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LNCT UNIVERSITY

LNCT VIDYAPEETH UNIVERSITY

SOUVENIR

INTERNATIONAL CONFERENCE
ON
MATHEMATICAL MODELLING AND COMPUTATIONAL INTELLIGENCE

ICMMCI-2022

15th & 16th July, 2022

In Association with

Rajiv Gandhi Proudyogiki Vishwavidyalaya
Bhopal, (Madhya Pradesh) INDIA

Accredited with 'A' grade by NAAC

Organized by

Department of Engineering Mathematics
Lakshmi Narain College of Technology & Science

Kalchuri Nagar, Raisen Road, Bhopal 462 022
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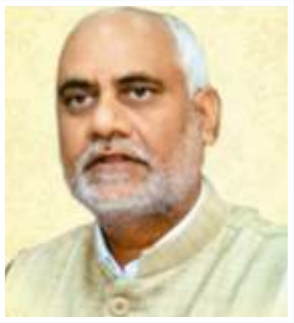

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Sibiu, Romania

Dr. Jomar Fajardo Rabajante
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Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV), accredited with 'A' grade by NAAC, established in the year 1998 is truly a picture of modernization offering learner-centric programmes in Engineering, Pharmacy, Architecture & Management. University is sprawled over a vast campus of 241.4 acres, marching towards development into a center of excellence in the arena of Technical Education, Research and Innovations. Under its umbrella there are 05 UTD's 188 affiliated Engineering Colleges, 69 Pharmacy Colleges, 25 MCA Colleges and 05 Architecture colleges imparting Graduate level institutions running 23 under graduate level courses & 84 post graduate level courses. Situated amidst an aesthetic and hilly surrounding the University is offering Ph.D. in eight faculties.

LNCT GROUP OF COLLEGES

LNCT Group of Colleges founded by Shri Jai Narayan Chouksey in 1994, is one of the most prestigious and largest educational group in central India. Lakshmi Narain College of Technology, Bhopal has the privilege of being the First Private (self-financed) Institute of Madhya Pradesh in India.LNCT Group offers Diploma, Bachelor, Master and Doctorate-level programs. LNCT Group of College having campuses at five locations of Madhya Pradesh and Chhattisgarh viz Bhopal, Indore, Gwalior, Jabalpur and Bilaspur in India. LNCT Group is one of the premier institutions in central India having prominent presence in India as well offer programs in varied field of study such as Engineering, Management, Pharmacy, Medical, Homeopathy, Dental and Nursing. LNCT Bhopal campus is a historic campus in Bhopal, which dates back from 1994. The LN Medical College & Research Center is located at Bhopal, MP. It is a part of LNCT Group of Colleges, which runs a hospital with 750 Beds. Today, prospective students will find 58 undergraduates, graduate as well as post graduate programs to pursue this career in Engineering, Management, Pharmacy, Medicine, Dentistry and Nursing.

LNCT Group appears as a world innovator in the world of higher education helping to create a better today & better tomorrow for the people of India and the world.

ABOUT ORGANIZING INSTITUTE & DEPARTMENT

Lakshmi Narain College of Technology & Science, Bhopal is devoted to excellence in teaching, research and innovation and to develop leaders who will make a difference to the world. LNCT&S, is established in Bhopal in 2006.The record-breaking placements at LNCT&S is an apt testimony to its focus on upholding the highest academic standards right from selecting top faculty, introducing world class pedagogical practices to personality development to the students. The department of Engineering Mathematics is one of the vibrant departments of the institution, established in the year 2006. The Department functions as a service agency providing support to UG inculcating analytical skills in mathematical sciences so as to enable the students to apply and formulate in solution making approaches of their technical subjects. Definitely the learning of mathematics will enhance and widen the mathematical aptitude, analytical skills, logical reasoning and systematic thinking of the students.

ABOUT BHOPAL

Bhopal, capital city of Madhya Pradesh, is known as City of Lakes. Founded by Raja Bhoj, the ity has many natural and artificial lakes and it is one of the greenest cities in the country. The main cultural center of Bhopal is Bharat Bhavan. The State Museum has fossils, paintings and rare Jain sculptures. Taj-ul-Masjid is one of The Asia's largest mosques, with white domes, and minarets. Van Vihar National Park, located in the middle of the city, has many species of animals living in their natural habitat. A large number of institutes of national importance have been established is Bhopal. Climate of Bhopal in pleasant in the month of November.

ABOUT INTERNATIONAL CONFERENCE

International Conference on Mathematical Modeling and Computational Intelligence (ICMMCI-2022) will be held at LNCT&S, Bhopal, July15&16, 2022. The aim of this conference is to bring together leading researchers and academics team in the field of Applied Mathematics and Engineers in order to debate current and interdisciplinary topics in Control, Fractional Calculus, Machine Learning, Big Data Analytic and their applications in engineering science. The aim of this conference is to promote the interconnection of mathematical modeling and computational methods used in solving complex (real-world) problems. The lectures will be prepared with a broad multi disciplinary audience in mind, and at each school a broad scope, ranging from modeling to scientific computing, will be covered. All submitted papers will be peer-reviewed by referees and accepted papers with great quality will be published in Material Today Proceeding (In Progress)/ Scopus/ Elsevier /Book Chapter.

Course Objective

Main topics: Mathematical Modelling and Computational Intelligence is a premier international conference on topics at the confluence of Machine Learning, Big Data Analytics and Large-scale Computing Systems, their use in modeling and simulation, their design, performance use their impact and related issues.

- Mathematical Modelling the Future Internet and developing future Internet security technology
- Data Science
- Big Data Analytics
- Mathematical Models and Information-Intelligent Systems on Transport
- Computational Methods for Linear and Non-linear Optimization
- Numerical Methods for Solving Non-linear Problems
- Bio-Mathematics
- Reliability and Optimization Techniques
- Mathematical Models for Computer Science
- Industrial Mathematics
- Computational Modeling in Engineering and Science
- Mathematical Modelling of Man-Made Natural disasters: Forest Fire & Environmental Pollution
- Numerical Linear Algebra Methods for Large Scale Scientific Computing
- Machine Learning Techniques in Bio-Informatics
- Processing, Modelling and Describing Time Series

Shivraj Singh Chouhan
Chief Minister

Government of Madhya Pradesh
BHOPAL - 462 004

June 29, 2022
SR. No. 647/22

Message

I am happy to know that the Department of Engineering Mathematics, Lakshmi Narain College of Technology and Science, Bhopal, is Organizing "International Conference on Mathematical Modelling and Computational Intelligence (ICMMCI-2022)" in asasociation with Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal July 15th-16th, 2022.

Mathematics is regarded as the mother of all Sciences. Technological and Industrial revolution have provide that the role of Mathematics is not restricted to purely academic domain. Mathematical modeling and computational intelligence play an important role in research and innovation in the field of technology.

I hope that the participation of large number of professionals, academicians and researchers will be able to generate high level of intellectual deliberations and help to inspire younger scientists and researchers to go the greater heights.

My best wishes for the entire endeavor.

(Shivraj Singh Chouhan)

राजीव गांधी प्रौद्योगिकी विश्वविद्यालय
(मध्यप्रदेश का तकनीकी विश्वविद्यालय)
Rajiv Gandhi Prodyogiki Vishwavidyalaya
(State Technological University of Madhya Pradesh)

Prof. Sunil Kumar
Vice-Chancellor

Do Letter No. RGPV/VC/2022/87
दिनांक/Date 04.07.202

MESSAGE

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Mathematics is the backbone for the development of scientific and technical fields. Scientific computing, the thrust area provides the basis for all round development of humanity and improvement of its wellbeing. This conference will provide a forum for interaction of Researchers in the field of mathematical science, computer science and Interdisciplinary Researchers.

The presence of large number of professionals, academicians and researchers would be able to generate high level of intellectual deliberations and would inspire younger scientists and faculty to go to greater heights.

My best wishes for the conference to be a great success.

S Kumar

Prof. Sunil Kumar

एयरपोर्ट रोड, भोपाल-462 033 (म.प्र.) दूरभाष : +91 755 2742001 फैक्स : +91 755 2742002 ईमेल : vcoffice@rgtu.net
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Website : www.rgpv.ac.in

Dr. S.C Choube
Professor and Dean
Rajiv Gandhi Proudyogiki Vishwavidyalaya
Bhopal (M.P.)

