Chaitanya Bharathi Institute of Technology (A)

Proceedings of 4th Research Day 2022

Saturday 17th December 2022

ISBN 978-93-90728-15-2

Organized by

Research & Development Centre

Research & Entrepreneurship Hub

Chaitanya Bharathi Institute of Technology (A)

(Autonomous under UGC)

Affiliated to Osmania University

Hyderabad-500075

Telangana State, INDIA

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Research and Development Centre

R&E Hub

4th Research Day-2022

(Online mode)

Saturday 17 December 2022: 10 AM-5 PM

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Director & Head of R&E Hub

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Sri. K. Lakshmanna
Senior Research Assistant, R&D Centre

FOREWORD

Chaitanya Bharathi Institute of Technology (CBIT), committed to Research and Innovation, with an objective to facilitate Individual and Collaborative Research for Sponsored and Consultancy Projects, has established, on the 23rd of August, 2018, a State -of-the-Art Research and Development Centre, to support advanced Research and Innovation Ecosystem, connecting Innovators across Industry and Individuals. The Mission of the Centre is to streamline the research activities and contribute products, processes and systems, to make a mark, in the 'Make in India' program actively and aggressively promoted by the Government of India. To achieve this, each of the Departments will engage in advanced research, in the independent space earmarked to them.

Commemorating CBIT's 43 years of successful Journey in the Field of Technical Education, the Institute has organized the third '**Research Day**' in the Institute's Campus on 17 December 2022, by inviting the Research Scholars, Faculty, Students and other scientists from industry and institutions, engaged in research to participate in the proceedings and present their works as abstracts. There has been an overwhelming response not only from CBIT fraternity but also from the research community across India. The meticulously selected Abstracts have been compiled and published as ***Book of Abstracts*** showcasing the Research in Progress and the outcomes of the completed Projects. This compilation of Research Abstracts will serve as a source of knowledge and inspiration to the discerning researchers and also enable them to appreciate the challenges in developing the innovate products while showcasing on the present status of the products and their principles of operation undertaken by other Researches, developers and enthusiastic engineers.

The knowledge gained from this Research Day will not only help the participants to better define their requirements and develop advanced products but also encourage the industries to develop high performance, cost effective and affordable products in addition to stimulating the academic faculty to focus on developing innovative products.

The Research Day has progressed successfully and it has inspired many of the targeted Scholars and Researchers whose contribution has made the launch a successful endeavor. We are

honoured to have with us the Dr G. Satheesh Reddy, Scientific Adviser to Raksha Mantri, Ministry of Defense, Govt. of India, for accepting our Invitation and for being the Chief Guest. His Presentation of the Research Works have been an inspiration. We also thankfully appreciate Sri N. Ravi Chander, Ex. Executive Director BHEL, Hyderabad and Dr. T. Ravi Shankar Former Dy Director (Bhuvan Geoportal and Web Services area) NRSC, ISRO, Hyderabad for accepting our Invitation and for being the Guest of Honours. We also thankfully appreciate Prof. Milos Stojmenovic Department of Computer Science & Engineering, Singidunum University, Serbia Sri Pranav Hebbar Founder - Make Room India (Global) & Uttunga Ventures Bengaluru, Karnataka, India, for accepting our invitation and for being the keynote speakers.

The Research Day Convenors, Internal Committees and the supportive Entities have responsibly undertaken their assignments and their efforts will remain laudable in the years to come. Special appreciation is to Sri K. Lakshmanna, Senior Research Assistant, R&D Centre and other departmental Research Coordinators who endeavored relentlessly in compiling this Collection of Abstracts as a Book.

With great pleasure, we thankfully acknowledge the participation of all the Delegates and hope they would be our Knowledge Partners in all the future annual programs of the Research Day Celebrations, and we formally through this message, invite them to participate in the future Research Days at our institute.

With Warm Wishes,

Dr. A. D. Sarma
Director, R&D

Dr. P. Ravinder Reddy
Director & Head of R&E Hub
and Principal

Programme Schedule

Time IST (Hrs.)	Programme
09:50 – 11:15	Inaugural Session
11:30 – 12:15	Key Note Speaker–1 AI in Health Care, Robotics, and Biologyby Prof. Milos Stojmenovic Department of Computer Science & Engineering, Singidunum University, Serbia
12:15 – 13:00	Key Note Speaker–2 Innovations for Bharatby Sri Pranav Hebbar Founder - Make Room India (Global) & Uttunga VenturesBengaluru, Karnataka, India
13:00 – 14:00	Lunch Break
14:00 – 16:00	Presentations-Respective Departments
16:00 – 16:15	Break
16:15 – 17:00	Valedictory Session

Invitation

Chaitanya Bharathi Institute of Technology (A)

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Gandipet, Hyderbad -500 075, Telangana State
Gandipet, Hyderabad

On behalf of the management and staff
We cordially invite you to the inaugural function of

4th Research Day-2022

at 10:00 Hrs on Saturday, the 17 December 2022
(Offline mode)

Sri N. Ravi Chander
Ex. Executive Director BHEL, Hyderabad
Guest of Honour 1

Dr. T. Ravi Shankar
Former Dy Director (Bhuvan Geoportal and Web Services area)
NRSC, ISRO, Hyderabad
Guest of Honour 2

Dr. G. Satheesh Reddy
Scientific Adviser to Raksha Mantri, Ministry of Defence,Govt. of India
Chief Guest

Dr.P.Ravinder Reddy
Principal, CBIT
has graciously consented to preside over the function

Dr.A.D.Sarma
Director, R&D, CBIT

Dr.P.Ravinder Reddy
Director and Head of R&E Hub

Programme

09:50 Hrs.	Inviting Dignitaries on to the Dias and Lighting the lamp
09:55 Hrs.	Invocation
10:00 Hrs.	Welcome address and About the college Dr. P Ravinder Reddy, Principal, CBIT
10:05 Hrs.	About the R&D Centre and Research Day Dr. A.D.Sarma, Director R&D
10:08 Hrs.	Release of Research Day Proceedings By Chief Guest
10:10 Hrs.	Address by Chief Guest Dr G. Satheesh Reddy, Scientific Adviser to Raksha Mantri, Ministry of Defence, Govt. of India
10:30 Hrs.	Address by Guest of Honour 1 Sri N. Ravi Chander, Ex. Executive Director BHEL, Hyderabad
10:45 Hrs	Address by Guest of Honour 2 Dr. T. Ravi Shankar Former Dy Director (Bhuvan Geoportal and Web Services area) NRSC,ISRO, Hyderabad
11:00 Hrs.	Presentation of Mementos to Guest of Honour and Chief Guest by Dr. P Ravinder Reddy, Head and Director-R&E Hub
11:10 Hrs.	Vote of Thanks Dr. S.Shanmukharao Samatham

