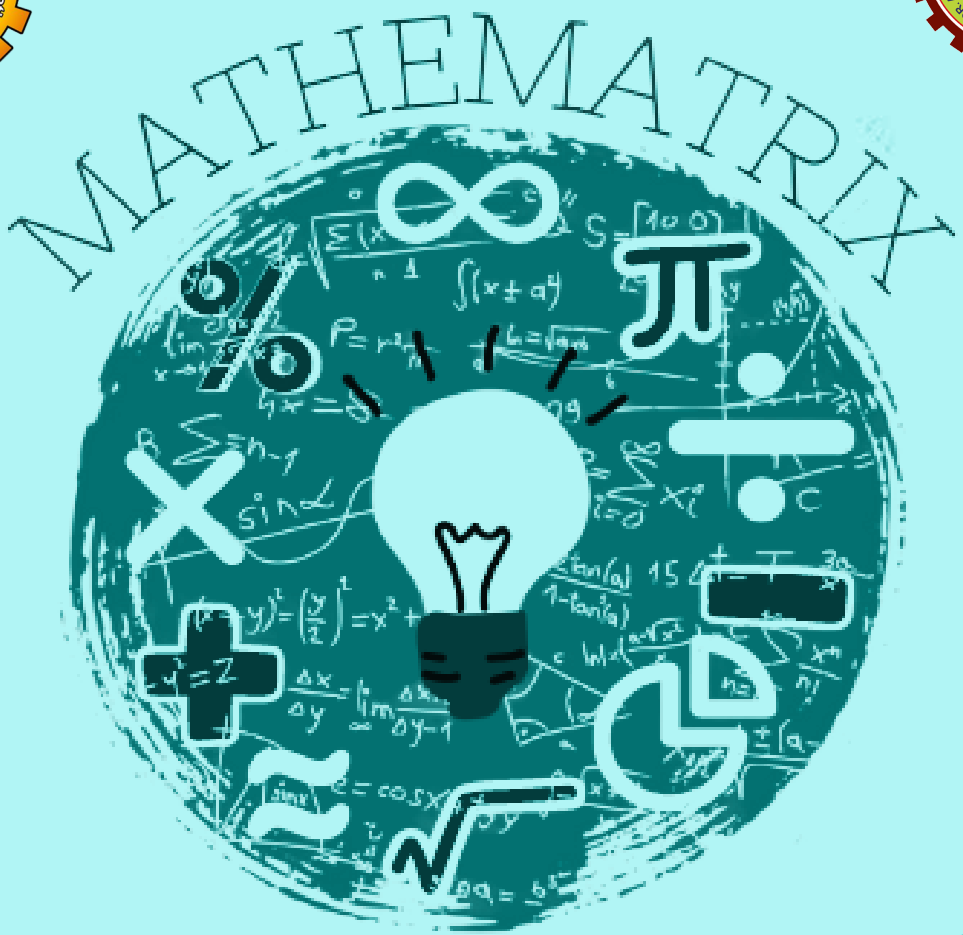
JSS Academy Of Technical Education, Noida

Department Of Mathematics



Volume 2 : Issue 2

The Institute

Vision

- *JSS Academy of Technical Education Noida aims to become an Institution of excellence in imparting quality Outcome Based Education that empowers the young generation with Knowledge, Skills, Research, Aptitude and Ethical values to solve Contemporary Challenging Problems.*

Mission

- *Develop a platform for achieving a globally acceptable level of intellectual acumen and technological competence.*
- *Create an inspiring ambience that raises the motivation level for conducting quality research.*
- *Provide an environment for acquiring ethical values and a positive attitude.*

Index

About Us

"Mathematics is not about numbers, equations, computations, or algorithms: it is about understanding."
-William Paul Thurston

Vision

- To strive for excellence in mathematics and promote interdisciplinary collaborative research leading to futuristic solutions.

Mission

- To empower students with mathematical knowledge that will enhance the problem-solving capability.
- To encourage faculty to engage in interdisciplinary research activity and scholarly writing.
- To give an exposure of real-world problems and methods of solving, using tools and techniques of mathematics.

The Department of Mathematics at JSS Academy Of Technical Education, Noida [JSSATEN] was initiated in 1998.Having situated at the ground floor in the Academic Block-V of the academy the department currently has 1 Professor, 1 Associate Professor and 6 Assistant Professors with each faculty having doctoral degree [Ph.D.] in different specializations of Mathematics. Faculty teaches Mathematics via regular and elective subjects for both undergraduate and postgraduate courses like B.Tech. and M.Tech. As a result of team effort, the department has been consistently producing excellent results. Various faculty members have got 6 text-books published to benefit the student community and teaching fraternity and have got more than 100 research papers published in journals/ conferences of international/ national repute. Over the years the department has contributed tremendously in imparting a strong Mathematical foundation to students, a basic necessity for producing the best engineers who are now excelling in their professions not only in India but across the globe.