MESSAGE

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I extend my best wishes to participants, members of managing committee and organizers of the **ICMMCI-2022**a grand success and also for the successful publication of the Souvenir and in all its future endeavors.

(Dr. S.C. Choube)

Shri Jai Narayan Chouksey
Chancellor
LNCT University, Bhopal
&
Chairman
LNCT Group of Colleges

MESSAGE

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"ICMMCI-2022" is successive efforts in the series of mathematical modelling and for the enhancement of knowledge and interest of one and all n research scholar and faculty members.

This conference is serving as an open platform for promoting and upbringing knowledge in the relevant area.

I heartilywish for the success of this conference and hope that all those are associated with this venture may achieve the most out of it.

(Jai Narayan Chouksey)

Smt. Poonam Chouksey

Hon'ble Chancellor
LNCT Vidyapeeth University, Indore
&
Vice-Chair Person
LNCT Group of Colleges

MESSAGE

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The topics to be covered in this International Conference are comprehensive and will be adequate for developing and understanding about new developments and emerging trends in this area. I hope the goal of the conference is to update the knowledge of faculty members, young researchers and PG students. I shall be glad to receive a path forward drawn from the conference.

I congratulate the organizers for taking this initiative and extend my best wishes for the successful conduction of event.

(Poonam Chouksey)

Dr. Anupam Chouksey

Hon'ble Pro-Chancellor
LNCT University, Bhopal
and
Hon'ble Secretary,
LNCT Group of Colleges

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(Dr. Anupam Chouksey)

Dr. Shweta Chouksey
Hon'ble Director,
LNCT Group of Colleges, Bhopal

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(Shweta Chouksey)

Dr. Ashok Kumar Rai

Director, Administration, LNCT, Bhopal
and
Conference Convener (ICMMCI-2022)

MESSAGE

It is the matter of great pleasure and pride that the Department of Engineering Mathematics, Lakshmi Narain College of Technology & Science, Bhopal, is Organizing **"International Conference on Mathematical Modelling and Computational Intelligence (ICMMCI-2022)"**in association with Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal (Madhya Pradesh) **July 15th-16th, 2022.**

This conference brings together leading academicians, scientists & researchers to exchange and share their experiences and research results in all aspects of mathematical modelling, machine learning and big data analytics. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends and concern as well as practical challenges encountered and solutions adopted in the field of mathematical modeling and Computational Intelligence.

We are grateful to all the delegates participating around the globe, the sponsors of this conference to help us in making this Endeavour a great success. On behalf of LNCT family, I wish all of you pleasant stay and fruitful participation in the conference.

(Dr. Ashok Kumar Rai)
Conference Convener
(ICMMCI-2022)

Dr. Anug Garg

Director, Training & Placement
LNCT Group of Colleges, Bhopal

MESSAGE

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ICMMCI-2022 is going to be a premier forum for presentation of new research and advances in this field and attract the industry people to get associated with the Lakshmi Narain College of Technology & Science, Bhopal.

I would like to encourage the academics fraternity to make use of this opportunity for themselves and thus contribute for the benefits of students and society

I whole heartily wish for the mega success of conference

(Dr. Anug Garg)

Dr. Amit Bodh Upadhyay

OSD, LNCT&S, Bhopal

MESSAGE

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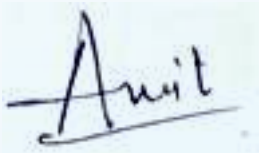

(Dr. Amit Bodh Upadhyay)

Dr. Sunil Singh

OSD,

LNCT Group of Colleges, Bhopal

MESSAGE

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The conference assumes significance in the context of increasing use of mathematical modelling and computational intelligence.

The technological institutes need to take academics leadership in this sphere. I hope the expert would focus attention on this aspect.

I wish the conference a grand success in its objectives.

(Dr. Sunil Singh)

Dr. Sanjeet Kumar

Professor & Head
Department of Mathematics, LNCT&S, Bhopal
Conference Coordinator(ICMMCI-2022)

MESSAGE

I feel so enthusiastic to share that the Department of Engineering Mathematics,Lakshmi Narain College of Technology & Science, Bhopal, is Organizing **"International Conference on Mathematical Modelling and Computational Intelligence (ICMMCI-2022)"**in association with Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal (Madhya Pradesh) **July 15th-16th, 2022.**

The combination of mathematical modelling and computational intelligence is very often ignored in the scientific community although only the combination of these two technologies allows us to get better simulation results for many pressing problems in science and engineering.

The presence of large number of professionals, academicians and researchers would be able to generate high level of intellectual deliberations and would inspire younger scientists and faculty to go to greater heights.

I am sure the delegates and speakers will enjoy the sessions and will carry with them pleasant memories of the Conference and the College Campus. I hope the Conference will create a strong group of specialists in the area of High Performance Computing and its Applications.

Dr. Sanjeet Kumar
Conference Coordinator
(ICMMCI-2022)

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MMCI- 01

Meningitis Transmission Dynamics on Children in North-western Nigeria

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Abstract: Meningitis is a very serious and most dangerous case in public health because it spreads rapidly and can kill in a few hours. Many authors undergo several researches for the understanding the transmission dynamics of different diseases and meningitis infection specifically but none of the researches reviewed used data (quantitative method) for the children under 15 years on meningitis outbreak in the northwestern Nigeria. In this study, more concentration is given on the developed new model of simple.

Keywords: Meningitis, Equilibrium state, Transmission dynamics, Threshold value

MMCI- 02

On Best Proximity Point Results In b-Metric Space

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Abstract: In this paper, some best proximity results have been constituted in b-metric space including the concept of weak contraction. To support the presented results, suitable examples are provided along with some of the consequences.

MMCI- 01

Keywords: Fixed Point, Best Proximity Point, b-metric space.

AMS Subject Classification: 47H10; 54H25; 34B15

MMCI- 03

Fourier Transform and Its Application in Sound Editing

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Abstract: In this paper; we propose/discusses the Discrete Fourier Transform Technique and visually demonstrate the simple method to edit unwanted noise from given digital audio. In our experiments several variants of the Fourier transform are used. Fast Fourier Transform is an algorithm which determines Discrete Fourier Transform of an input very fast that computing it directly. Fourier Transform is such mathematical tool which enables to get different frequency components of one sound wave and using reverse Fourier Transform we can easily eliminate noise. For this demonstration purpose we have used digital audio editor and recording application Audacity. However, using small audio file for experiments with digital audio editor and freely available recording application Audacity.

Keywords: Fourier Transforms, Discrete Fourier Transform, Fast Fourier Transform, Sound, Digital audio, Noise, Audacity

MMCI- 04

An optimal solution to multi-goal fuzzy linear programming problems using elementary transformations

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Abstract: This paper looks at how Fuzzy Linear Programming can be used to solve a multi-goal problem to achieve optimal solutions. Our goal is to minimize production and transportation costs by using an elementary transportation method and comparing the results with those of existing methods. We discuss the results of numerical example and illustrate this method.

Keywords: Linear Programming Problem, Multi-Objective, Elementary Transformation Method, Triangular Number.

MMCI- 05

A Mathematical Model of Blood Flow of a Stenosed Artery in Variable Shape

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Abstract: In this theoretical study a mathematical model is developed to carry out a systematic analysis of flow behavior in a two-dimensional vessel (modeled as artery) with a locally variable shaped constriction. The artificial artery which containing a viscous incompressible fluid that representing the flowing blood, can be treated as inflexible vessel. The shape of the stenosis in the arterial lumen is chosen to be symmetric as well as asymmetric about the middle cross section is perpendicular to the axis of the vessel. The constricted vessel is resolved into a straight vessel and the entire resulting equations are solved by a numerical method with Reynolds number and 'n', a number giving the shape of the constriction as parameters. The impacts of these parameters on wall shear stress, pressure gradient and velocity have been analysed. It is found that the flow resistance decreases as the shape of a smooth stenosis changes and extreme resistance is attained for the symmetric stenosis. But the length of separation increases for the asymmetric constrictions and the oscillation in the shear layer appears earlier for asymmetric constriction than that in the case of symmetric constriction. The extreme resistance is attained for inflexible stenosed vessel rather than the flexible one.

