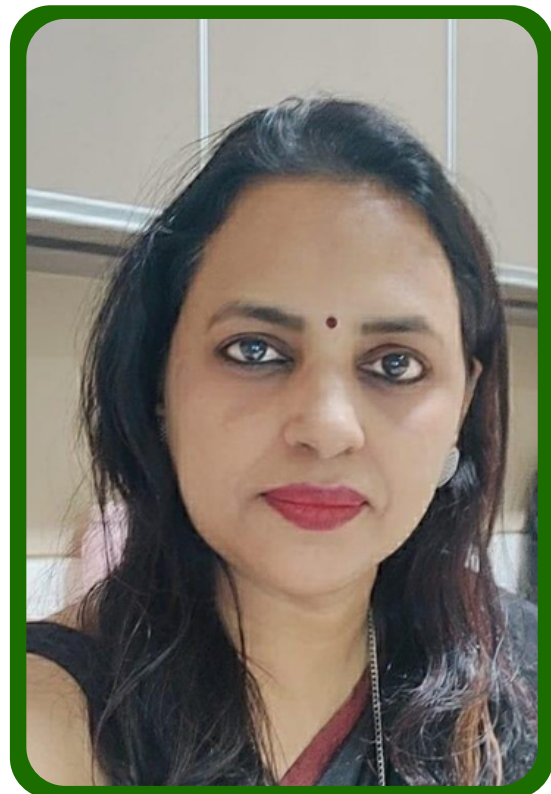
PROGRAM CHAIRPERSON

-Dr. JYOTI VERMA

The inner beauty of Mathematics is that it develops logical and critical thinking. I have been teaching Mathematics for over 20 years, and I believe it is my responsibility to create and develop interest in this subject as it has roots in every other science and engineering domain.

My experience at NMIMS is one of the best because I feel NMIMS is known for its incredible working culture, interdisciplinary courses, dynamic syllabus, dedicated Staff, and competent top management.

All the courses include the combination of Mathematics, one of the oldest branches of Science and Statistics, one of the youngest twentieth-century disciplines of science.



The curriculum offered in all the programs focuses on producing highly qualified scientific talent, which fulfils the industry's needs and the research institutes' demands.

SOMASA (School of Mathematics, Applied Statistics & Analytics) aims to be a center of excellence in Applied Computational Mathematics, Applied Statistics, and Analytics, providing quality education. The unique feature of all the courses is developing the students' research culture.

B.Sc. Applied Statistics & Analytics:

It is a unique program that gives students an insight into applications of Statistics to various fields from the undergraduate level.

The program provides rigorous training in fundamental concepts of Statistics, Mathematics, Economics & Computers.

It creates a solid knowledge base in the Data Science domain.

It extensively uses the following software: MS Excel, R Studio, Python, SQL, Oracle, and SAS Visual Analytics to solve practical problems and projects.

B.Sc. Data Science:

A unique program, focuses on building skillsets for the growing requirement of data scientists in the industry.

The program gives students a basic foundation in three individual but interrelated branches of Mathematical Sciences: Computer Science, Statistics, and Mathematics.

Students will learn computer programming, data analysis, and database systems and will learn to think critically about the process of handling and understanding data.

B.Sc. (Hons.) Artificial Intelligence:

This program aims to prepare students to develop artificial intelligence applications and purposeful competencies in Artificial Intelligence and Data Science.

-Dr. JYOTI VERMA



FUTURE OF DATA ANALYTICS

-Dr. SURESH PATHARE

Data analytics is one of the vital processes that helps businesses grow and respond as per the volatility of the market. The study of data analytic science has got a lot of relevance in today's times. The raw data is very useful. And reaping the most benefits from it propels the company to new heights.

Data analysis has become the crux of the market. It is a detailed approach that does not let an organization have a biased idea about the customers' demands. It just brings out the perfect market prediction and helps organizations make quick and smart decisions accordingly. The latest customer trends, the prediction of behavior, easy interpretation, business profitability, and lots of other vital information are brought by the data analytics process.

The most important virtue of data analytics is that it helps a company identify its potential customers and how they can be attracted. Hence, we can affirm the scope of data analytics in the future.

Innovative Approach:

You can have a rough idea of future trends through data analytics. Hence, you can update your approach and benefit from it. Hence, here you can get an idea of why data analytics is the future of everything.

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TIME IS
GREATER
THAN
MONEY

Reduction of Cost of Operation:

Data analysis cuts the cost of operation and brings growth in the revenue of the business. The scope of data analytics in the future is so brightly visible because of its unending list of virtues that can bring about a major change in a company's growth. You can exactly know the right type of advertisement that is best for you to attract your customers, and that too, at a very low price.