Principal's Desk

'Obvious' is the most dangerous word in mathematics."
— Eric Temple Bell

With the divine blessings of His Holiness Jagadguru Dr. Sri Sri Shivarathri Deshikendra Mahaswamiji, JSS Academy of Technical Education, Noida (JSSATEN) is recognised as one of the leading technical institutions. JSSATEN vision is to impart quality outcome based education (OBE) that empowers the young generation with the knowledge, skills, research aptitude and ethical values to solve the real world challenging problems. I am delighted to know that the Department of Mathematics is bringing out yet another issue of their famous newsletter named "MATHEMATRIX" during the current semester. The collection of information summed up in this issue has all the necessary steps to educate the aspiring students with the world of mathematics and its vast dimensions & its applications. I hope that the students and the readers will benefit from such an endeavor by the Department of Mathematics at JSSATEN.

I congratulate Dr. Bhupender Parashar, HoD (Mathematics), Dr. Ranu Pandey, Editor, and the entire team of the Department of Mathematics and all the students for bringing out the next digital newsletter edition and wish them a great success.

Dr. Amarjeet Singh
B.Tech, M.Tech, Ph.D.
Principal
JSSATE, Noida

Department Pillars

" Mathematics knows no races or geographic boundaries; for mathematics, The cultural world is one country. "

— David Hilbert

Engineering with Mathematics is everything and Engineering without Mathematics is nothing. The current issue has come up as a result of the enormous efforts, hard work, dedication and patience that's put in by our editorial team.

Mathematrix aims to encourage creative thoughts, power of expressions and help students to understand the importance and value of mathematics. The newsletter will provide useful information about mathematical tools, techniques, tips & tricks in learning Engineering/Management related Mathematics and hope that it will greatly benefit all its readers. I, on behalf of the department, welcome B.Tech. first-year students admitted for the session 2022-23 and wish them all success in their future endeavors.

Dr. Bhupender Parashar
Associate Professor & HoD,
Department of Mathematics
JSSATEN Alumni Coordinator

I am profoundly happy to write for this volume II second issue of the newsletter initiated by the Department of Mathematics. As First Year Coordinator, I have always felt proud when I see my colleagues and my juniors working hard and moving towards the path of upliftment and success for the department. I truly believe that this edition would really inspire and motivate students, especially newly admitted first-year students.

It is my pleasure to be part of the newsletter for the Department of Mathematics. I congratulate the entire editorial team of the Mathematics newsletter headed by the Head of the Department, Dr. Bhupender Parashar and Dr. Ranu Pandey for their excellent initiative. My good wishes are with the entire team of 'Mathematrix'.

Dr. Z.K.Ansari
First Year Coordinator &
Professor
Department of Mathematics

Editor's Desk

"Go down deep enough into anything and you will find mathematics."
— Dean Schlicter

It's a matter of immense pleasure to launch the second issue (Volume II) of 'Mathematrix', the Newsletter from The Department of Mathematics.

In this release, we offer a wide range of articles including the ones from the experts, a few offerings from our current engineering undergrads and special write-ups from our distinguished alumnus. This edition witnesses ample engrossing Puzzles, BrainTeasers, a great deal of Current Affairs, scores of opportunities in the field. It includes a glimpse of the activities which turned out in this session.

I appreciate the outstanding efforts of the team in releasing the issue in time and my special mention to the young student's brigade Anubhavi, Palak and Pradhumn from the fourth year for their outstanding ideas and bringing up yet another excellent cover page for the present issue. I also welcome our new student volunteers team Harsh Jain (IT-3rd year), Shagun Singh (EC-2nd year) and Somiya (EC-1st year) and wish to carry forward the legacy and surpass the benchmark set by their seniors. Once again, my sincere thanks to each and everyone who has been associated with it head on or circumlocutorily for putting all his/her efforts into its successful release. I firmly believe that second issue of Mathematrix would prove to be a milestone for all our young engineers.Looking forward for getting the valuable feedback and suggestions which eventually would help us to improve and come up with finer content and tweak design for the forthcoming issues as we aspire to bring perfection and be roads ahead with the progress of time.

Wish you all a joyful learning and Good Luck!!!