List of Session Chairs

S. No	Dept.	Name of the session chair	University / Institute
1	Chemical	Archana Giri	JNTUH University
2	Civil	Darapureddi Ravi prasad	NIT
3	CSE	G. Suresh Reddy	JNTU Kukatapally
4		Rahee Amit Walambe	Pune
5	IT	T V S Udaya Bhaskar	HAL CAMPUS
6	ECE	Ashish K R Shukla	ISRO, Ahmedabad
7		K. Rama linga Reddy	Raidurg
8	Chemistry	A Praveen Kumar Reddy	IICT Hyderabad
9	Physics	Prof M Prasad	Osmania University
10	MCA	Uday Shankar peyyeti	Madhapur
11	MBA	P. Ramlal	NIT Warangal

4th Research Day Team

Dr. P Ravinder Reddy
Director & Head Research and Entrepreneurship Hub

Dr. A D Sarma
Director R&D

Departmental Research Coordinators

S. No	Category / Group	Department	Name of the Research Coordinator
1.	Circuit Branches	CSE	Dr. Sangeeta Gupta, Associate Professor Dr. Rupesh Mishra, Assistant Professor
		ECE	Dr. Supraja Reddy, Associate Professor Dr. M. Vinodh Kurmar, Associate Professor
		EEE	Dr. M.Bala Subba Reddy, Associate Professor Dr. T. Sudhakar Babu, Associate Professor Dr. N V Phanendra Babu, Assistant Professor
		IT	Dr. D L.Srinivasa Reddy, Associate Professor Dr. Pragati Priyadarshinee, Assistant Professor Dr. B. Veera Jyothi, Assistant Professor
		MCA	Dr B. Indira, Assistant Professor
2.	Non-Circuit Branches	Civil	Dr. T. Chaitanya Srikrishna, Assistant Professor
		Mechanical	Dr. Rahul, Assistant Professor
3.	Life Sciences	Bio-Technology	Dr. Rajasri Yadavalli, Associate Professor Dr. Bishwambhar Mishra, Assistant Professor Dr. C Nagendranatha Reddy, Assistant Professor
		Chemical	
		Basic Sciences & Humanities	Dr. D.Saritha, Assistant Professor (Chemistry) Dr. G V Ramesh, Assistant Professor (Chemistry) Dr. K. Sharada, Assistant Professor (Mathematics) Dr. Palle Kiran, Assistant Professor (Mathematics) Dr. Santhosh Kumar A, Assistant Professor (Physics)
4.	Social Sciences	English	Dr. Shirisha Deshpande, Assistant Professor (English)
		MBA	Dr. S Saraswathi, Associate Professor

Supporting Staff

Mr. K Lakshmanna, M.Tech
Senior Research Assistant

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Contents

Bio-Technology

De-extinction: Recovering extinct species

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Extinction is the disappearance or termination of species. The death of last individual of the species is considered as the moment of extinction. Extinction is a natural occurrence, which can be due to habitat destruction, catastrophe, competition, chronic environment stress, alien species invasion, etc. Around 24 to 150 species disappear every day. Over the past 3.5 billion years nearly 90% of species disappeared. Extinct animals need to brought back for ecological restoration and function. Each and every species have their particular niche and role/functions in this ecosystem. Their functions may be redundant or shared or completely individual based. Even though the de-extinction (the process of reviving either an extinct species or a species resembles them) is highly speculative, the advances in genetic engineering like CRISPR-Cas9 revolution made researchers believe that resurrectionor revival of species might be able. The species brought back can do good for the ecosystem left behind. De-extinction can be done by back breeding, gene cloning or genetic engineering. Back Breeding involves finding living species that are similar to the extinct ones, then the selectively breeding is done. Where as in cloning the nucleus of recently extinct species is extracted and swapped with animal's closest living the relative. The newest de-extinction technique is the genetic engineering where genes of closely related animals are mutated number of times to get a species resembling as exactly as the extinct species.Even though, de-extinction has its risks; with the help of advancements in the genetic engineering the risks can be minimized and the revived species can be helpful in fulfilling the missing ecological functions.

Anti-oxidant and nephroprotective effects of Basil Polysaccharides in pharmacological diabetic model

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Basil (holy tulsi) is a very common plant found in South Asia Belt. But its antioxidant, anti-diabetic, and nephroprotective property against type 1 diabetes is not fully explored. In this paper, we aimed to study the antioxidant and anti-diabetic effects of Basil Polysaccharides (BP) using multi-dimensional approaches like in-silico, in-vitro and in-vivo. Initially, prediction for pharmacological properties of polysaccharide constituents of *O. sanctum* was carried out using online web tools such as the online PASS prediction tool. This was done by extraction from seeds using hot water extraction followed by its efficacy testing on cell lines: BHK cell lines were used followed by antioxidant activities, animal models:histopathological studies followed by antioxidant activities. Also significant other activities were predicted using in-silico studies.This study reports anti-diabetic activity and significant antioxidant properties of BP. Further studies are required to confirm the anti-diabetic and anti-oxidant activities of individual polysaccharide constituents of BP.

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Advancement of nanocarrier entrapped phytochemicals for the treatment of breast cancer

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Background Breast cancer is yet a considerably fatal noncommunicable disease worldwide due to lack of diagnosis, costly and painful treatments, side effects and the relapse of it. The conventional treatments have sever post treatment harmful effects which leaves them less pursuable. The advanced nano-phytochemicals includes phytochemicals and nanocarriers which are not harmful and yet serves the purpose of killing the cancer cells.
Objective Phytochemicals recently is gaining more importance due to easy, natural availability and safe therapeutic efficiency when compared to commercial drugs. Hence a promising and advance nano-phytochemical can be created by reviewing the various merged research studies.
Methods In this review the potential of phytochemicals and nanocarriers for the treatment of breast cancer, their mode of action, challenges and possible solutions are discussed.
Results Phytochemicals when used alone or in combination with nanocarriers induced apoptosis and necrosis of the cancer cells. They produced reactive oxygen species in cancer cells and acts as anti-oxidents for the normal cells.
Conclusion This review delves into the act of phytochemicals and nanocarriers and its mode of action for the treatment of breast cancer.