Rightly anchoring Digital Marketing Strategies:

When your digital marketing strategy is on point, you need not fear much about your company's growth. Digital marketing builds up your brand image on the virtual platform. And data analysis brings value to your digital marketing moves. Hence, when your digital marketing strategy is free of flaws, you tend to successfully add value to your brand image.

Accuracy of Information:

Companies must have a clear picture of where they stand to have a quantum leap in their careers. Data analysis helps them have a vivid picture of their services and how the market is responding to them. This gives a clear idea of how to align plans and see fruitful results coming in.

RECRUITMENTS WITH HANDSOME SALARIES

As we have discussed above, companies today have realized the importance of data and are making the most of it. Analyzing data has become one of the most crucial moves to respond to the market in an ideal way. It has found its relevance in various fields like machine learning, simulation, data analysis, market analysis, business growth, forecasting, supply chain analytics, etc. Hence, we have got some of the big names which have got data analytics future scope – Google, Axis Bank, Micro-soft, Kotak, Cartesian Consulting, Tumblr, ICICI Bank, Accenture, Amazon, Machine Pulse, Fractal Analytics, CRISIL, Barclays, E&Y, Bank of America, Facebook, Instagram, Snapdeal, Flipkart, Flytxt, etc.

EXPERT'S BELIEF IN THE DATA ANALYTICS FUTURE

At times, you can feel low when you find a lack of career prospects in your respective field or have a blurry vision of the future. Hence, we have put together a few facts which are put out by the experts regarding the data analytics field and its growth in the coming days, which can help you stay motivated and recognize positive opportunities available. Data analytics will have a huge role to play in the market in the coming years. They will be recognized as the Data Protectors. They will preserve the privacy of data, detect intrusions.

-Dr. SURESH PATHARE

- The IoT which is an abbreviation of the Internet of Things will see tremendous growth. Management, analysis, and security of large amounts of data, both structured and unstructured ones which are generated by IoT will remain to have a superior place in the market.
- The coming days will be the golden time for tremendous growth in cognitive analysis
- Companies will voice their demands in a louder manner and make the most usage of data to secure financial gain which affirms the future scope of data analytics.
- The open-source solution will again gain relevance in the market
- Companies will have a critical and attentive approach to data accuracy and security
- There will be an immense boost in the demands of data scientists.

JOB PROFILES CONCERNING DATA ANALYTICS

There are plenty of job profiles available to people concerned with data analytics. And one of the most common misconceptions about jobs related to data analytic science is that people believe a diploma or a degree course in the field is enough for companies to hire an individual. But companies today have changed their ways of recruiting and have started putting strict eyes on the skill set of an individual instead of their degrees.

Hence, if you possess strong analytical and numerical skills, then you have got a better scope of data analytics in the field. Some of the major job profiles in the field of data analytics are listed as follows: data architect, data scientist, data analyst, data engineer, database administrator, statistician, etc.

To create learned, versatile and confident mathematicians, applied statisticians, data analysts and Artificial Intelligence practitioners who are employable and who have developed a love for Mathematics and Statistics and its innumerable areas of application in real world, we at School of Mathematics, Applied Statistics & Analytics, NMIMS Deemed to be University, Navi Mumbai launched undergraduate B.Sc. programmes in Applied Statistics & Analytics, Data Science, Artificial Intelligence.

-Dr. SURESH PATHARE



STATISTICAL GENETICS: An Emerging Area in Statistics

-Dr. HEMANT KULKARNI

Statistical analysis has become very important in various areas of research, such as biological sciences, social sciences, environmental sciences, public health etc. The use of statistical techniques for biological data has a long history. Many statistical techniques such as hypothesis of testing, design of experiments, etc. were developed for biological experiments. Later, they were used for the analysis of data obtained in other areas of research. However, in recent years, due to the invention of different modern devices in the field of medical sciences, lots of data has been generated in the fields of medical sciences and biology. The Biological Sciences become more quantitative in nature, and statistics play an increasingly important role in analyzing these data. These analyses not only help to understand the complexity of diseases but are also useful for studying the factors associated with diseases.

In the 20th century, the development of genetics opened a new window in the fields of biology and statistics. A branch of statistics which focuses on statistical models and statistical inference methodologies that relate to genetic variation is called Statistical Genetics.