Dr. Ranu Pandey (Editor)
Assistant Professor
Department Of Mathematics

Role Of Mathematics

"The only way to learn mathematics is to do mathematics."
-Paul Halmos

Mathematics plays a crucial role in many aspects of our lives and society. Here are some of the key roles of mathematics:

- **Problem-solving:** Mathematics is the study of patterns and relationships. It provides a set of tools and techniques that can be used to solve problems in a wide range of fields, from physics and engineering to finance and economics.
- **Scientific discovery:** Mathematics provides a powerful language for describing the natural world, and it is used extensively in scientific research to develop and test theories.
- **Technology:** Many of the technologies we use today, such as computers, smartphones, and the internet, are built on mathematical principles. Mathematics is also used in the design of products and systems, from cars and airplanes to buildings and bridges.
- **Business and finance:** Mathematics is essential in the world of business and finance, where it is used to analyze data, make predictions, and manage risk.
- **Education:** Mathematics is a core subject in most education systems around the world, and it plays a key role in developing critical thinking and problem-solving skills in students.
- **Art and aesthetics:** Mathematics has been used throughout history to create beautiful and elegant designs, from the patterns in Islamic art to the sculptures of Michelangelo.

In summary, mathematics is a fundamental part of our lives and has countless practical applications in fields ranging from science and engineering to business and finance, and it also plays a role in shaping our aesthetic and cultural experiences.

Department News

"If I were to begin my studies again, I would follow the advice of Plato and start with mathematics."
— Galileo Galilei

Seminars, Workshops and FDPs Attended/Organized: 2022

- Dr. Bhupender Parashar participated in UGC Approved Short Term Professional Development Programme conducted by IGNOU Staff Training and Research Institute of Distance Education New Delhi 110068 under Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching and successfully completed the Professional Development Programme on 'Implementation of NEP2020 for University and College Teachers' held from December 05-13, 2022 and obtained 'A+' Grade.

- Dr. Bhupender Parashar attended an expert talk on "Number theory & its Applications" as part of Ramanujan Day-2022, organized by the Department of Mathematics, SRMIST, Ramapuram, Chennai - 600089 on December 23, 2022.

- Dr. Bhupender Parashar participated in Virtual Talk titled "The Time-Fractional Cahn –Hilliard Equation-Analysis and Numerical Approximation" conducted on Thursday November 10, 2022 by Maths Club and Staff Development Committee, Information Technology Department, University of Technology and Applied Science, MUSCAT, Sultanate of Oman.

- Dr. Bhupender Parashar participated in Virtual Talk titled "Graph Theory in the Information Age" conducted on Thursday October 20, 2022 by Maths Club and Staff Development Committee, Information Technology Department, University of Technology and Applied Science, MUSCAT, Sultanate of Oman.

- Dr. Bhupender Parashar attended an expert talk "Carving your Career", organized by the Department of Mathematics, SRMIST, Ramapuram, Chennai - 600089 exclusively for Teachers on August 06, 2022.

- Dr. Vinita Khemchandani and Dr. Ranu Pandey participated in the one week international Faculty Development Programme on "Innovative Mathematical Techniques in Research" conducted by the Department of Mathematics at Sathyabama Institute of Science and Technology, Chennai from August 1-6, 2022.

- Dr. Bhupender Parashar attended an expert talk "Technology Enabled Learning for 21st Century Students", organized by the Department of Mathematics, SRMIST, Ramapuram, Chennai - 600089 Exclusively for School Principal & Teachers on July 16, 2022.

- Dr. Shalini Singh attended a one week Faculty Development Programme on "Research Methodology and Introduction to Modelling Techniques" from July 18-23, 2022 conducted by Delhi Technological University, Delhi.

- Dr. Vinita Khemchandani and Dr. Ranu Pandey attended a one day workshop entitled "Compliment Journals with reference books on Science Direct organized by Elsevier on July 28, 2022.

Achievements, Responsibilities other than academics: 2022

- Dr. Z.K. Ansari discharged responsibility as a coordinator in conduction of the First Year Induction and Orientation Programme for the session 2022-23 held on December 19, 2022.

- Dr. Anushri Verma worked as a department website coordinator for the even semester 2021-22.

- Dr. Shalini Singh worked as a first-year time table coordinator for the even semester 2021-22.

- Dr. Vinita Khemchandani has successfully completed the four weeks course on "Introduction to Artificial Intelligence" with a score of 94% from November 1-28, 2022.

- Dr. Ranu Pandey has successfully completed the four weeks course on "Introduction to Artificial Intelligence" with a score of 88% from November 1-28, 2022.

- Dr. Ranu Pandey as an Editor of the department newsletter MATHEMATRIX with a team of students successfully released Volume 2, Issue 1 in the month of October 2022.

Research Publications: 2022

- Dr. Z.K. Ansari published a paper entitled "Fixed Point Result on Generalized Cone b-Metric Spaces" Pure and Applied Mathematics, Vol. 11(2),28-32, http://www.sciencepublishinggroup.com/j/pamj,doi:10.11648/j.pamj.20221102.11,ISSN: 2326-9790 (Print); ISSN: 2326-9812 (Online), 2022. (Scopus)

- Ranu Pandey published a paper entitled "A Tsallis-like effective exponential delay discounting model and its implications" Physica A: Statistical Mechanics and its Applications, Vol. 603, 127836, https://doi.org/10.1016/j.physa.2022.127836, October 2022. (WoS & Scopus) .