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Effect of the position of the OH functional group on the enthalpy of combustion of alcohols

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Energy is one of the fundamental and most fascinating units that drives various processes. The sum total internal energy stored in reactants or products may be defined as Enthalpy (H). The amount of heat lost or gained by a system is equal to the Change in enthalpy of combustion or ΔH. In the present study an attempt has been made to find out if positioning of OH group in methanol, 2-propanol and 2-methylpropan-2-ol has any affect on the standard enthalpy change. Heat energy released during combustion was trapped to heat water and raise its temperature by 30°C using a calorimeter designed. Initial temperature was recorded with 100 g of distilled water poured into the calorimeter. 20 ml of alcohol weighed and poured into spirit lamp. It was lit and placed under the calorimeter till the water increased by 30 ^{0}C. Mass of the alcohol remained is measured immediately. The tests were repeated three times with all three type of alcohols. The mean values obtained were -41.8 KJ mol $^{-1}$, -114 KJ mol^{-1}, -114 KJ mol^{-1} for methanol, propan-2-ol and 2-mehtylpropan-2-ol respectively. Present study showed that the standard change in enthalpy of combustion of secondary alcohol and tertiary alcohol exhibited the same amount.However compounds with same number of C-C bonds but different geometrical structures have varied standard enthalpy of combustion values. For example: 1-butanol: −2671 kJ/mol, 2-butanol: −2661.1 kJ/mol. This variation tends to exist as the enthalpy of combustion is not only dependent on the nature of the C-OH bond but also the R group. As its neighboring groups have different enthalpy of formation thus, may result in slight variations in enthalpy of combustion. To conclude the position of OH functional group primary, secondary and tertiary carbon effects the standard change in enthalpy of combustion.

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Mass commercialization of biofuel

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With the rise in the population of people, the need for resources has also risen. Similar to how food is essential for our survival, fuels have also become a necessity. Advances in technology are playing a major role in every aspect of our life and the automobile sector is not an exception. Though the market is filled with various models of vehicles, fuel vehicles are more in demand compared to others. But these sought after vehicles are not without cons. The major disadvantage of these vehicles is the depletion of fossil fuels as the production of this fuel is from natural resources like coal and wood. The paper gives information about the alternative that can be used for the production of fuels from fossils by the usage of microalgae and why there is no mass commercialization of biofuels. Biofuels are the fuels produced from biological organisms, the most suitable organism for production being microalgae. Microalgae for various reasons require less land for growth comparatively, larger yield and less expensive is preferred for biodiesel. The benefits of biodiesel over regular fuels are discussed. Biodiesel, produced naturally from microalgae through the process of transesterification, is a carbon-neutral fuel and hence causes no loss to the environment. The main objective of this paper is to spread awareness about biodiesel and to identify the reason why the mass commercialization of biodiesel has remained stagnant without a step forward. The best solution is to decrease the depletion of resources is by utilising biofuels.

Bioconversion of amides to hydroxamic acids using acyl transferase activity of amidase

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A bacterial strain capable of utilizing aliphatic nitrile as a sole source of carbon and nitrogen was isolated from chemical waste sample and identified as *Paracoccus* sp. SKG. Mineralization of aliphatic nitrile in *Paracoccus* sp. SKG follows the bi-enzymatic pathway with the sequential action of nitrile hydratase (NHAse) and amidase enzymes.The amidase enzyme purified and characterized, this enzyme is specific to aliphatic amides but not to aromatic amides.Amidase or amidohydralaseexhibited to catalyse hydrolytic as well as acyl transfer activity in the presence of hydroxylamine which acts as an acyl acceptor and aliphatic amide acts as an acyl donor. The highest activity is detected to acetamide, propionamide and acrylamide. The resting cells of *Paracoccus* sp. SKG were prepared by grown in minimal mineral salt media congaing containing acetonitrile as sole source of carbon, nitrogen and used for laboratory scale synthesis of acetohydroxamic acid (AHA). The reaction conditions required for maximum conversion of acetamide to AHA for were optimized. It was observed that 80% molar conversion of acetamide to acetohydroxamic acid in presence of hydroxylamine hydrochloride for 60 min incubation at 40 ºC in a 100 ml batch reaction mixture. The formed acetohydroxamic acid was recovered and conformed by HPLC analysis. Reusability of resting cells for the production of AHA was studied by repetitive batch reactions. Resting cells can be recycled for 8 cycles with 75%bioconversion of hydroxamic acid. This bacterium could be used not only for decontamination of nitriles but also used for the bioconversion for the production of pharmaceutically important hydroxamic acids.

In silico docking study of Cyanogenic glycosides against oral cancer

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Oral cancer is the serious health concern in various region of India, especially in Gujarat. It cause highest mortality rate in male because of use of tobacco. Squamous cell carcinoma (SCC) is the most frequent type of oral cancer. Its comprise total 90% of the total oral malignancy. Various computational methods are used to evaluate anticancer potential of compounds. In this study, Cyclin dependent kinase 4 is used as it is mainly found in squamous cell carcinoma. The CDK4 (PDB ID: 2W96) was used as protein molecules and docked with Cyanidin 3-glucosides (C3G) and cyanidin 3- rutinosides by using Autodock 4.2.The results of docking represents in the form of binding energy. C3G exhibits higher binding affinity as compare to Cyanogenic-3 rutinosides. Finding of this study can be helpful to understand its involve as anticancer agent. It will also helpful in drug design for the treatment of oral cancer in future.

Non-invasive methods for Diabetes Monitoring

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Non-invasive glucose monitoring holds great promise for improved management of diabetes. The more traditional skin pricking method has been shown to cause discomfort and pain to the patient. Skin pricking also carries the risk of causing infections due to open wounds or improper invasion of the needle. The accuracy of the tests should also be prioritized from emerging non-invasive invasive technologies for people with diabetes. Few methods to implement this less painful method of testing, modern technologies such as IOT(Internet of Things) can be used. A device which constantly monitors the blood sugar level and gives timely updates to the caretaker is the most ideal form of test for any patient. It ensures a pain free and risk free method of monitoring essential vitals.Although there are non invasive options to test blood sugar levels, the problem lies in the accuracy and the availability of such tests. The traditional tests are more within the reach of the general patients and are hence used more. It would be beneficial and a huge step in ease of patients to shift to the more non invasive methods of testing.

Use of Bioluminescent Noctiluca in Bottle Lamp to provide lighting at Night

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"Slum" is used to define informal human settlements within cities that have inadequate housing and, miserable living conditions. They are often overcrowded with many people settled over a small area. They lack basic facilities like - water, toilets, electricity, transportation. Due to the lack of electricity many houses are devoid of even a small bulb, due to which the people are forced to live in the darkness. Litre of Light is a low-cost light tube . It works on the principle of Refraction and Scattering of Light. The simple device is made of a transparent two-litre bottle filled with water and little bleach to inhibit algal growth and fitted into a hole in a roof. The device functions like a deck prism: at daytime the water in the bottle refracts sunlight, giving as much light as a 40–60-watt incandescent bulb to the interior. A properly installed solar bottle can last up to 5 years. But the main Problem with this device is that it can't be used at night because of which the slums still end up in darkness at night. After coming across this device and its disadvantage at night, we can improve the functionality of the bulb, to provide lighting at night is to include Noctiluca, a dinoflagellate capable of Bioluminescence. Noctiluca is a Dinoflagellate, living in Marine habitat capable of Photosynthesis. It often forms blooms in the seas and oceans. Since it requires low maintenance and manufactures its own food, we can include these microbes into the device so that they can illuminate the slums at night. By incorporating Noctiluca into this device we can at least light the slums near to seas and oceans.