Keywords: Two-dimensional vessel, artificial artery, incompressible, stenosed artery, Reynolds number, resistance, asymmetric.

MMCI- 06

An SRGM using correction lag function and testing efficiency in detection and correction process

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Abstract: Software reliability growth models(SRGMs) have shown remarkable research since the early 1970s. Usually, These SRGM growth models are used in the software testing process and provide the failure pattern, consumption of testing efforts, total expected cost, and reliability. The underlying common assumption of many existing models is that the faults are detected they removed instantly. But in reality, this is often not the case. Firstly, faults are detected, isolated, and then corrected. To fill this gap, correction lag function, and testing efficiency to improve the SRGM in detection and correction process. In this paper, an SRGM has proposed using the total expected cost and real based on the proposed model is discussed and numerical results based on real data set are proposed to validate the proposed model

Keywords: Software Reliability Growth Model(SRGM), Detection and Correction Process, Correction Lag Function, Testing Efficiency, Cost, Reliability.

MMCI- 07

Fuzzy Logic based Expert System for Livestock milk production

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Abstract: Livestock means "farm animals considered as an asset". The word "Cattle" and "Livestock" have been used interchangeably. India consists of a large amount of livestock resources. Among livestock, Cattle are the largest animal population in the country. India has the highest level of milk consumption of all countries. In our country, the milk yield is low due to factors like poor nutrition, improper feed management, inefficient veterinary practices, inefficient implementation of breed improvement programmes. Fuzzy logic can be used to manage uncertainty in expert systems and solve problems that cannot be solved effectively by conventional methods. The main aim of fuzzy expert systems is to use human knowledge to process uncertain and ambiguous data. The objective of this paper is to design and develop a fuzzy logic expert system which will help to determine the suitable conditions required for the improved and increased production of milk. This fuzzy logic system provides expert opinion about the various factors or parameters and their favorable conditions for the profitable yield of milk. The defined factors and their given ranges are considered as input and the productivity of milk is considered as the output.

MMCI- 08

Computation of Multi-Objective Linear Programming Problem by Row Reduce Echelon Method

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Abstract: The objective of this paper is to solve a Multi-Objective Linear Programming problem to achieve optimal solutions for two objectives. As we solve our problem by using a row reduced echelon method and compare the result with existing methods, we are aiming to minimize production and transportation cost. This method is illustrated by solving numerical examples and discussing the results.

Keywords: Linear Programming Problem, Multi-Objective, Echelon method

MMCI- 09

Course Time Table Scheduling Applying Linked List Based Exact Algorithm of Graph Coloring

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Abstract: Preparation of course timetable and exam time table are two very usual problem in any educational system. The presence of very large numbers of students and offered courses combination makes it very complex to prepare course time table .A suitable schedule can be prepared by using different resources like students , teachers, subjects, and classrooms in such a way to evade conflicts by satisfying special types of constraints. Graph coloring is one of appropriate approach which can solve timetable scheduling problem and can satisfy changing requirements. In this paper we have prepared a systematic course timetable by applying graph coloring approach based on linked list exact algorithm introduced by ajay narayan , vishal bharti and madan garg, and provide a time slot for major subjects and all minor subjects in such a way that the lectures of any subjects are not over lapped. The result shows that the proposed graph coloring approach generates suitable time table for college ,and helps to provide a proper time to all subjects. Given approach has lots of future scope in all types of scheduling problems.

Keywords: graph coloring, linked list, time table, soft constraints, hard constraints adjency matrix

MMCI- 10

Best proximity points for proximal contractive type mappings with C-class functions in S-metric spaces

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Abstract: In this paper, we use the concept of C-class functions to establish the best proximity point results for a certain class of proximal contractive mappings in S-metric spaces. Our results extend and improve some known results in the literature. We give examples to analyze and support our main results.

Keywords:- C-class function, best proximity point, proximal contractive mapping, S-metric spaces.

MMCI- 11

Some Common Fixed-Point Theorems for Expansive Type Mapping in Hilbert Space

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Abstract: The objective of this paper is to obtain some common fixed-point theorems for expansive type mappings defined on a non-empty closed subset of a Hilbert Space. So, the purpose of this paper is to establish the existence of a fixed-point theorem in a Hilbert space.The presented theorems extend, generalize, and improve many existing results in the literature.

MMCI- 12

Best Proximity Results in b-Metric Space using Weak Contraction Mapping

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Abstract: In the present paper, the purpose is to find the best proximity point in b-metric space using the concept of weak contraction mapping. Here, some best proximity results have been presented in b-metric space. In support of the theorem, we present a suitable example. Also, some consequences have been shown here.

Keywords: Fixed Point, Best Proximity Point, Metric Space, b-metric space, Weak contraction.

AMS Subject Classification: 47H10, 54H25, 34B15.

MMCI- 13

A Brief Overview on Gender Constraints in Education Participation

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Abstract: Despite the fact that universal basic education has been regarded as a non-negotiable subject in India and Madhya Pradesh, there has been little progress. Scanning Indian policy documents demonstrates that the country's "rhetoric and official texts are perfectly in line with global development ideas and trends". On the other hand, out of about 200 million children in the age group of 6-14 years, only 120 million are in school, and net primary attendance is just 66 percent of enrollment. In this paper a brief overview on Gender constraints in education participation has been presented.

Keywords: Belief, Attitudes, Perception, Economic concerns, Modesty, Gender constraints.

MMCI- 14

The Fire Safety or Fire Risk Evaluation: A Brief Review

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Abstract: Increased exposure to antagonistic attacks for multipurpose structures adds to the above-mentioned complexity, with potentially serious implications. Because several functions are crammed into a tiny space in a multipurpose structure, these structures are more vulnerable as a result of attacks and other incidents. An attack on a a multipurpose structure would cause severe emotional and/or financial harm, as well as deterioration society functions, resulting in these structures as much as likely to be targeted by antagonistic attacks. In this paper a brief review has been presented on the Fire Safety or Fire Risk Evaluation

Keywords: Fire safety, Fire Alarming, Risk indexing, Hazard's consequence, Occupancies

MMCI- 15

Particle swarm optimization and a fuzzy technique for multi-objective optimization of a sequentially inspected system vulnerable to hidden and unhidden failures

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Abstract: The multi-objective availability and cost optimization of a sequentially inspected single-unit system alternating between unhidden and hidden failures is examined in this study. In the former scenario, failures are discovered right away, whereas in the latter scenario, inspections are necessary for failure discovery. The evaluation of broad expressions for limiting availability and long-run average cost of the system undergoing sequential inspections is the primary topic of this research. The proposed model's distinguishing feature is that the inspections aren't always flawless. Furthermore, it is assumed that corrective repair yields a device that is as good as new and that inspection and maintenance time are not negligible. The Pareto optimal solutions are first produced using particle swarm optimization (PSO) to address the multi-objective optimization (MOO) problem, and the best compromise solution is then chosen using a fuzzy approach. Additionally, a numerical case study is provided to demonstrate the applicability of the suggested approach.

Keywords: Particle swarm optimization (PSO); Fuzzy method; multi-objective optimization (MOO); Sequential inspection; Availability.

MMCI- 16

A Mathematical approach to Study the Effect of Infection on two-prey One-predator system

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Abstract: The present work deals with the cooperation and non-cooperation between the two prey populations and interaction with one predator population. It is assumed that infection a*ff*ects only one prey population and predator avoids capturing the infected prey. The infected prey is subjected to harvesting at low and high harvesting rates. Equilibrium points are obtained and existence of all equilibrium points are analysized. In the analysis, we have discussed the persistence of all species populations and obtained the conditions of stability at various equilibrium points of the prey predator system by means of applying the Jacobian matrix and Routh-Hurwitz criterion.

Keywords: Two-prey one -predator model, Disease, Equilibrium points, Persistence.