New Appointment 2022

- The new faculty member Dr. Sonam Singh joined the Mathematics department as an assistant professor (ad-hoc position) on 13.12.2022. She has done her Ph.D. from IIT-ISM Dhanbad in the field of "Solid Mechanics with specialization in Wave Propagation aspect of Layered Structures composed of smart Piezoelectric composites with complexities". She is also the GATE and NET qualified.

Department Activities organized: 2022

- **Guest lecture on "Latest Trends of IT-Opportunities, Ideas & Implementation"**

In Commemoration of 107th Jayanti Mahotsava of Mysuru Srimanmaharaja Rajaguruthilaka His Holiness Jagadguru Dr. Sri Sri Shivarathri Rajendra Mahaswamiji; the Guest lecture on "*Latest Trends of Information Technology-Opportunities, Ideas and Implementation*" was organized by JSSATEN Alumni Association and the Department of Mathematics on 2nd September 2022, Friday (2-3.30 PM) in the seminar hall 113, AB-III at JSS Academy of Technical Education, Noida.

The Speaker of the event was one of the illustrious Alumni of JSSATE Noida from first batch (1998-2002), Electronics and Communication Engineering branch, Mr. Saurabh Pandey, Assistant Director, Department of Defence, Government of Australia, Canberra. He did his MBA, Marketing & Systems from KIIT, Orissa, Bhubaneswar.He further

pursued Master of Information Systems, Melbourne University, Australia. Additionally, he showed his excellence in gaining extensive certificates in the field of Cyber Security.

The event was initiated by Dr. Ranu Pandey, Assistant Professor, Department of Mathematics with a floral welcome of the distinguished guest and Principal by the Alumni Coordinator and HoD Mathematics, Dr. Bhupender Parashar. Thereafter, the Principal was invited for the opening remarks about the event which was then followed by the address of the Alumni Coordinator. Dr. Bhupender Parashar also introduced the speaker and invited him at the podium for his address to the entire gathering present in the seminar hall. The Speaker addressed the gathering of 45-50 students along with the department Alumni faculty Coordinators. Mr. Saurabh Pandey talked about the ongoing latest trends in Information Technology at the global level. The session proved to be highly interactive and informative. The speaker immaculately handled students' queries to its best and also promised to share a few very important certificates links that will be beneficial for the students at the end of their engineering days. The session was thoroughly enjoyed by the gathering. After the talk, Alumni Coordinator and Principal felicitated the guest with a memento on behalf of JSSATE, Noida. The feedback from the students was taken on the session.

• *Guest lecture on "Latest Trends of IT-Opportunities, Ideas & Implementation"*

With the divine blessings of His Holiness Jagadguru Sri Sri Shivarathri Deshikendra Mahaswamiji, JSSATEN Alumni Association and the Department of Mathematics conducted and co-ordinated the Guest lecture on "Digital metamorphosis: transforming academic landscape in the post pandemic world" for B.Tech. First Year students under induction programme on 24th November 2022, Thursday (11-45A.M.-1.15 P.M.) in the Multipurpose Hall at JSS Academy of Technical Education, Noida.

The distinguished International Speaker of the event was our illustrious Alumni from Computer Science and Engineering branch of second batch (1999-2003), Mr. Prashant Pandey, Director of Library Services (IT), Flinders University, Adelaide, South Australia.

The event was initiated by Dr. Ranu Pandey, Assistant Professor, Department of Mathematics by welcoming the Guest, Principal, First Year coordinator, HoD, faculty and students. The guest was given a floral welcome by the Principal Dr. Amarjeet Singh, First-Year Coordinator Dr. Z. K. Ansari, Alumni Coordinator & HoD-Mathematics Dr. Bhupender Parashar. Thereafter, Principal was invited for the opening remarks about the event which proved

highly motivated. He also encouraged the gatherings for the importance and significance of lectures, seminars, workshops etc. in their academics. The event

was then followed by the address of the Alumni Coordinator, who introduced the speaker and invited him at the podium for his address to the entire gathering present in the Multipurpose Hall. The Speaker addressed the gathering of around 450 B.Tech. first year students .

Mr. Prashant Pandey successfully delivered the lecture on latest trends in Automation, Data Sciences at the global level. The session proved to be highly interactive, informative and influential. The speaker discussed the latest worldwide opportunities in terms of academics and relevance of taking up professional courses. Mr. Pandey made the session very interesting and engaged students through LIVE feedback sessions on various important topics. The session was thoroughly enjoyed by the gathering. Many queries were raised by our students which were successfully handled by the speaker. After the talk, Principal, First Year coordinator, Dean (A) and Alumni coordinator in the presence of the faculty coordinators Dr. Ranu Pandey and Dr. Vinita Khemchandani from the Department of Mathematics felicitated the guest with a memento on behalf of JSSATE, Noida.