Chemical Engineering

Application of Chemical engineering concepts for converting plastic waste to value added products

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Plastic waste being generated is drastically increasing day by day due to their vast applications in many sectors because of their properties such as durability, versatility, lightweight, and low cost. The short life span of plastic accelerates the production of plastic waste daily. The continuous disposal of plastic waste causes the accumulation of plastic in the landfill which consumes a lot of space possessing a destructive impact on the marine and terrestrial ecosystem. The presence of additives makes Plastic biodegrade. This plastic waste needs to be collected, disposed of, and treated properly. There are two techniques considered for plastic waste management: Recycling and Energy recovery techniques. Some drawbacks of the recycling methods such as the need for sorting which is labour-intensive and water contamination that reduces the process sustainability. Due to these limitations, energy recovery methods are being preferred, to meet the growing energy demand. There are various methods of treating plastic waste to obtain value-added products which are possible through thermal treatment technologies such as gasification, pyrolysis, plasma process, and incineration. Pyrolysis is a promising technology that has the potential of converting waste to most energy. Pyrolysis is a thermal conversion process where the waste undergoes a chemical change at elevated temperatures in an inert atmosphere. The main products obtained are solid(char), liquid or pyrolytic oil, and gas. In this presentation, the parameters Temperature, Pressure and residence time, type of reactor used, catalysts, and type and rate of fluidizing gas control the pyrolytic product distribution are highlighted.

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Synthesis of novel membrane for the application of microbial fuel cell

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Microbial fuel cell is a emerging technology in recent times. Enhancement of proton exchange system for high proton conductivity and low oxygen diffusivity plays the key role for that synthesis of novel membrane with the help of advanced molecular dynamics and application of recent technologies shows the efficient results for production of energy. Selection of membrane and its characteristic of material composites used for membrane studies are done by using X-ray diffraction (XRD) and Fourier transform infrared (FTIR) spectroscopy required for design of novel membrane and also our research work focus on removal of chemical oxygen demand (CFD) depends on microbial activity in anodic chamber. Prediction of proton conductivity of membrane is done by using EIS method. The efficiency of the membrane is compared with the Nafion 117 membrane. The advanced technologies mainly know as simulation of fizzy expertise system and cfd simulation for the synthesis of membrane using ANN and the mathematical modeling for the experimental data
Keywords— MICROBIAL FUEL CELL, SYNTHESIS OF MEMBRANE, PROTON EXCHANGE SYSTEM, COD.

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Civil Engineering

Engineering Milestones in the evolution of High-Rise Structures

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In ancient times, high-rise structures were built for religious purposes, to express strength and power, or as tombs for the Royals. The inventions of Portland cement and the Bessemer method for mass steel manufacturing during the Industrial Revolution are the most significant milestones in the modern age of Civil Engineering. Centuries before these inventions, the world saw some incredible structures in the Roman and Ottoman empires. Ingenious ancient techniques, combined with continuous inventions, research, and innovation, have taken the game of high-rise structures to unprecedented heights since the Industrial Revolution. Several landmark techniques and inventions, starting from stone pedestals to deep concrete piles, have been seen over the past five millennia, from the pyramids to the present. The current socio-ecological challenges, particularly in cities, are to blame for the need for High-Rise Buildings. The purpose of this paper is to investigate the Engineering Milestones that laid the groundwork for High-Rise building construction and propelled the world into the era of skyscrapers, without diving deep into the technical aspect's. An attempt is done to study the social dynamics and sustainability of High-Rise structures.

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Alternatives for Epoxy coated rebar

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Corrosion in reinforcement bars is one of the most expensive to repair and damaging in terms of durability in mechanisms of concrete. This happens mainly due to chlorides. These chlorides damage the passive layer of rebar and hence destabilize the structure. The most common way to avoid this problem is to use epoxy coated rebars. Epoxy bars are normal reinforcing bars which are coated with epoxy, whose thickness is only a few microns. But, the problem with epoxy coated bars is there could be pinholes and small discontinuities on the coating known as holidays which may happen either due to manufacturing defects or during handling and replacement of bars at a construction site. These holidays can promote accelerated corrosion at a single spot thereby causing bars to break suddenly and also results in debonding of epoxy. Epoxy coated rebar is banned in the Province of Quebec, Germany, Norway and Sweden. The Indian Standard code (IS code) does not provide any alternatives other than epoxy coated rebar and black rebar. The objective of this research is to find the issues faced with epoxy coated rebars and examine the efficacy of alternatives with both technical and economical perspectives. These include galvanization of rebar, stainless steel micro composite steel, glass fiber reinforced polymers (GFRP) and non-metallic coatings.

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Accuracy determination of SRTM DEM through Comparative analysis for Hydro-morphometric Applications

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Digital Elevation Model (DEM) is a class of raster dataset whose pixel values indicate the elevation representing the topographic of a particular location Above Mean Sea Level (MSL). In this study, an evaluation of the accuracy of Shuttle Radar Topographic Mission (SRTM) DEM of 30m is carried out for hydro-morphometric applications. The accuracy of the SRTM DEM varies according to the topography, vegetative cover in the hill slope, terrain slope, and presence of water bodies. In this study, Himayatsagar watershed located in the Krishna basin is considered based on the topography and vegetative cover. The Stream network is digitized from the Topographical map of the study area. From SRTM DEM, stream network is derived using QSWAT. D8 flow-direction algorithm is applied to derive the flow accumulation and stream network delineation. Stream density, stream frequency, slope and watershed area are compared from the toposheet derived morphometric parameters values with the values derived from SRTM DEM. Based on the analysis, the SRTM DEM seem to have a closer correlation with Toposheet derived DEM.

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Computer Science Engineering

Rank on Different Crop Disease effected regions using ML

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Nowadays, we have seen in our state, country and others places also that lot of crop is affecting from different diseases from different insects. So we have planned to develop a system for ranking of those regions which is basically infected with several diseases and which places infected more in comparisons with other regions. We have taken datasets from the websites www.kaggle.com, which is related to Crop disease related datasets for Indian regions only. We have not included datasets other than India. Use Machine Learning approach for this problem statement to find out the result parts. Here we have introduced BERT representation embedding model for sentence embedding of our datasets. Through the sentence embedding the BERT can classify our datasets in the form of sentence only. Now after that we will apply LSTM machine leaning algorithm for convert sentence embedding into regression part. After doing this regression we have to change the regression into some fixed score for our complete sentence into region wise datasets with the help of linear kernel. Based upon unique score we will provide the rank of region wise crop diseases. This tool we can use in the medical background of datasets also.