MMCI- 17

Simultaneous Triple Series Equations Involving The Product of 'r' Generalized Bateman-k Functions

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Abstract: In the present section the solution for the series equations is obtained by using the multiplying factor technique. In this section a closed form solution has been obtained for the triple series equations involving the product of 'r' Generalized Bateman-k functions. Certain mixed boundary value problems of mathematical physics lead to triple series equations of the form:

Keywords: 45F10 Triple Series Equations, 33C45 Bateman- k function, 33D45 Basic Orthogonal polynomials and functions, 42C05 Orthogonal functions and polynomials, General Theory, 26A33 Fractional Derivatives and Integrals, 33B 15 Beta function, 34BXX Boundary value problem.

MMCI- 18

Quasi Weakly Essential Supplemented Modules

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Abstract: In this work we extend supplemented modules as quasi weakly essential supplemented modules and some properties of these modules are investigated. We show that every finite sum of quasi weakly essential supplemented modules is quasi weakly essential supplemented.

Keywords: Essential Submodules, Small Submodules, Supplemented Modules.

MMCI- 19

Fixed Point Result with Expansive Mapping in Digital Metric Space

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Abstract: In this paper we introduces α-φ- expansive mapping for Digital metric space . we prove some fixed point theorem in digital metric space by using α-φ-expancive. There are varies application of fixed point theory in mathematics. The abstraction of this theory is the pioneering work of the great Polish mathematician Stefan Banach Published in 1922. Digital topology is a developing area which is related to features of 2D and more 3D digital images using general topology and functional analysis. The purpose of this paper is to associate fixed point theory and digital images with expansive mapping.

Keywords: Digital image,digital metric space , α-φ- expansive mapping

MMCI- 20

Fuzzy Dynamic Programming to Determine the Shortest Route Problem

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Abstract: The purpose of this paper is to develop a new paradigm for a fuzzy dynamic programming for solving the shortest route problem. Dynamic programming is a mathematical technique used for obtaining the solution for a sequence of interrelated decisions. In real life, situations are not crisp enough moreover, they are fuzzy in nature. Therefore, in order to deal with the real situations a new method is being proposed here to find the more realistic answers to the dynamic problems. For this purpose, the MATLAB software is used where the decision parameters are trapezoidal fuzzy numbers.

Keywords: Dynamic programming, fuzzy dynamic programming, shortest path problem

MMCI- 21

Certain Integral Involving *H* Function Involving Complex Arguments

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Abstract: Most of researchers already work on the field of *H*-function namely Inayat-Hussain (1987). In this sequel, here, we aim to introduce a new sequence of functions involving the special functions in their series of papers and involving the generalized Mellin-Barnes type of Contour Integrals by using the hypergeometric function of different orders and complex arguments by making use of -function.

Keywords: Special Function, *H*-function, Hypergeometric function.

Mathematics Subject Classification 2010: 26A33, 30C45,11B65.

MMCI- 22

Generalized F-contractive type mappings in b-metric spaces and some related fixed point results

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Abstract: In this paper, we define generalized F-contractive type mappings in b-metric spaces and prove some fixed point results with suitable examples. Generalized F-expanding type mappings are also defined and a fixed point result is obtained.

Keywords: b-metric spaces , Fixed point, continuous mapping, F-contractive type mappings, Generalized F-contractive type mappings.

AMS classification:- 74H10, 54H25

Enhancement of the Performance of an Earth-Air tube Heat Exchanger for Greenhouse Cooling by the Incorporation of Water Finned Tubes—A Systematic approach

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Abstract: Proper climatic conditions in greenhouses are one of the major parameters to ensure optimum crop development. The installations of heating and cooling systems are the common solution to form a proper microclimate inside the greenhouse. However, the operation of these systems is accompanied by energy consumption. Therefore, many methods and alternative systems are sought to encounter this issue. A system which has been examined as an alternative solution for full or partial cover of a greenhouse is the Earth to Air Heat Exchanger (EAHE). Up to now, many research works have concentrated on the investigation and operation of such systems. In this study, a method to enhance the efficiency of the EAHE is examined based on the simultaneous flow of water (Water assisted earth to air heat exchanger—WAEAHE) following the concept of a double pipe heat exchanger which has been widely used in other applications. Furthermore, the improvement of the systems' efficiency is investigated via the application of fins on the internal pipe of the heat exchanger. For the purpose of the study, different case studies have been investigated in order to reach safe results conserving the parameters affecting its efficiency. The results of the theoretical analysis have shown that the application of an internal water pipe can increase the system's efficiency sufficiently, while it is further increased with the application of fins. In fact, the application of fins can lead to an increase of the overall heat transfer coefficients varying from 36–68%. In the current study, only the energy efficiency of the system was estimated. This system needs to be further investigated to be technically and financially efficient and applicable in actual case studies.

Keywords: Greenhouse cooling; earth to air heat exchangers; fins; heat transfer coefficient, Earth–air heat exchanger; Nusselt number (Nu); Effectiveness of EAHE (ε); Earth's undisturbed temperature (EUT).

MMCI-24

An Inventory Model with Partial Backordering, Weibull Distribution Deterioration under Two Level of Storage

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Abstract: This chapter present "An Inventory Model with Partial Backordering, weibull Distribution Deterioration under Two Level of Storage" in which a theoretical model is developed under constant demand rate with two parameter weibull distribution deterioration and shortages amount of inventory is backlogged at fraction of constant rate. The holding costs in both ware houses are taken to be linear time dependent.

Keywords: Two-Warehouse, inventory model, deteriorating items and inflation

MMCI- 25

Programming Problem using Graphical Method with an Excel Solver

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Abstract: Linear Programming is a name of a branch of Applied Mathematics which deals with solving optimization problem of a particular form. In business operations, the linear programming technique is a critical decision-making tool for minimize a solution within the restrictions of available resources. The Graphical method is one of the methods to solve the linear programming issues. Linear programming problems consists of a linear cost function which is to be minimized subject to a certain number of constraints. The constraints are linear inequalities of the variables used in the cost function also sometimes called the objective functions. Microsoft Excel comes with a solver add-in used to solve a system of equations or inequalities to arrive at a solution. In this paper an approach is presented to solve LPP by graphical method for finding a minimize of an objective function. This method is applied to a real-life example. This paper shows the use of excel solver tool for solving a simple LP problem to find the optimal solution and easier to understand and takes less time to get better solution.

Keywords: Graphical Method, LPP, Constraints, Objective function, minimize, Excel solver, Microsoft Excel worksheet.

MMCI- 26

Impact of Lockdown due to COVID-19 on Human life and Environment of India

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Abstract: The Pandemic COVID-19 is causing lockdown with enormous changes in human life and the Environment. It has an impact on the economy and keeps on giving rise to unemployment. This research paper includes an Analysis of the Statistical Data obtained from the survey to come to a consensus to conclude what is the impact of COVID-19 lockdown on human life and the environment as a whole. The research also compares the results obtained from the statistical survey on Environmental changes, impact on Economy and understanding importance of self and social hygiene due to COVID-19 lockdown. This Analysis provides an account of the potential impact of COVID-19 in Indian society and helps one to draw measures to overcome the impact.

MMCI- 27

Quantum Computation Theory

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Abstract: The subject of quantum computing brings together ideas from classical information theory, computer science, and quantum physics. This review aims to summarize not just quantum computing, but the whole subject of quantum information theory. Quantum computing is the new field of science which uses quantum phenomena to perform operations on data. The goal of quantum computing is to find algorithms that are considerably faster than classical algorithms solving the same problem. In this paper we will talk about need of quantum computation and the advantages they offer us in compare with the classical computers. We will discuss what the elements of Quantum computing are. Along with this we will talk about the challenges to Quantum computing.

Keywords: Quantum computing, phenomena, classical computers.

MMCI- 28

An Interesting Integral Involving Product of Two Generalized Hypergeometric Function

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Abstract: In this research note, an interesting integral involving hypergeometric function has been evaluated in terms of gamma function. It is further used to evaluate an integral involving product of two generalized hypergeometric functions. A few very interesting special cases have also been given.

Keywords: Hypergeometric Function, Generalized Hypergeometric Function, Watson Theorem, MacRobert's Definite Integral.