The feedback from the students were taken for the session through google form with the following link https://forms.gle/LoM23WPazfgoWgfr7 shared through WhatsApp for further records.

- **Induction Program for newly admitted students (2022-23)**

As per Dr APJ AKTU, Lucknow , three week Student Induction Programme held at JSS Academy of Technical Education , Noida from November 6, 2022 to November 24, 2022 . The various Modules or core Areas recommended by the University were covered during this period.

The Modules covered are:

SIP Module 1- Universal Human Values (UHV 1)

Senior faculty members of the Institute gave Lectures to the First Year Students from November 14, 2022 to November 19, 2022 on different topics of UHV I. The topics covered by the Faculty members were:

- UHV LECTURE TOPIC 1-Aspiration and Family Expectations- Dr Prashant Chouhan
- UHV LECTURE TOPIC 2-Purpose of Course – Dr Prashant Chouhan
- UHV LECTURE TOPIC 3-Self and Body - Dr Prashant Chouhan
- UHV LECTURE TOPIC 4- Peer Pressure , Peer Pressure and English- Dr Amit Kr Ahuja
- UHV LECTURE TOPIC 5-Activates of Self – Dr Amit Kumar Ahuja
- UHV LECTURE TOPIC 6-Prosperity – Dr Amit Kumar Ahuja
- UHV LECTURE TOPIC 7-Relationship in Family –Mr Nagaraj M
- UHV LECTURE TOPIC 8-Trust, Anger – Mr Nagaraj M
- UHV LECTURE TOPIC 9-Respect , Self Confidence – Mr Nagaraj M
- UHV LECTURE TOPIC 10-Gratitude – Mr Nagaraj M
- UHV LECTURE TOPIC 11 -Relationship VS Transaction – Mr Nagaraj M
- UHV LECTURE TOPIC 12-Competition and Cooperation – Mr Naveen K Jha
- UHV LECTURE TOPIC 13-Competition and Excellence – Mr Naveen K Jha
- UHV LECTURE TOPIC 14-Interaction and Ragging – Mr Naveen K Jha

- ***UHV LECTURE TOPIC IS-***Four orders of Nature Mr Naveen K Jha

SIP Module 2: Physical Health and Related Activities

Physical Health and Sports activities were held on Sundays (November 6, 13 and 22 ,2022 under the guidance of Mr Girish, Director of Physical Education.

SIP Module 3: Familiarization of Department / Branch and Innovation

Students were visited different department/ branch and familiarized with labs and other activities of the department.

SIP Module 4: Visit to Local Area:

On Saturday, November 12, 2022 , students mainly from Hostels(College as well as Nearby area) visited the different local areas nearby to the college . Few groups of students also visited the Akshardham Temple, New Delhi.

SIP Module 5: Lecture by Eminent People:

On 18th November,2022 in orientation programme , Lt. Col.(Rtd.) Pradeep Khare, Ex- Army Person, Book writer , Youtube and Motivational speakers address the students. On 24th November ,2022 , Mr Prashant Pandey an illustrious Alumni from Computer Science and Engineering branch of second batch (1999-2003) of JSS Academy of Technical education , Noida ,and Director of Library Services (IT), Flinders

University, Adelaide, South Australia address the first year students on the Topic" Digital metamorphosis: transforming academic landscape in the post pandemic world".

SIP Module 6: Proficiency Modules:

On November 10 & 11, 2022 Introductory Lectures of English, Mathematics, Physics, Chemistry and Basic Knowledge of Computers were held. An online test on the above Topics was also taken by the concerned Department.

SIP Modules 7, 8 & 9: Literature/ Literary Activities , Creative Practices & Extra Curricular Activities:

Last three SIP Modules were covered by different student societies during the Orientation Programme of the Student societies from November 14 , 2022 to November 21, 2022.

The Orientation Programme of Fresher students was held on 18th November, 2022 .Principal , Dr. Amarjeet Singh , CAO, Cmde B. K. Gupta, Vice Principal , Dr T. G. Mamatha, Dean (A) & Chief Warden Dr R . S. Jagadish along with the Chief Guest Lt. Col. (Rtd.).Pradeep Khare addresses the students.

Words Of Alumnus

"Mathematics is not about numbers, equations, computations, or algorithms: it is about understanding."
-William Paul Thurston

YASHWANT SINGH MAURYA (CE)-2015-19

I am Yashwant Singh Maurya, currently pursuing Masters in Environmental Engineering under the Department of Civil Engineering from IIEST, Shibpur. I did my graduation in Civil Engineering from JSSATE, Noida between 2015-2019. I will be joining Systra India Pvt. Ltd. from July, 2023 as an environmental and design engineer.