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Auth chain-Lightweight Authentication Scheme at Edge Layer for Internet of Things

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Internet of things is one of widely used technology in the entire globe. It suffers from security and privacy issues due to resource constrained nature of IOT devices and insufficient security design. Dealing with these issues at cloud layer is not very feasible for real time applications. Edge layer which lies between device layer and cloud layer is helpful in dealing with security issues. Strong authentication techniques are required if security has to be ensured. Blockchain is also one of the preferred technologies among the researchers to provide security to Internet of things due to its decentralization, fault tolerance and cryptographic security benefits. In this paper, Auth Chain-Lightweight authentication scheme using blockchain at edge layer is proposed to take care of security issues in IOT. Here permissioned blockchain, Trust chain is being used. In trust chain, for mining purpose trust concept is being used as it consumes less resources when compared to Proof of Work (POW) and Proof of Stake (POS)Techniques. Device and user registration is done inside the Trust chain using smart contract. After Registration, Distributed PKI technique existing inside the blockchain is used for issuing digital certificates to all registered nodes and devices. Certificate based authentication is done between the two parties who wants to communicate to each other using digital certificates. Here two factor authentication is used. First by using certificate-based authentication and then using Zero knowledge proof. In zero knowledge proof prover verifies it identify to verifier without sharing any knowledge. This scheme could be feasible mechanism for having strong authentication between two parties.

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Smart Assistance for the Visually Impaired People

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Blindness is a curse that many unfortunate humans are born having or might get diagnosed with. As of 2020, an estimated 45 million people around the world suffer from this. Avoiding obstacles, finding objects, people, avoiding vehicles, etc. are some daily activities that the blind people are unable to do. Many blind people do not go out without human assistance, and a good number of them do not have the confidence going outdoors. This paper proposes a system utilizing a neck collar consisting of multiple cameras, a walking stick, and sensors. The neck collar proposed in this project is a novel approach that consists of multiple cameras around the collar to provide a 360-degree field of vision around the user. The neck collar aims to alert users on moving vehicles, provide image captioning (description of the surroundings), object detection, facial recognition, etc. It also provides haptic feedback based on the application of the system so that the user knows the direction of occurrence of some event. Obstacle detection maybe done using depth estimation or by using a walking stick that has ultrasonic sensors. The system components are connected to and communicated through a centralized computer supported by the human.

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M5 Stack Replicator

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M5 stack aims to take the pain out of developing new inventions and ideas. It comes with sensors, Wi-Fi, Bluetooth, screen, and its own power supply. It is a robust open-source Modular toolkit for IoT devices with Stackable, Scalable, and portable modules making it low cost, full-function, and easy for developers to handle new product development. Like Arduino, you can add functionality by stacking PCBs using a standard header. Unlike Arduino, M5Stack fits in a case nicely and is designed for building devices with user interfaces. It is an IOT based project. It does not require datasets it creates its own dataset. Here 160×128 pixel are divided into a set of rows and columns depending on requirement of fonts, proper spacing and selection of rows is done to acquire User-friendly Interface on display. Images fetched from SD card are properly aligned. It is a ESP32 based hardware implementation utilizes SPI protocol to interact with TFT Display to show data and images from SD card according to requirement. It also utilizes I2C protocol to connect with RTC. Main work of Free RTOS is to collect data provided by input devices to give appropriate output. When Free RTOS is switched ON multiple tasks are been scheduled such that all the tasks resemble at real time. According to user requirement tasks will be prioritized. Adafruit libraries from github are been used. It will send real time sensor data and RTC data to server and display data on TFT display.

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Habit Prediction using Machine Learning

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There are many prediction models in use. However, there isn't any model for predicting the habits of a person. This project aims to predict the actions of an individual after a period of time using machine learning. Real-time data is collected over a few months systematically by observing the person. The data is recorded in the excel sheet. With the help of machine learning algorithms like k-means clustering and linear regression, the predictions are made using the python programming language. K-means clustering is used to group similar data. Linear regression is a supervised learning task for classification. The goal of the model is to check whether the expected prediction matches the expected prediction and the accuracy of the prediction model.

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Security Assessment for Blockchain based IoT

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Technology has advanced to higher levels where in machines collaborate and communicate with each other for efficient information sharing and processing without any manual interference. However, there is a need to continuously monitor the inefficiencies that arises during the data transfer and sharing process. Also, the ability to code logic statements in connection to the above is a challenging task. Internet of Things (IoT) play a prominent role in this direction due to the use of sensors to deal with enormous data. Tracking the effective working of a sensor is an additional cost added factor inspite of automation and integration done at multitude levels. When the monitoring is to be carried out using a decentralized blockchain technology, the ability to code the contract should be dynamic enough to deal with the variations that arise in the entire data flow across devices. Also, the adoption of a suitable protocol assisted with a particular technology such as IoT or blockchain is another challenging aspect to be considered. This is essential, as the foundation for such technologies is built using various protocols that are operated by different categories of people assigned with different roles and responsibilities. Security may be at stake for the overall development, if the working nature of the protocol is modified. Therefore, it is essential to thoroughly analyze various existing protocols and choose a suitable one before integrating it into the working environment. Throughout this selection process, resource consumption may add up to the cost factor. Hence it is essential to device efficient methods to deal with the security and cost related issues in IoT using Blockchain environment.

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Data Management using Emerging Technologies

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The emergence of data in different flavors like audio clips, unorganized documents and images etc is a matter of prime concern to develop security measures in the modern world filled with variety of technologies. If an image captured via sensor based drones is used to analyze the weather conditions and temperature estimates at a place to make strategic business plans, and the image is incorrectly manipulated by the eavesdroppers, then such issues incurs great losses to the firm. This may be an opponent's trick to fail the business idea of their competitor. Hence, safety measures such as hash based append operation or key based append operation need to be added in the data capture mechanisms irrespective of the nature of the data to overcome losses and to yield productive outcomes. An integration with various consensus mechanisms help serve the aforementioned purpose. However, the processing cost and time are peculiar aspects to be considered with varying application requirements. Hence, the nature of data flow such as rest or motion and nature of storage provision such as a single machine or a cluster shall be analyzed before arriving at an adoption of a technology to infer conclusions about its effectiveness.