2010 Mathematics Subject Classification: 33B15, 33C05, 33C15, 33C20.

MMCI- 29

Dynamics of a predator-prey model with delay harvesting

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Abstract: In this presentation, we will explore dynamics of a Logistic Lotka-Volterra predator-prey system with delay harvesting of the prey population. Harvesting generally has a stabilizing effect on predator-prey interactions. However, we will see that owing to delay harvest, the system exhibits three types of delay-induced stability scenarios, viz., stability invariance (no stability change), stability change (stable to unstable), and stability switching (stable to unstable to stable) depending on the effort of harvesting. Analytical criteria for the existence of these three stability scenarios will be presented. Numerical simulations using time series, phase portraits, and eigenvalue variation will be provided to illustrate the stability scenarios.

Keywords: Quantum computing, phenomena, classical computers.

MMCI- 30

Smart Grid: Demand Side Management and Optimization

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Abstract: Higher renewable energy penetration, as well as power supply dependability and economy, are required for smart grid development. The traditional power grid dispatching system is incapable of meeting the demand. This study examines smart grids and their characteristics, as well as demand side management and optimization strategies, and compares them. This report also discusses the differences between smart grid and traditional grid. Demand Side Management has long been one of the Energy Sector's main goals. According to various publications, existing options for demand side management include Direct Load Control and Smart Pricing.
Keywords: Smart Grid, Demand Side Management, Optimization, Reliability.

MMCI- 31

On the Solution of fractional K(m, n, 1) equations

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Abstract: This paper is devoted to a newly introduced numerical method for time-fractional K(m, n, 1) equations. The time-fractional K(m, n, 1) equations play a great role in solving the problems arising in science and engineering. The numerical technique comprises of Sumudu transform, homotopy perturbation scheme and He's polynomial, namely homotopy perturbation Sumudu transform method (HPSTM) is efficiently used to examine time-fractional K(m, n, 1) equations. The approximate analytic solution of the time-fractional K(m, n, 1) equations obtained by HPSTM is compared with exact solution. The results derived with the aid of HPSTM are in a good agreement and consequently this method may be considered as an alternative and efficient approach for solving fractional partial differential equations. Several test problems are experimented to confirm the accuracy and efficiency of the proposed methods. This study also states that HPSTM is much easier, more convenient and efficient than other available analytical methods.

Keywords: K(m,n,1) equation, Sumudu transform, Homotopy perturbation method, He's polynomials, Approximate Solution.

MMCI- 32

Discrete Mathematics and their applications in Computer Science

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Abstract: Discrete mathematics is study of mathematical structures. It deals with object that can have distinct separate values. It is also called Decision mathematics. This paper introduce Importance of discrete mathematics in computer science and its applications like Theoretical computer science, Information theory, Set theory, Combinatorics, Graph theory, Numbers theory, Topology and In this paper we particularly focused on Theoretical computer science, Information theory, Set theory, Combinatorics.
Keywords: Discrete mathematics, Mathematical logic, number theory.

MMCI- 33

Advancement in the Fields of Chemical Engineering and Biology Through Computational Intelligence and Machine learning: An overview

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Abstract: Availability, quantity and complexity of data in all the disciplines are rapidly increasing and the demand to perform multiple computations on them. Using traditional methods at times causes critical patterns to hide and now many researchers claim that machine learning solves this issue. In this article, we take an overview on the accomplishments machine learning and computational intelligence have made in chemical engineering and biology. Some of the recent developments in the province of biology include the creation of xenobots, in the domain of healthcare systems, with an emphasis on covid-19, and medicine. Along with that, machine learning holds a lot of potential in departments such as environmental science and emerging fields like plant nanobionics. Machine learning techniques helped chemical engineering in revealing patterns in data which were undiscovered and its advantages helped in extension to large data systems and datasets without capacious computational resources. In addition to it, recent advancements have been seen in predictions related to chemical engineering. Predicting outcomes and suitable conditions for organic reactions, solubility prediction of active pharmaceutical ingredients and planning chemical synthesis are certain cases in point. Notwithstanding the wide obtainability data from scientific literature and dedicated databases, accompanied with a generous amount of algorithms and methods, machine learning is at its novice phase and has to achieve exceedingly. Few researchers insist the black box approach with limited training of chemical engineers and biologists in computer science to be the reason behind it. Nevertheless, machine learning strongly holds the future.

MMCI- 34

A Review of Encryption Schemes using Laplace Transform

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Abstract: By encrypting messages with codes, cryptography allows for the secure transmission of information only to those designated to receive it. Laplace Transform can help to increase the security of the communication process. This article highlights a decade's worth of research on Laplace transforms in cryptography. Here, we discuss about how different Laplace transform formulas are used to create various private keys in cryptography and find new ways to accomplish encryption. For the decryption procedure, various Inverse Laplace transforms are applied in a way that their combination offers the highest level of security. On the basis of Laplace cryptography, we present a comparison table and some instances.

Keywords: cryptography, Laplace transform, encryption, decryption.

MMCI- 35

Mathematical Modelling Of Time Dependent Stenosis In An Artery

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Abstract: In this paper, we have discussed about effect of time dependent stenosis and slip velocity on flow of blood in an artery. We have explored the problem using analytical methods. We have obtained the equations of axial velocity, volumetric flow rate, resistance to flow and wall shear stress. The results shows that resistance to flow and wall shear stress increases as stenosis height increases. Also, the variation of axial velocity, resistance to flow and wall shear stress with different parameters of time and slip velocities has been investigated.

MMCI- 36

Application of integration in Civil and Aerospace Engineering

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Abstract: In this paper, we are going to study how application of integration are used. In the field of aerospace and civil engineering, integral calculus is having a wide range of application in both the fields, but in this paper, we are going to focus on how ideal rocket equation is calculated using integral calculus in aerospace stream and how integral calculus is used to calculate heat loss in building.

Keywords: Aerospace Engineering, Civil Engineering, Ideal Rocket Equation, Heat loss in building.

MMCI- 37

Normalization of Fuzzy T-Sub algebra in T-Algebra

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Abstract: In this paper, we define a normal fuzzy T-sub algebra and maximal element of the fuzzy T-sub algebra in T-algebra. Required definitions and lemmas are mentioned to understand the approach of the work. This work leads for generalization of Intuitionistic fuzzy set, interval valued fuzzy set and Bipolar fuzzy sets.

Keywords: T-Algebra, T-Sub algebra, Fuzzy T-Sub algebra, Normal Fuzzy T-Sub algebra, Maximal element in T-Sub algebra.

Application of Realizable k-epsilon Turbulence Model for CFD on ANYSY WORKBENCH to Determine the Optimum Dimension of Conical Frustum for Wind Speed Enhancement

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Abstract: The quest for developing renewable energy systems to generate more power with increased economic feasibility as well as area of reach is driving the scientists globally for inventing techniques to reduce the technological gaps in renewable energy sector reported till date. The countries need to meet the global commitment of zero emissions by 2050 as well as achieving the Sustainable Development Goals number 7 and 13 which are crucial to combat the climate change and fossil-free energy production. Present study involves the use of continuity equation by utilizing a conical frustum in front of wind turbine blades for increasing the wind speed as well as subsequent power production at low wind speed areas. This study is conducted by involving realizable k-epsilon turbulence model on ANYSY WORKBENCH Software. Inlet and outlet wind speeds with turbulence kinetic energy in different dimensions of conical frustums are computed for determining the optimized model. The selected reference device for present study is a commercially available 500-Watt wind turbine. This study upon completion and field verification, would be useful in developing small wind turbines for household as well as commercial buildings at low wind speed areas. And thereby will open new avenues for renewable energy production at increased number of sites. It may enhance the power production due to estimated three-fold increase in natural wind speed as per result of this Computational Fluid Dynamics (CFD) study.

Keywords: Renewable Energy; Wind speed; wind turbines; conical frustum; Turbulence model.