From my school life only, mathematics has always intrigued and helped me in various aspects of life. I was lucky enough to get guidance from such teachers in school and college that made the subject look so easy and understandable. While inside the class I would learn about various facets of mathematics, outside the class I could easily see their applications in real life. This could be from calculating the throwing angle of basketball to the probability of winning a toss in a match. Professionally as a civil engineer, I need mathematics in all kinds of calculations and designing. Calculating load bearing capacities of structures, estimating the amount of flow in a pipe, estimating the materials and cost of a building, predicting the life of a structure, anticipating the traffic on busy roads; The applications of mathematics in civil engineering are limitless. It wouldn't be wrong to call civil engineering as practical application of mathematics.

Talking about environmental engineering, mathematics play an important role in forecasting the population of a city, predicting the water demand of area, designing water treatment facility, planning of water and sewage distribution of city, designing dams and canals, calculating effects of human activities on climate, environment, etc. This can be done by extreme calculations or by developing advanced mathematical models. Hence, mathematics has stayed with me and will stay with me in all regards of life. Being a logical person myself, I have often taken the help of maths when faced with difficult situations in life and rarely did it fail to satisfy me.

I would like to thank the Mathematics Department, JSSATE Noida for helping me in developing an interest for the subject and also for giving me an opportunity to be a part of this newsletter.

RESCALED RANGE AND FRACTAL MARKET ANALYSIS

By

DR. E. PRIYADARSHINI

Professor, Department of Mathematics,

Sathyabama Institute of Science and Technology, India

Rescaled Range Analysis

Rescaled Range Analysis can be used to detect the level of persistence and randomness in financial time series. This method is also used to study the long-range dependence (LRD) of ship flow sequence structure in maritime container ports and further analyze the influence of trend component and periodic component on Hurst exponent. Forecast and analysis of future trends of water resources and wetlands can be done using this analysis. Predicting climatic change trends based on the non-linear mathematical method can be done by analyzing time series on long-term memory effects and memory period by Hurst index, fractal dimension and non-period cycle average cycle length. Several recent developments in Mathematics and Natural Sciences have yielded important insights into the various applications of Rescaled Range Analysis.

History

The history of the Rescaled Range begins with British dam builder and hydrologies H.E. Hurst (1900–78). He worked on the Nile River Dam Project in the early 20th century. In an effort to solve a hydrological problem, Hurst searched for patterns in the Nile Delta. Most hydrologists assumed that water inflow was a random process with no underlying order. He found that large overflows tend to be followed by larger overflows. There appeared to be cycles, but their lengths were non-periodic and standard statistical analysis revealed no patterns between observations.

Hurst developed his own analytical method to explain the non-periodic cycles. The distance covered by a random particle undergoing random collisions from all sides is directly related to the square root of time. This is called the T1/2 rule, and is commonly used in Finance and economics.

It divided the Nile data into segments and examined the logarithmic range

and scale of each segment in comparison to the total number of segments.This process is called Rescaled Range Analysis. The range is re- scaled because it has a zero mean and is expressed in terms of local standard deviation.

Applications Of Rescaled Range Analysis

Rescaled Range Analysis is used to study the persistence of trends and the memory content in the time series. It will give the long- term behavior of the time series.
The market consists of people with many different investment horizons. In the case of a day trader, the investment horizon is measured in minutes or hours only. But for a long-term investor, it could be a few years. A day trader is more concerned with short term trends in the market. Generally technical analysts have short investment horizons and fundamental analysts have long investment horizons. The behavior of the investor is found to be different for different investment horizons and information has different impact on the investors in different horizons.

Many economic and financial time series exhibit considerable persistence. The long memory or long-term dependence property describes the high order correlation structure of a series. If a series exhibits long memory, persistent temporal dependence exists between distant observations. Such series are characterized by distinct but non -periodic cyclical patterns. On the other hand, the short memory or short-term dependence property describes the low-order correlation structure of a series.Over the last few decades, the foreign exchange market has experienced unprecedented growth. The exchange rates play a vital role in controlling the dynamics of the exchange market. As a result, the appropriate prediction of exchange rate is a crucial factor for the success of many businesses and fund managers. Exchange rate prediction is one of the most challenging applications of modern time series forecasting. The rates are inherently noisy, non-stationary and deterministically chaotic.

For thousands of years, gold has been valued as a global currency, a commodity, an investment and simply an object of beauty. As financial markets developed rapidly from 1980 to 1990, gold receded into the background and many investors lost touch with this asset of last resort. Recent years have seen a striking increase in investors' interest in gold. A sustained price rally, underpinned by the fact that demand consistently outstrips supply, is clearly a positive factor in this resurgence.
Due to the growing popularity of gold as a tool of investment, people and institutions around the world are once again investing in gold. At this juncture, it is imperative for the investors to evaluate the future performance of the gold rates before deciding on investments.