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NoSQL Cloud based Bigdata Technologies for Efficient Performance Evaluation in the Modern Era

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Latest technological advancements in the modern world led to innovations which, if tackled properly yields value-added outcomes or may result in disruptions if mishandled. One such technology is NoSQL cloud databases that evolved in hundreds of numbers. Though these support a wide number of features such as consistency, availability, fault-tolerance, scalability and security, there is no single store that bundles all together. Another aspect to be considered lies in the ability to handle streaming data which required a special kind of storage to process data on fly. This gains wide support if integrated with various learning platforms to yield an added outcome. However, the application of pre-processing techniques and the identification of data splits, irrespective of the dataset is an essential activity to be carried out to infer better results. Towards this end, an efficient NoSQL cloud datstore based analysis is to be used to showcase the significance of NoSQL over traditional relational databases to overcome bigdata analysis based difficulties. This also employs the selection of a suitable cloud datastore based on the nature of the data to be analyzed, ultimately getting down the storage and evaluation cost.

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Fingerprint Identification using Recurrent Neural Network

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Every fingerprint plays an important role in identification of a person as it is unique for everyone. Fingerprints always played important role in forensics but in recent years it is most commonly used for security purposes. Fingerprints are two types' i.e Latent and Patent fingerprints. Usually fingerprints might be incomplete and difficult to be categorized. Minutiae points are the main features for matching fingerprints. This project discusses how we can identify fingerprints using Recurrent Neural Network (RNN) after extracting its minutiae points. RNN is one type of neural network where output of previous step is fed as input in the current step. It uses the past knowledge which makes it more accurate. For feature extraction image pre- processing is done. The dataset taken is FVC2002 from kaggle. RNN is used for identification of finger prints. This makes the identification of fingerprints more accurate than previous Machine Learning approaches.

Analyzing the Data Privacy Using ML and NLP

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These days data privacy issues are increasing in multiple sectors. As data centers deal with huge amount of data and high priority services, there exists absence of technology to help firm in dealing with the convoluted data units. We make use of NER i.e Named Entity Recognition is a way to recognize, track and verify PII i.e personally identifiable information. This technology helps to protect the data, reduces the cost, gives a shield to data attacks and data breaches. This technology comprises of NLP tools i.e NLTK, Stanford CoreNLP, spaCy. The first step is to access the potency of the tools via generic dataset. ML models are trained and evaluated with datasets. In existing system, the CoreNLP was used with less customizability, and low performance with respect to large datasets and noisy data. Efficient software are to be designed for better automation of data privacy. Increase in customer activism such as automation over control and monitoring of data

Transfiguring of Realistic Image to Cartoon Image

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The main idea of the project is to provide a solution for refiguring realworld image into Cartoon Image. The earlier method of transformation requires complicated computer graphics and skills but hear I am implementing machine learning algorithm that is K-Means clustering algorithm and edge mask in color quantization. Adaptive threshold function, which consider the smaller regions of an image are more likely to have approximately uniform illumination is also used which will create a cartoon-like effect to the realistic image. Later we can perform image filtering using bilateral filter and the using bitwise function and combine edge mask with colored image. After that we use color quantization in which we implemented k-means algorithm using opencv. The required cartoon image is generated as output. We are using the flicker data set which is taken from the www.kaggle. In future we can work on not only images but also with videos.

Nutritious Recipe Advisor for Personalized Diet

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Nowadays people are facing problems related to their health as the diet which they follow is less nutritious, and the sites or apps are distracting their views by giving incorrect evaluations and comments about the recipes. We can see mostly that there are a few personalized advisory systems and are less satisfactory. Additional task in our project is to obtain an ordered list of recipes that satisfy the EER nutritional limits. The rankings on the recipes are not helpful in case of personalized diet. Our main aim is to develop a system where the user gets nutritious recipe choices meeting the EER and is a personalized one. The main effort is to advise people healthy recipes by taking their body conditions, gender and other related factors into consideration. We progress this project by applying the machine learning algorithms like DBSCAN, Hierarchical-agglomerative clustering to cluster the flavors made from their compound. The recipe data is collected from Yummly's API, which contains the components for individual recipes and nutrition data is collected from open food facts dataset. This approach will help people to get nutritious recipe choices satisfying their individual taste.

A Smart Home Automation Using Personalized Mobile Application

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During the past few years, The concept of home automation, often known as a smart home system, comes from the desire to make items in a house easier to control and manage. They can also be set to work automatically. This project discusses how a mobile application may be used as a user interface internet of things (IOT) to make it easier for users to operate their homes using raspberry pi. to make it easier for users to operate their homes using raspberry pi. Two different jobs may be performed remotely with the device; voice command is one of them as well as a personalized mobile application While the Google Assistant is useful in a voice command setting, while the personalized mobile application will help from the third party access and there will be lack of security

A Voice Controlled Rover using Machine Learning and IOT

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My Idea Is to build a personal rover which can be controlled through Voice command and also should be able respond to general queries like a personal assistant. So I For that i am Using IOT and Machine learning, BY using Raspberry pi and Machine learning techniques and By using a speech recognition package in python and a few other components. And by using components like smart car chassis, raspberry pi 4, robodo motor driver, battery and and a Bluetooth microphone, Bluetooth speaker. By combining smart car chassis equipment with raspberry pi4 and robodo motor driver. Now, BY writing implementation code as to recognize speech and respond as a voice assistant to integrate raspberry pi, so that it makes the smart car chassis as we command to move and also respond to basic queries likes what's time, weather etc…,by using external power bank, We can power the raspberry pi and robodo using a battery. By all this it is possible to create a voice assistant combined with a rover.

Weberator

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Nowadays everyone wants to have a website of their own and website creation is a tedious job. The software which we will be developing helps its users to get a web application based on their preferences automatically. Our project titled 'WEBERATOR' is software wherein users can get all the files required to host a website based on their interests. We will be giving the users an interface so that they can communicate with the software and get what they require. All that the user has to do is just interact with the interface which is provided and talk about the website they need. The software generates the web application based on the user's input and will be giving the files related to the same as an output to the user. This process of generating the web application will be done in three important steps. Firstly, we take the user requirements through a mobile app or a website in which they can either select the options provided by us about the design and functionalities of the website or input a voice note (an advanced feature) consisting the idea of the website which they want. Secondly, if the user opted the choices from the list of options provided by the interface, based on the user's choices, their preferences will be passed as entities and a website will be generated or if the user opted for recording a voice note, then the entities required for the generation of the website will be extracted from the voice note (using NLP, ML, etc.,) and will be given to the generator tool in the form of an entity file. The generator tool will now process the entity file and will generate a web application. Lastly, the folder containing all the files related to the web application will be shared with the user and the user can deploy it into the real world.