MMCI- 39

Modeling and Analysis of Fuzzy Sustainable Inventory for Deteriorating Item with Controllable Carbon Emissions and Preservation Technology

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Abstract: Due to carbon emission difficulty in the environment, associated with the preservation technology strategy, this study involves green technology development to decrease carbon dioxide emissions from greenhouse operations and to decrease product deterioration by applying preservation technology. Greenhouse product manufacturers will apply preservation technology to increase the product's lifetime and hence decrease environmental effects. The results and sensitivity analysis demonstrate the positive impacts of controllable carbon emission and deterioration on the total inventory model profit. Shortage costs, preservation costs, and deterioration costs are considered as fuzzy trapezoidal numbers. A graded mean integration method is applied to defuzzify the total inventory cost. To validate the model in real-world problems, numerical examples are used.

MMCI- 40

Fourier Transform and Its Application in Sound Editing

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Abstract: In this paper; we propose/discusses the Discrete Fourier Transform Technique and visually demonstrate the simple method to edit unwanted noise from given digital audio. In our experiments several variants of the Fourier transform are used. Fast Fourier Transform is an algorithm which determines Discrete Fourier Transform of an input very fast that computing it directly. Fourier Transform is such mathematical tool which enables to get different frequency components of one sound wave and using reverse Fourier Transform we can easily eliminate noise. For this demonstration purpose we have used digital audio editor and recording application Audacity. However, using small audio file for experiments with digital audio editor and freely available recording application Audacity.

Keywords: Fourier Transforms, Discrete Fourier Transform, Fast Fourier Transform, Sound, Digital audio, Noise, Audacity

MMCI- 41

Algorithmic Game Theory and Its Application

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Abstract: Algorithmic game theory (AGT) is a branch of game theory and computer science that aims to understand and design algorithms in strategic environments. We provide a brief overview of the rise of game theory as a topic of study in artificial intelligence, as well as an explanation of the term algorithmic game theory. We then describe two broad areas of current research in algorithmic game theory by AI researchers: Computational social choice, and mechanism design.

MMCI- 42

Quality Rating and Improvement Systems adopted in Early Childhood Care and Development (ECCD)

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Abstract: Early childhood learning experiences in a variety of domains cause the cells in the brains of a number of children to connect, and this connectivity of brain cells is strengthened regularly through fresh stimulus from the surroundings. Creativity peaks during the preschool years (Torrance 1963; Singh 1989), and if not nourished at that time, creative qualities might become hard to express afterwards. Research shows that good quality early learning, early childhood education and early childhood development (ECD) programmes help to reduce the chances of dropout and repetition and improves outcomes at all levels of education. In this paper a brief overview has been given on Quality Rating and Improvement Systems adopted in Early Childhood Care and Development (ECCD)

Keywords: Childhood education, Enhanced programme, Rating and Improvement, Learning Network.

MMCI- 43

Constructing Pure-Exchange Economies with Many Equilibria

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Abstract: We develop a restart algorithm based on Scarf's (1973) algorithm for computing approximate Brouwer fixed points. We use the algorithm to compute all of the equilibria of a general equilibrium pure-exchange model with four consumers, four goods, and 15 equilibria. The mathematical result that motivates the algorithm is a fixed-point index theorem that provides a sufficient condition for uniqueness of equilibrium and a necessary condition for multiplicity of equilibria. Examining the structure of the model with 15 equilibria provides us with a method for constructing higher dimensional models with even more equilibria. For example, using our method, we can construct a pure-exchange economy with eight consumers and eight goods that has (at least) 255 equilibria.

Keywords: uniqueness of equilibrium; multiplicity of equilibrium; computation of equilibrium.
AMS subject Classification: C60, C62, C63, D51.

MMCI- 44

Perfect fluid Bianchi type-I cosmological models with Decaying Vacuum Energy

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Abstract: We have investigated perfect fluid Bianchi type-I cosmological models with Decaying Vacuum Energy. The deceleration parameter is assumed to be function of Hubble parameter H. This should aid resolution of several difficult problems of astronomy such as the best value for the Hubble parameter; energy density isotropic pressure and cosmological constant at present and at recombination. We discuss, in the context of some vacuum decay laws, cosmological implications of the corresponding solutions. A detailed study of physical and kinematical properties of the model is also discussed.

MMCI- 45

Discrete Mathematics and their applications in Computer Science

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Abstract: Discrete mathematics is study of mathematical structures. It deals with object that can have distinct separate values. It is also called Decision mathematics. This paper introduce Importance of discrete mathematics in computer science and its applications like Theoretical computer science, Information theory, Set theory, Combinatorics, Graph theory, Numbers theory, Topology and In this paper we particularly focused on Theoretical computer science, Information theory, Set theory, Combinatorics.

Keywords: Discrete mathematics, Mathematical logic, number theory.

MMCI- 46

On fixed point approach to equilibrium problem

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Abstract: The equilibrium problem defined by the Nikaido-Isoda-Fan inequality contains a number of problems such as optimization, variational inequality, Kakutani fixed point, Nash equilibria, and others as special cases. This paper presents a picture for the relationship between the fixed points of the Moreau proximal mapping and the solutions of the equilibrium problem that satisfies some kinds of monotonicity and Lipschitz-type condition.

Mathematics Subject Classification (2010): 47H05, 47H10, 90C33.

Keywords: Monotone equilibria, fixed point, Moreau proximal mapping.

MMCI- 47

A Two-warehouse Inventory Model for Decaying Items with Exponential Demand and Variable Holding Cost

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Abstract: This chapter presents a two warehouses inventory model for deteriorating items. It is assumed that the inventory costs (including holding cost and deterioration cost) in RW are higher than those in OW. Demand is taken exponentially increasing with time. Holding cost is taken as variable and it is linear increasing function of time. Shortages are allowed in the owned warehouse and the backlogging rate of unsatisfied demand is assumed to be a decreasing function of the waiting time. Profit maximization technique is used in this study.

Keywords: Two-Warehouse, inventory model, deteriorating items and inflation

MMCI- 48

A comprehensive study on Two-stage Object Detection: CNN, R-CNN, Faster R-CNN & YOLOR

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Abstract: Object detection as measured on the MS COCO dataset has been on a rising curve past few years. With the advancement in both the algorithms and models, it is hard to differentiate and decide on a given Object detector. For the detectors to be tested under the computational power is a task. The models are supposed to be well trained beforehand to perform with high accuracy and hence take time in yielding results. In this paper, we study the up-and-coming algorithms thoroughly and draw up a conclusion on which one-stage and two-stage detector could be used on a particular dataset to give high efficiency and accuracy.

MMCI- 49

Assessment of Oral Cancer Risk by using Fuzzy Expert System (FES)

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Abstract: The planning of the malignization system is so far deficient, until now oxidative pressure is emphatically correlated to carcinogenesis. In this study, the Fuzzy Expert System (FES) has been utilizing to gauge the oxidative pressure related cancer risk of the oral possibly threatening disorders. For this purpose, the serum data of 10 patients with oral theoretically malignant disorders has been used. This data used as input in FES and generate the 20 rules based on the knowledge base. After that oral cancer risk has been appraised in the crisp value with scale 0 to 100. Aftercare fully examination this study advocate that, the present methodology could be used as a chief assistance in oral cancer screening and establish future medical decision in oral potentially malignant disorders.

Keywords: Cancer Risk, Fuzzy Expert System, Oral potentially malignant disorders, Proton donors.

MMCI- 50

To optimize Genomic Algorithm by using Experimental Data of Diabetes

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Abstract: Chronic disease is an important research field because of the growth of the number of affected people around the world. When someone has Diabetes, the body either does not make enough insulin or cannot use its own insulin as well as it should. In this work, optimization of deterministic solution by using based and clinical investigations, and shape future research. Computational model with evolutionary algorithms s can supplement exploratory and clinical investigations, and shape future research.

Abstract: Diabetes Mellitus, Optimization, Genetic Algorithm, Evolution Algorithm

MMCI- 51

Development of an Intrusion Detection System using Deep Neural Network

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Abstract: The detection and classification and of network intrusion detection is very critical challenging task due to large into new format and dynamic nature-based attack pattern for host and computer. The countermeasure of intrusion attack classify is very critical task. For the classification and detection aim used several data mining and machine learning technique for network depends on intrusion detection. The processing of machine learning is efficient for the processing of network depend on intrusion detection technique. Many researchers also used soft computing techniques with machine learning and data mining method. The soft computing approach gives the great versatility of fuzzy logic. Fuzzy logic is process of multi-decision support system used for the prediction of rule generation and formation.