Scan To Contact

Applications Of Mathematics In AI

Mathematics plays a crucial role in the development and implementation of AI (Artificial Intelligence). Some of the key applications of mathematics in AI are:

Linear Algebra: Linear algebra is used to represent and manipulate data in AI. Matrices and vectors are used to represent data and model complex systems. Linear algebra is used in neural networks, machine learning, and computer vision.

Calculus: Calculus is used to optimize algorithms in AI. It is used to minimize the loss function of machine learning algorithms and to find the maximum likelihood estimates in probabilistic models.

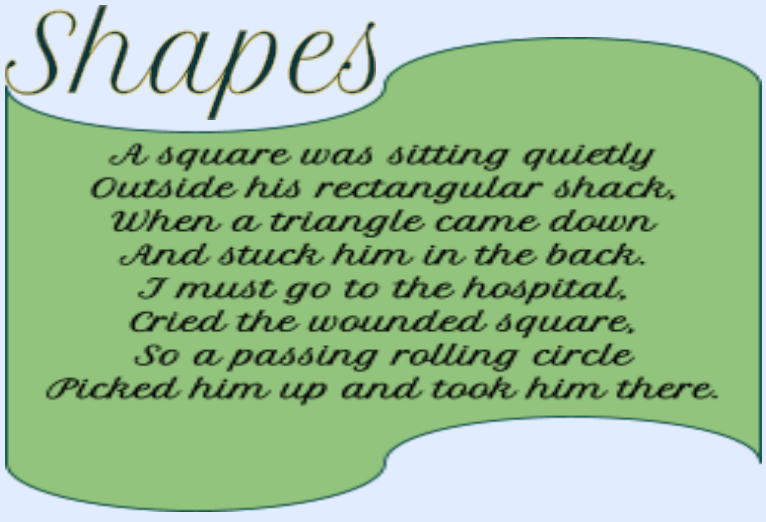
Probability and Statistics: Probability and statistics are used to model uncertainty in AI. Probability theory is used in Bayesian networks, Markov decision processes, and hidden Markov models. Statistics is used to estimate parameters of models and to analyze data.

Graph Theory: Graph theory is used to model relationships between objects in AI. It is used in social networks, recommendation systems, and search algorithms.

Optimization: Optimization is used to find the best solution for a given problem. It is used to optimize machine learning algorithms, to find the shortest path in a network, and to optimize resource allocation.

Numerical Analysis: Numerical analysis is used to solve complex mathematical problems that cannot be solved analytically. It is used in optimization, simulation, and modeling.

Overall, mathematics provides the theoretical foundation for AI algorithms and is essential for the development of advanced AI applications.



Student's Corner

Maths a Challenge

Try, Try and Try,
the more I try,
the more I cry.
I practice math with my heart and soul,
Yet I am not able to achieve my goal.
I never get marks in maths,
Inspite of my great efforts.
I really want to improve my maths,
For this I am trying my level best.
I am candid, so i confess,
In the examination I always create a mess.
All the answers I guess,
ultimately marks are quite less.
I believe that if I do ample practice,
I'll one day probably achieve my goal.
And I seriously have to improve,
Because in my life math plays a significant role.

Marvelous Multiplication
Alluring arithmetics
Tantalizing tangrams
Hypnotizing hypotenuses
Enticing Equations
Mesmerizing monomials
Amazing angles
Thrilling Trigonometry
Inventive Inequalities
Creative Coordinates
Sassy sums

Poem On Mathematics

~By Pradhumn(Btech. ME 4th Year)

Numbers with theory seems mild,
This makes our mind go wild.
Story of statistics is fun,
Only if you know what will be the sum.
Conic section is a part of geometry,
But we never knew we would have differential geometry.
Joining lines was just a design,
Till graph theory came to our mind.
If you are happy by mastering real analysis,
Wait! You still have to learn complex analysis.
Measuring area of triangle was easy,
Measure theory will further make you go crazy.
At least algebra was bit humble,
But doing linear and abstract makes us fumble.
Stories in maths are uncountable containing problems,
Terminates with finding solution,
chained with still many more problems.