Covid-19 Contact Tracker using DBSCAN Clustering

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COVID-19 Contact Tracker is an essential public health tool for controlling infectious disease outbreaks like COVID-19.Once a person is tested positive for coronavirus, it is very important to identify other people who may have been infected by the patients diagnosed. The main objective is to identify the people with whom the patients have been in close contact for the past 14 days, so that our system can locate them and can break the chains of virus transmission. One of the reasons behind the fast spreading of the virus is not knowing the people that he/she was in contact with. An infected person can spread COVID-19 starting 48 hours (or 2 days) before the person has any symptoms or tests positive. Our tracking system helps to collect the information of the people who were in contact with the patient in the past 14 days and who were within the radius of 2 meters. This system helps the people to know about their exposure to COVID-19 so that they can inform their close contacts and isolate themselves. This helps in protecting everyone and the virus transmission can be stopped. This contact tracking process is designed by using the algorithm of MACHINE LEARNING called DBSCAN-Density-based spatial clustering. Clusters are dense regions in the data space, separated by regions of the lower density of points. The DBSCAN algorithm is based on this intuitive notion of clusters. The key idea is that for each point of a cluster, the neighborhood of a given radius has to contain at least a minimum number of points. Each point is considered as a person and we will see the persons who are in the neighborhood of a certain radius.

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Digital Outdoor LED Display for Street Advertisement

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During the last few years outdoor advertisement has seen complete remaking. We now live in the age of Digital where it builds a link with people and catch people's attention. Small Digital out of home digital display are affordable such that many client can buy it and attract more customers for their products. It can be easily updated according to time. One of the example at present is we can display Independence Sale, 50% Off, Raksha Bandhan Sale, etc. An LED Display is used which is connected to Wi-Fi module which fetches the data from server and display advertisements based on time and location. Wi-Fi module used is ESP32 which interacts with LED Display using hub75 protocol maximum of 4x3 which is 12 panels that can be connected according to requirements. Orientation of display is transferred to the server and server sends respective images accordingly. SD card is used for permanent data to be viewed if it losses internet connection. Hub75 protocol from Github is used. Iot and realtime control is provided to display to alter contents of display. In future work we can increase size of display, real-time video streaming and social media contents can be updated

Electronics & Communication Engineering

Generation and Evaluation of IRNSS Navigation data for Spoofing Applications

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Indian Regional Navigation Satellite System (IRNSS), India's own satellite navigation system is now finding its way into various civilian and defence applications. IRNSS signals like any other Global Navigation Satellite System (GNSS) signals are weak when received by receiver on earth and are vulnerable to spoofing. Spoofing refers to generation and transmission of false IRNSS signals to mislead the victim receiver to a false position. The spoofing attack is dangerous because the target receiver is not conscious of this menace and will provide false navigation solutions which seem to be reliable. GNSS signals can easily be spoofed by making significant modifications in GNSS navigation data. In this paper, IRNSS navigation data is generated and evaluated for spoofing applications. Initially IRNSS RINEX navigation data file is obtained from the IRNSS-GPS-SBAS (IGS) receiver located at Chaitanya Bharathi Institute of Technology (CBIT), Hyderabad (lat. long) and ephemeris parameters are extracted. Ephemeris parameters are used in the computation of the satellite Position, Velocity and Time (PVT). The results show that the satellite PRN's (IRNSS 1B, IC,1D,1E, 1F, 1G & 1I) are acquired and their PVT are computed. Also, IRNSS navigation data message is constructed using the extracted ephemeris parameters. The constructed navigation message is validated. Satellite positions and desired spoofing location (MGIT, lat and long) are used to compute the pseudoranges. The pseudoranges and satellite positions are given as input to the Least Square Algorithm (LSA). The output obtained is desired/spoofed location (MGIT). Further, this work can be extended to develop advanced spoofing detection and mitigation techniques.

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Implementation of Deep Learning Architectures for Classification of Skin Lesions

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Skin cancer is the common type of cancer that is affecting people across the world every day. The major type of skin cancer that is found in people is Melanoma which has a high death rate. Because of the similarity in the different types of the skin lesions, it leads to inaccurate diagnosis. So, early detection of these lesions is necessary to save the life of patients. Hence models have to be developed that can classify the skin lesions accurately. This project deals with the classification of skin lesions using deep learning CNN architectures such as LeNet and ResNet. Transfer learning has been used for ResNet architecture by pre-training it on ImageNet dataset to boost the performance further. HAM10000 dataset is collected from the ISIC 2018 challenge to test the performance of the CNN models on the classification of different types of skin lesions. The CNN models are able to classify the seven different types of skin lesions i.e. melanocytic nevi, melanoma, benign keratosis-like lesions, Basal cell carcinoma, actinic keratosis, vascular lesions, dermatofibroma. Performance metrics such as Accuracy, Precision, Sensitivity and Specificity are measured for both models and they are compared to determine the best CNN model among them. LeNet has an accuracy of 73%. ResNet model achieved a better overall accuracy of 88% on the test images than LeNet.

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Implementation of Deep Neural Networks for Multi-Classification of Brain Tumor Images

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Classification of brain tumor is the circular role to determine the tumors and make a treatment decision with respect to their classes. Many imaging techniques are used to detect the brain tumors. However, Magnetic Resonance Imaging(MRI) is used for this project. Because MRI provides better soft tissue than CT and MRI does not involve the radiation. This MRI uses a magnetic field and computer generated radio waves to create detailed images of the organs and tissues in our body. Deep Learning(DL) is the subset of Machine Learning(ML) and useful for the classification and segmentation problems. The Deep Learning algorithm is flexible to be adopted to new problems in the future. Segmentation plays a very important role in medical imaging, it is the division of an image into regions or categories. In this project uses two datasets, first one classifiers the tumor in to three categories (Meningioma, Glioma and Pituitary). Second one is to differentiate three glioma grades (Grade-II, Grade-III, Grade-IV). In this project first step is to perform the preprocessing with respect to the two datasets. Later it involves the detection and finally it will segment and classifies the tumor images by using convolution neural network algorithm. The proposed CNN achieves a significant performance with the best overall accuracy for the two datasets are 94.3% and 96.4% respectively. The final results represent the ability of the model for brain tumor.