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BE
GRATEFUL

Research in statistical genetics generally involves developing statistical methods for three major areas of genetics research, namely population genetics, genetics epidemiology, and quantitative genetics. Population genetics is the study of genetic variation between organisms. Statistical techniques for multivariate data such as classification, clustering, principal component analysis, etc. are commonly used in the field of population genetics. Genetic epidemiology is a branch of genetics that studies the effects of genes on various diseases. Genetic epidemiology helps to understand the genetic architecture of complex diseases. The parametric and non-parametric test procedures are helpful in identifying the linkage and association between the different genes and the disease. In quantitative genetics, different quantitative phenotypes such as blood pressure level, LDL, HDL, etc. are considered instead of the disease status of the individuals, and the objective of these studies is to identify the genes associated with quantitative phenotypes. Regression analysis, ANOVA, and multivariate analysis are commonly used for the analysis of quantitative phenotypes. With the ease of computational facilities, Bayesian computations and network-based analysis techniques have become popular in the field of statistical genetics. Genetic data on individuals or families is not easily available, but the summary for different studies can be easily obtained from different projects such as Genome-Wide Association Studies (GWAS). One can perform the analysis on summary data using meta-analysis to understand the genetical factors associated with different diseases. One of the major drawbacks of statistical genetics is that many times the interpretation of results obtained from the study is not straightforward for the various complex and multifactorial diseases. Recently, machine learning-based techniques such as support vector machine (SVM) and neural networks are also used for the analysis of complex genetical data.