Star Performers

1st and 2nd Year Students who Scored>=90% in External AKTU Even Sem 2021-22

SR. NO.	ROLL NO	BRANCH/SEM	NAME	EXT MARKS (100)
1	2000910130123	IT (IV SEM)	VANSH CHOPRA	100
2	2000910310100	IT (IV SEM)	MONISHA SINGH	99
3	2000910100047	CS (IV SEM)	AYUSHI SAHU	98
4	2000910100166	CS (IV SEM)	SEJAL SINGH	98
5	2100910100161	CS (II SEM)	SHUBHAM RAI	97
6	2000910100003	CS (IV SEM)	AANCHAL SAXENA	97
7	2000910100009	CS (IV SEM)	ADITI SAHU	97
8	2000910100029	CS (IV SEM)	APARNA SHARMA	97
9	2000910130127	IT (IV SEM)	VARSHA GOYAL	97
10	20009100130131	IT (IV SEM)	WAMA NIGAM	97
11	2000910100002	CS (IV SEM)	AANANT	95
12	2000910100024	CS (IV SEM)	ANKIT MISHRA	95
13	2000910100130	CS (IV SEM)	PRISHA THAPAR	95
14	20009100130014	IT(IV SEM)	ANKIT NAYAN	95
15	20009100130044	IT (IV SEM)	HEMANG SHARMA	95
16	2000910200086	EE (IV SEM)	RITESH PATEL	95
17	2000910100131	CS (IV SEM)	PRIYANSHI TYAGI	94
18	20009100130132	IT (IV SEM)	YASH SAXENA	94
19	2000910200101	EE (IV SEM)	SRISHTI YADAV	94
20	2000910100115	CS (IV SEM)	PANKHURI SRIVASTAVA	93
21	2000910100136	CS (IV SEM)	PUSHKAR SINGH	93
22	2000910100167	CS (IV SEM)	SHAILESH MISHRA	93
23	2000910100179	CS (IV SEM)	SMRITI SRIVASTAVA	93
24	2000910100025	CS (IV SEM)	ANKITA GUPTA	92

Star Performers

SR. NO.	ROLL NO	BRANCH	NAME	EXT MARKS (100)
25	2000910100076	CS (IV SEM)	HARSHIT KESHRI	92
26	2000910100040	CS (IV SEM)	ASTITV GUPTA	91
27	2000910100087	CS (IV SEM)	KAMYA VERMA	91
28	20009100130041	IT (IV SEM)	GAURAV CHANDEL	91
29	2000910130115	IT (IV SEM)	SWATI VERMA	91
30	2000910200065	EE (IV SEM)	MAYANK RAJPUT	91
31	2000910200087	EE (IV SEM)	SADHANA VERMA	91
32	2100910100176	CS (II SEM)	TUSHAR PANDEY	90
33	2100910100036	CS (II SEM)	ANUBHAV PAL	90
34	2100910100043	CS (II SEM)	ARYAMAN VERMA	90
35	2100910100081	CS (II SEM)	HARSHIT SAHU	90
36	2100910310014	EC (II SEM)	AISHWARYA SRIVASTAVA	90
37	2100910310016	EC (II SEM)	AKASH KUMAR	90
38	2100910310017	EC (II SEM)	AKASH MISHRA	90
39	2000910100057	CS (IV SEM)	DEV BATRA	90
40	2000910100066	CS (IV SEM)	GARIMA AGARWAL	90
41	20009100130050	IT (IV SEM)	JAYATI DIXIT	90
42	2000910130089	IT (IV SEM)	SHAILI SINGH	90

RIDDLES

I am an odd number. Take away a letter and I become even. What number am I?

Using only addition, add eight 8s to get the number 1,000.

The monthly incomes of X and Y are in the ratio of 4:3 and their monthly expenses are in the ratio of 3:2. However, each saves Rs. 6,000 per month. What is their total monthly income?

I add five to nine and get two. The answer is correct, but how?

Number 136 is added to 5B7 and the sum obtained is 7A3, where A and B are integers. It is given that 7A3 is exactly divisible by 3. The only possible value of B is

A. 2 B. 5 C. 7 D. 8

ANSWERS

1- seven 2- 888 + 88 + 8 + 8 + 8 = 1,000

3- 42,000 4- When it is 9 p.m., add 5 hours to it and you will get 2 p.m. 5- 8

Student Volunteers

"Being associated with Mathematrix as an integral part has been a wonderful experience. It took me back to the roots "Numbers".I wish Mathematrix great success and hope it continues to inspire its readers more and more with its forthcoming issues."

~ Anubhavi Agrawal (BTech CSE 4th Year)
Email: anubhavi.callme@gmail.com

"The whole process of coordinating with our convenors has been a great lesson in responsibility, accountability and the corresponding authority that comes with it to get the job done effectively and efficiently."

~ Pradhumn (BTech ME 4th Year)
Email:pradhumncool3x@gmail.com

"Mathematrix has connected us once again with Mathematics. We all hope that the legacy of Mathematrix is carried on further with the same pride and efforts, with each edition being better than the last"

~ Palak Goyal (BTech CSE 4th Year)
Email: palakgoyal686@gmail.com