MMCI- 52

Bianchi Type-III Dark Energy Cosmological Model in Brans-Dicke Theory of Gravitation

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Abstract: We have investigated spatially homogenous and totally anis topic Bianchi type II dark energy cosmological model in the framework of the Brans-Dicke theory of gravitation to get determine solution of the field equation we get the help of special law of variation for Hubble parameter represented by Barman. We study the dynamical stability and physical features of the models.

MMCI- 53

Dynamics of a predator-prey model with delay harvesting

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Abstract: We investigate a discrete-time system derived from the continuous-time Rosenzweig-MacArthur (RM) model using method of piecewise constant argument. The carrying capacity of the prey species can stabilize and destabilize the system if increased further because of occurrence of flip and Neimark-Sacker bifurcation. We analyze normal forms of different types of bifurcations occurring in the system with varying carrying capacity and present numerical examples. We observe many complex phenomena such as periodicity, quasiperiodicity, period-doubling, period-bubbling, and chaos. Multistabilities are present in the system and their basins of their attraction have complicated structures. The ecological interpretations of the effect of species enrichment on both species will be investigated. We also explore the bi-parameter (prey and predator harvesting effort) space using isoperiodic diagrams and maximum Lyapunov exponents. We observe presence of organized periodic structures with different kinds of period-adding and frequency locking phenomena. Arnold tongues are embedded in the quasiperiodic region where we find shrimp like structures in the chaotic region. These organized periodic structures also show the presence of period-doubling, and period-bubbling phenomena.

MMCI- 54

Results for Coupled Fixed Point Theorems in Partial Order Metric Spaces

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Abstract: In this paper, we show several coupled fixed point theorems in partial order metric space that are equipped with rational type contraction. These results also generalized into integral type contraction. We have also included several instances to back up our major findings.

Keywords: Coupled fixed point, compatible and continuous mapping, mixed monotone property.

MMCI- 55

A THEORETICAL MODEL OF THE TEMPERATURE DISTRIBUTION IN HUMAN SKIN UNDER DISEASED CONDITION

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Abstract: A model is proposed in this work which studies the heat flow in human skin under the effect of physiological parameters which mimics the diseases conditions. The study focus on the inner layer of skin i.e. hypodermis [1]. The skeletal muscles have an important role to play in movement and heat flow as muscles contract and relax continuously. The heat flow from skeletal muscles to skin surface is studied [2,3]. Conversion of Euler to Lagrange variables is done to simplify the mathematical equation and impose boundary conditions. The study concludes that temperature of skeletal muscles decreases with time [4,5]. This result is studied for different values of metabolic rate and perfusion rate of blood, and it was found that high metabolic rate accelerates the fall of skeletal muscle temperature while perfusion rate deaccelerates it [5,6].

Keywords: Heat flow, Skin, Metabolic rate, Blood perfusion, Muscle, Core

MMCI- 56

A Study of Graph Coloring - Its types, Methods and Applications

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Abstract: Graph coloring has been a very fastest growing in mathematical mainstream and the reason for this is the application of graph coloring in various fields. There are many practical applications as well as theoretical challenges to Graph Theory. Graph coloring is very progressive area of research. The main aim of this paper is to represent importance of graph theoretical ideas.. This paper represents a survey of graph coloring as an important subfield of graph theory, Describing various methods of coloring, and a list of problems and conjuctures associated with them..

Keywords: Graph coloring, vertex coloring, edge coloring, applications of graph coloring.

MMCI- 57

Some Results Involving Efros and Integral transform with General class of Hyper Geometric Function

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Abstract: In this paper author established two theorem by making use of Efros theorem with general of class of polynomial. In later part author give suitable example along with particular cases in term of corollary.

Keywords: Special Function, Efros and Integral transform,Hypergeometric function.
Mathematics Subject Classification 2010: 26A33, 30C45,11B65.

MMCI- 58

Pattern Classification Technique using Quasi Random Forest Method in Machine Learning

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Abstract: We have proposed a new technique called reinforced quasi-random forest for the pattern classification task. Reinforcement is performed continuously and iteratively by adding new generated trees to the forest. In our method, we assign an importance to each of the attributes and identify those attributes which causes the wrong classification of the data points during the period of training. The new trees are generated by using the wrong classification of data points with the reduced set of attributes. The attributes for splitting the nodes of the reinforced trees are found in a deterministic manner. Hence the new generated trees are quasi-random in nature. The best out of all the new trees are found using a novel electrostatic model. These trees are termed as reinforced trees. Additions of reinforced trees to the existing forest ensure maximum reduction in classification error. The efficacy of the proposed method is established through experiments on breast cancer data sets for detecting mitotic nuclei. Results of our method show significant improvement compared to other state-of-the-art approaches. Results on benchmark datasets show as much as 14% reduction in classification error.

Keywords: Random Forest, reinforcement learning, orthogonal decision trees, importance of attributes.

MMCI- 59

Experimental Investigation of Temperature Variation in Room by using AC.

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Abstract: Among the several countries around the globe, India is a country which is in the category of a developing country. Since the air conditioner is equipment or device which provides comfort and luxury to human beings .so, its usage is increasing day by day. Since every machine has its positive aspects and negative aspects and among its major negative aspects is that it is responsible for global warming. Since a/c usage is increasing so the energy which is required for the working of air condition is also increasing which affects the total energy requirements of our country. Keeping this point in mind an analysis had been done in order to work an air conditioner at its maximum or we can say the fullest efficiency and if it had been found that its efficiency can be increased if the following suggested parameters are undertaken.

Keywords: Air conditioner, global warming, energy requirements, efficiency, parameters.

MMCI- 60

The Study Effect of Solvent on Fluorescence polarization

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Abstract: A polarizing prism properly oriented was found to darken the sea relative to the sky, to reduce the brilliance of the sun path and to render the horizon more distinct. In bright weather it increased the visibility of objects against the sea background. Attaching polarizing prisms to a sextant and to binoculars improved these instruments in certain cases. Measurements of the light of the sea ruffled by a breeze from several hundred yards from the observer out to the horizon several miles away showed that the light was often more, and rarely less, than 2/3 polarized with electric vector mainly horizontal but tilted up under certain conditions, e.g., tilted up 30° for the sun bearing 90° and at 45° altitude. From the observations and theory it came out that the sea light was the light of the sky at about 25° to 35° above the horizon reflected by the sea, the reflecting facets of the sea surface being most frequently at about 15° to the horizontal. The width of the sun path calculated from this was in agreement with the observed width of about 6°, 14° and 18° in moderate weather for the sun at altitudes 10°, 20° and 30°, respectively. The explanation is given of a number of breezy sea reflection phenomena.

MMCI- 61

Availability analysis for Multi-failure System modelled by alternating renewal processes

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Abstract: In this paper a complex system has been modelled which can fail due to multiple failure modes. Also, reliability measures of the system have been derived. Inspections are performed at regular intervals to detect breakdowns. The focus of the paper is to find the optimal interval period with minimum maintenance cost. The system is illustrated with the help of a Power Distribution System. The obtained results direct towards enhancing the availability of the system and making decision about an appropriate inspection period.

Keywords: Relaibility, Renewal process, Availability, Optimal maintenance.

MMCI- 62

Analysis of Newtonian and non-Newtonian blood flow through multiple stenoses in narrow artery

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Abstract: A mathematical model designed here for the study about the effects of blood flow parameters in narrow arteries having multiple stenoses. In this work, blood is considered as a non-Newtonian Kuang-Luo (K-L) fluid model, with no-slip conditions at the arterial wall. In fact the main properties of K-L fluid model, is that the plasma viscosity and yield stress play a very important role. These parameters make this fluid remarkably similar to blood, however when we change these parameters the flow characteristics change significantly. We have derived numerical expression for the blood flow characteristics such as resistance to blood flow, blood flow rate, axial velocity, and skin friction. These numerical expressions have been solved by MATLAB 2021 software and discussed graphically. Furthermore, these results have been compared with Newtonian fluid and observation made that resistance to blood flow and skin friction is decreased when blood is changed from non-Newtonian to Newtonian fluid

MMCI- 63

Classification Model for covid test data of definite area

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Abstract: Administered Machine Learning (ML) is the quest for algorithms that reason from remotely provided occurrences to deliver general hypothesis, which at that point make forecasts about future examples. In other words, the objective of managed learning is to fabricate a brief model of the conveyance of class marks as far as indicator highlights. The resulting classifier is then used to select class imprints to the testing events where the assessments of the marker features are known, yet the assessment of the class name is dark. This paper portrays different coordinated AI characterization systems used in illustration of the preliminary of Corona virus for definite area. Clearly, alone article can't be a completed review of all overseen AI order calculations, yet we believe that the references alluded to will cover the significant speculative issues, directing the specialist in fascinating exploration headings and proposing conceivable predisposition blends that presently can't seem to be investigated.