-Dr. HEMANT KULKARNI



GROWING IMPORTANCE OF MENTAL HEALTH AT THE WORKPLACE

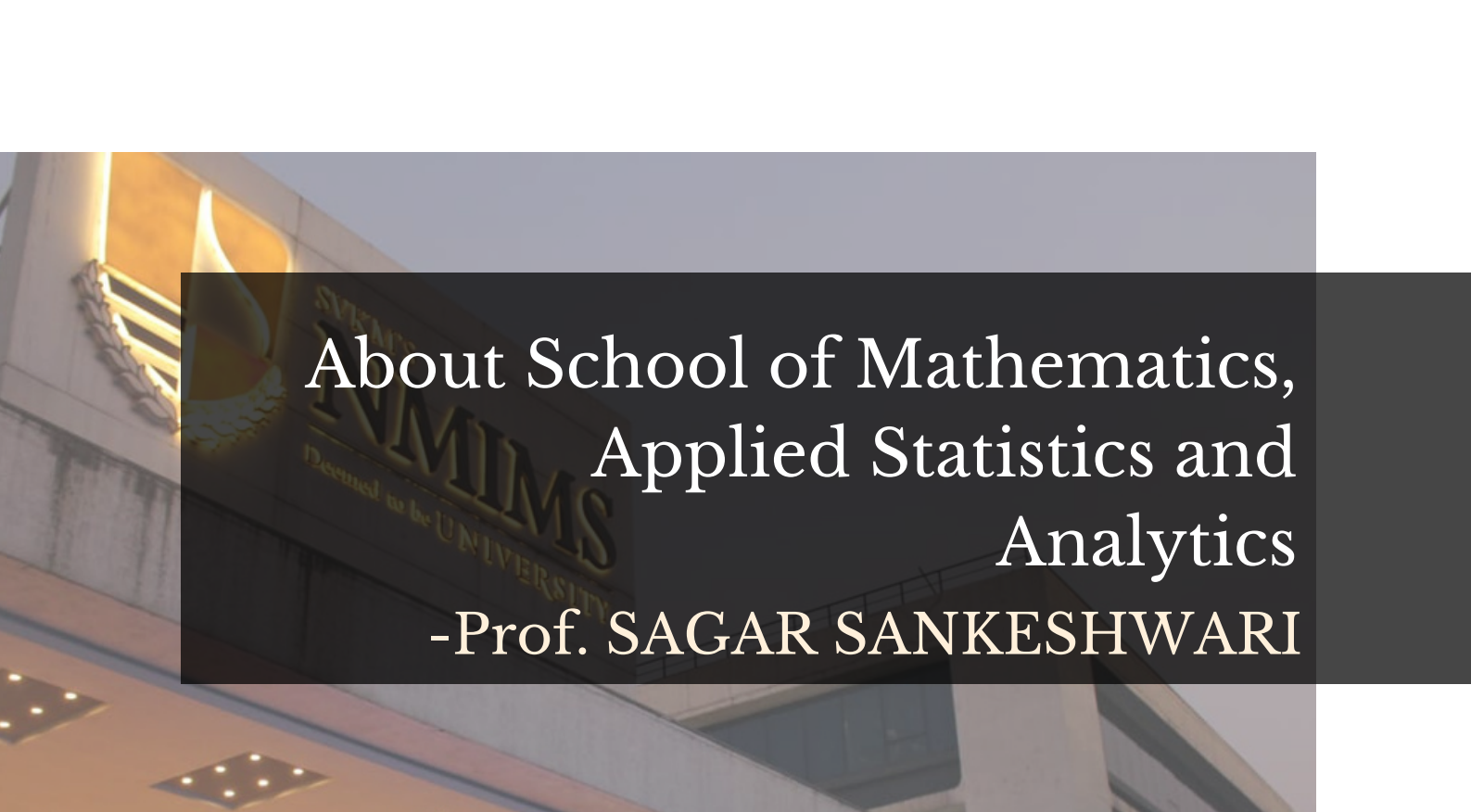
-Prof. ARPITA SARKAR

According to the 2021 Trends report of the American Psychological Association, two-thirds of employees at the workplace reported that there was an undercut in their work performance during the COVID-19 pandemic due to poor mental health, and 40% of employees were fighting burnout. The COVID-19 pandemic experiences compelled employers to take employees' well-being and mental health seriously. Clearly, mental well-being issues affect performance negatively, and that becomes a liability for corporates. The rationale is simple: "Healthy employees are more productive ones."

Undoubtedly, the workplace is a primary means of seeking social and emotional support for employees. A spike in cases of stress, anxiety, and depression in our country, extraordinary demands on working parents, and the continuous work-life balance battle faced by employees have led today's employers to pay more attention to employee mental health.

Companies have modified their leave policies and have introduced COVID-related special paid leaves. More employers have invested in software training programmes and digital tools to teach managers how to pick up on subtle and often virtual cues of employee distress (APA Trends Report 2021).

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MAKE
IT
HAPPEN



About School of Mathematics, Applied Statistics and Analytics -Prof. SAGAR SANKESHWARI

Being part of the NMIMS is a real satisfaction and privilege for me. The NMIMS brand spells excellence and is among the most illustrious educational stalwarts in the country.

All our academic programmes are consistently ranked among the top 10 institutes in the country.

I am passionate about teaching. This was the reason for joining NMIMS, where I was sure I would get the freedom and respect for my abilities and potential. I have been teaching mathematics for over two years. Mathematics is an integral part of Applied Statistics and Analytics, Data Science, and Artificial Intelligence.

Courses like Discrete Mathematics, Linear Algebra, Numerical Methods, Calculus, and Multivariate Calculus are important in Applied Statistics and Analytics, Data Science, and Artificial Intelligence programs.

I always found the class to be motivated and well-prepared despite having to manage pressing work commitments during the week, and I found the observations of the class to be extremely perceptive. Teaching the class has been a unique learning experience for me as an instructor as well.

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CHOOSE
TO
SHINE

In today's world, an enormous amount of data is being generated continuously. This data flood has the potential to transform the way business, government, science, and healthcare are carried out. The emerging discipline of data analytics holds the key to unlocking that potential. It uses automated methods to analyze massive amounts of data and extract knowledge from it. Applied statisticians are highly in demand as public organizations and private companies look for the complex data at their fingertips. These professionals work as statisticians and data, financial, and quantitative analysts. At its core, applied statistics is a field of mathematical study, which is why it's a great fit for mathematicians and statisticians looking to advance their careers. Those with a foundation in math or statistics study applied statistics to learn the more complex statistical methods, software programming languages, and visualization skills needed to thrive as a data analyst.

What is Data Science? Data contains science. It is much different from the approach of classical mathematics, which uses mathematical models to fit the data. Data science is a composite of a number of pre-existing disciplines. It is a young profession and academic discipline. The term was first coined in 2001. Its popularity has exploded since 2010, pushed by the need for teams of people to analyze the large amounts of data that corporations and governments are collecting. The Google search engine is a classic example of the power of data science. Math is a core educational pillar for data scientists, regardless of their future industry career path. It ensures you can help an organization solve problems and innovate more quickly, optimize model performance, and effectively apply complex data towards business challenges.

In the last decade, artificial intelligence has gained importance, with a lot depending on the development and integration of AI in our daily lives. The progress that AI has already made is astounding, with self-driving cars, medical diagnoses, and even beating humans at strategy games like Go and Chess. The future for AI is extremely promising and it isn't far from when we have our own robotic companions. This has pushed a lot of developers to start writing code and start developing for AI. However, learning to write algorithms for AI isn't easy and requires extensive programming and mathematical knowledge. Mathematics plays an important role as it builds the foundation for programming.

-Prof. SAGAR SANKESHWARI

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