Keywords: Stenosis, resistance to blood flow, blood flow rate, skin friction, K-L fluid model
Mathematical Subject Classification: 92B05, 76Z05

MMCI- 64

Data Mining for Learning Analytic and Educational Faculty Performance System

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Abstract: Learning analytics is another trendy choice for technology-enhanced learning. It is not surprising, therefore, that learning analytics is the topic of many scientific papers as a new learning process and tool to improve learning performance. Some of the most common methods used in data mining for learning analytics, include: classification and prediction, clustering, outlier detection, relationship mining, social network analysis, process mining, text mining, distillation of data for human judgment, and discovery with models. The use of analytic learning and data mining in education and learning, generally to store information related to student backgrounds, about their interactions with the learning system and to understand how students interact with learning resources, learning styles, predictions of learning out comes and their possibilities for completing studies they successfully. With this study teachers and school managers can develop new learning tools how to apply analytic learning to improve and predict student learning success.
Keywords: Prediction algorithms, Statistical Regression Model, Linear Regression algorithm, Performance Evaluation, Educational Data Mining (EDM).

MMCI-65

Course Time Table Scheduling Applying Linked List Based Exact Algorithm of Graph Coloring

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Abstract: Preparation of course timetable and exam time table are two very usual problem in any educational system .The presence of very large numbers of students and offered courses combination makes it very complex to prepare course time table .A suitable schedule can be prepared by using different resources like students , teachers, subjects, and classrooms in such a way to evade conflicts by satisfying special types of constraints. Graph coloring is one of appropriate approach which can solve timetable scheduling problem and can satisfy changing requirements. In this paper we have prepared a systematic course timetable by applying graph coloring approach based on linked list exact algorithm introduced by ajay narayan , vishal bharti and madan garg, and provide a time slot for major subjects and all minor subjects in such a way that the lectures of any subjects are not over lapped. The result shows that the proposed graph coloring approach generates suitable time table for college ,and helps to provide a proper time to all subjects. Given approach has lots of future scope in all types of scheduling problems.

Keywords: graph coloring, linked list, time table, soft constraints, hard constraints adjency matrix

MMCI-66

Computation of Multi-Objective Linear Programming Problem by Row Reduce Echelon Method

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Abstract: The objective of this paper is to solve a Multi-Objective Linear Programming problem to achieve optimal solutions for two objectives. As we solve our problem by using a row reduced echelon method and compare the result with existing methods, we are aiming to minimize production and transportation cost. This method is illustrated by solving numerical examples and discussing the results.

Keywords- Linear Programming Problem, Multi-Objective, Echelon method

MMCI-67

Mathematical Modeling in Biosciences for Study of Disease, Prevention and their Treatment

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Abstract: Mathematical modeling is art of translating real world problems into mathematical problems, solving the mathematical problems and interpreting these solutions in the language of the real world. A mathematical model is a description of a system using mathematical concepts and language. In this paper study the important role of mathematical modeling in biosciences that give the recent advancement in curing of disease. The paper outlines the application of mathematics to the field of Biology and Medicine as an current need. The paper also highlights the solution of real world problem as medical science through mathematics. This branch of disciplines uses mathematical methods and techniques to provide insights into biological and biomedical phenomena with the aid of advanced computational power.

Keywords: Mathematical modeling, Biosciences, Medicine

MMCI-68

Bianchi Type-III Dark Energy Cosmological Model in Brans-Dicke Theory of Gravitation

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Abstract: we have investigated spatially homogenous and totally anis topic Bianchi type II dark energy cosmological model in the framework of the Brans-Dicke theory of gravitation to get determine solution of the field equation we get the help of special law of variation for Hubble parameter represented by Barman. We study the dynamical stability and physical features of the models.

MMCI-69

A Linear Boundary Value Problem Associated with the Hinged and Clamed Beam Equation Solve by Elzaki Transform

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Abstract: Introduction of Elzaki transform and its application is the topic of this paper. The definition of Elzaki transform and its properties have been mentioned and apply on ordinary differential equation. Elzaki transform is effective tool for engineering to solve some problems such as electrical/electronic, dynamic system analysis, mechanical and civil engineering. In this paper spicily introduce the application of hinged and clamped Beam Problem for civil engineering.

MMCI-70

Applications of Mathematical in Computer Science

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Abstract: Abstract: Mathematics (The QUEENs mother of all Sciences), is the foundation of Computer Science.Mathematics can be perceived in our garden or park from symmetry of leaves, flowers, fruits etc. and by so many examples of Geometry and symmetry can be seen in nature. Scientists and researchers cannot ideally accomplish their work without the inclusion of mathematics. Mathematics is sociable for analytical skills needed in Computer Disciplines like; Concepts of binary number system, Boolean algebra, Calculus, Discrete mathematics, linear algebra, number theory, and graph theory are the most applicable to the subject of computer science with the accessional emergence of new concepts like machine learning, artificial intelligence, virtual reality and augmented reality make the future of mathematics grow endless. Mathematics has been an important intellectual preoccupation of man for a long time. Computer Science as a formal discipline is about seven decades young. Is the almost spontaneous use of computing? In this article, this paper convey to the frontage the many close connections and parallels between the Mother and daughter sciences. The paper underscores the strong interplay and interactions by looking at some exciting contemporary results from number theory and combinatorial mathematics and algorithms of computer science.

Keywords: Computational paradigm, Combinatorial mathematics, Binary Number System, Discrete Mathematics, Number Theory, Graph Theory, Virtual Reality, Augmented Reality, Artificial Intelligence and Machine Learning.

MMCI-71

Modelling the dynamics of multi- variant SARS-Cov2 virus and estimating its impact on Covid-19 burden

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Abstract: This paper investigates a new mathematical SIQR model for Novel Coronavirus-19 burden. Here, we are analyzing the comparative impact of both variants (Delta and Omicron). We examine the SIQR model's equilibria's existence and stability. Disease-free, endemic equilibrium points and Basic Reproduction Numbers are found for the said model. Local Stability is analyzed through Jacobean Matrix while Lyapunov Function is constructed for the study of the Global stability of the model. We used MATLAB software for graphical simulation.

MMCI-72

Linear algebra and Its Application

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Abstract: Applied Mathematics is future classified as vector algebra, differential calculus, integration, discrete Mathematics, Matrices & determinant etc. Among various topic matrices is generally interesting. Matrices have a long history of application in solving linear equations. Matrices are incredibly useful things that crop up in many different applied areas. Matrix mathematics applies to several branches of science, as well as different mathematical disciplines. Engineering Mathematics is applied in our daily life. We see the results of matrix in every computer-generated image that has a reflection or distortion effects such as light passing through rippling water. Before computer graphics, the science of optics used matrix to account for reflection and for refraction. In mathematics, one application of matrix notation supports graph theory.

MMCI-73

Applications of Differential equation in Electrical Engineering

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Abstract: Differential Equation is an importance tool in Electrical Engineering as it is used to model electrical systems and equipment. It is practically important for electrical engineers to be able to solve physical electrical problems using differential equations. This paper discusses the uses of differential equation in electrical engineering. The definition of differential equation and the important of differential equation in circuit element. A method used to find the loop and some elements have time varying properties. The voltage drops of these loops are determine by differential equations.

Keywords: Differential Equation, Electrical Engineering, Electrical Circuit, Loops, Voltage Drop.

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