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Design of Multi Band Antennas For Wireless Applications

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A triple band and a multi band antenna is designed for wireless applications. The antenna has a defective ground structure that provides comparatively high gain and suppressed higher mode harmonics. DGS has the advantage of decreasing the mutual coupling between the adjacent elements. FR4 epoxy substrate is chosen with dielectric constant of 4.4. In wireless communication, where the size of the antenna is a limitation, micro strip antennas are more advantageous. The targeted frequency ranges are 2.2-2.52 GHz, 3.8-4.3 GHz, and 5.05-5.84 GHz. 2.3 GHz frequency is used for WiMAX applications. 4.1 GHz frequency is used for 5G communication. 5.2 GHZ is used for Wireless Local Area Network (WLAN) applications. These frequencies fall under the sub-6 GHz frequency band of 5G spectrum suitable for applications related to the RFID and the WiMAX. The multi band antenna is aimed to be designed for frequencies which also covers the triple band frequencies. Simple design procedures and optimization techniques were used to achieve better antenna performance. The antennas were simulated using HFSS.

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Implementation of Bird Monitoring System using LPC2148

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Many people like to keep pets like dogs, cats, birds, rabbits and fish aquarium etc. Taking care of birds is somewhat difficult because they need continuous attention and care. It is more difficult to the owner to leave them home for few hours or days and to keep an eye on them. To overcome this problem, the proposed system bird feeder with environment monitoring would support greatly. This system is developed using LPC2148 microcontroller which collects the data from all sensors (temperature, rain, IR, ultrasonic) interfaced and display sensor values on LCD, the amount of food that is fed to them, time intervals at which the food is being fed as well as any slight changes in the temperature. When a bird lands on the feeder it is detected by a sensor, the microcontroller collects the information like current temperature, rain drops detection, time & date, amount of food presents in the feeder. The data collected is sent as an SMS through GSM at regular intervals of time.

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Implementation of Impatient Backoff Algorithm for wireless Adhoc networks

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Adhoc wireless network has become one of the main growth areas of wireless network and information technology. Adhoc network is a new paradigm of mobile host wireless network. Unlike traditional mobile wireless networks, adhoc networks do not rely on any fixed infrastructure. Instead, hosts rely on each other to maintain network connectivity. One of the main factors affecting adhoc communication is the multi-hop flow in the wireless adhoc network. In this type of network, it is difficult to achieve predictable Quality of Service (QoS) due to interference between links. The project task solves this problem by implementing two algorithms, Impatient Backoff Algorithm (IBA) and Adhoc Shortest Widest Path algorithm (ASWP). In order to improve the quality of service in wireless adhoc networks, this project involves implementation of both the algorithms. First Adhoc Shortest Widest Path Algorithm is implemented and from the ASWP the optimal path for data transmission is obtained. For the obtained Optimal path, we implement Impatient Backoff Algorithm. Impatient backoff algorithm reduces the backoff delay in the event of a collision to achieve a fairer allocation of available bandwidth, and the Adhoc Shortest Widest Path algorithm provides shorter and widest path. The road to the destination is wider. Evaluate the stability and fairness of different topologies with the least number of hops and the widest bandwidth to improve the fairness of the network. A comparison is done based on the obtained throughput of the network at the active nodes of the optimal path for Exponential Backoff Mechanism and IBA. The results show that IBA achieves comparatively better throughput than Exponential Backoff Mechanism.

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The basaltic analysis for safeguarding structures nearby CBIT premises

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In this swift developing world of 21st century, where the forests and farmlands are being subjected to deforestation to meet the demands of rapid population growth. In such scenario we bring forward our project basaltic analysis for safeguarding structures. As we all know before construction there are various factors the builders, developers take note such as they examine the land. If there are any hills and mountains located at the site of construction, then it's mandatory to eradicate such hills and mountains. In order to eradicate such hills, the developers make use of explosive blasts due to which the rocks present break and can be easily transported to other places. Now as the developers make use of explosives which not only causes the huge rocks to break but also weakens the structures of all nearby buildings and if this continues on a regular basis the building may also be subjected to collapse. In such a scenario we as a team have drafted an idea to measure and monitor the vibrations that occur with the use of explosive blasts. Seismic surveying requires placing a large number of sensors in a grid pattern, triggering aseismic event, and recording accelerometer readings at each sensor. Seismic surveying employs human labourers for sensor placement and retrieval. Use of explosives, harsh climatic conditions, we propose an autonomous heterogeneous sensor deployment system using drones to plant and recover sensors. We also tend to develop an android based application to directly take note of the sensor readings on our mobile phones. With the help of this seismic survey we can be able to determine the seismic vibrations and bring to the notice of developers that if this continues it will weaken the structure of other buildings. As a result, the necessary precautions are to be made while using certain explosives.

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Design and Analysis of Reversible Random Access Memory

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The computation in conventional systems uses logic gates which consume more power. The reversible gates are used to reduce power consumption. There are equal inputs and outputs which will make the inputs retrievable from the output end resulting in no loss of bits i.e., a one-to-one mapping is done from input to output. The common reversible gates used are Toffoli gate, Feynman gate, Fredkin gate, Modified Fredkin gate, Peres gate. Quantum cost, Garbage outputs, and Delay are important design constraints for reversible gates. The 2^2×3 Random Access Memory (RAM) is built using reversible gates to optimize the delay, quantum cost, power consumption, and garbage outputs. The basic building blocks of RAM include the decoder and write-enabled D-Flipflop. The proposed 2×4 decoder is built using Feynman gate and modified Fredkin gate. The proposed write-enabled D-Flipflop is built using a double Feynman gate, Feynman gate, and modified Fredkin gate. The proposed 2×4 decoder and proposed write-enabled D-Flipflop are compared with the existing design and the efficient design is used in the implementation of 2^2×3 Random Access Memory. The input is given to the decoder which is decoded and used as a clock signal to activate a row of D-Flipflops. The write signal is used to decide the read or write operation. The data is written into RAM through D-Flipflops when the write signal is high. The previous data is read out of D-Flipflops when the write signal is low. The delay of the existing design is addressed and also the optimization of quantum cost, delay, garbage outputs, and power consumption has been achieved in the proposed RAM.

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Design and Simulation of Approximate Multiplier for Low Power Applications

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Multiplier is a fundamental subsystem used in digital signal processors, microprocessors and image processing applications. It is constituted by complex logic design and most power and area consuming digital blocks. In order to achieve low power and area efficient multiplier, approximate computing is used. Approximate computing is an emerging technique that trade off the accuracy which is acceptable to give a substantial improvement in power, speed and area. It can be applied in several error-resilient applications such as multimedia processing, image processing and machine learning, etc. In this paper, a rounded based approximate Wallace tree multiplier is designed and simulated using Xilinx tool. The impact of rounding technique is compared with the conventional Wallace tree accurate multiplier. The simulation results show that the approximate computing-based multiplier has significant improvement in power, area and speed.

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Generation and Evaluation of BDS Navigation Data for Spoofing Applications

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Beidou Navigation Satellite System (BDS) is China's own satellite navigation system. BDS is designed for providing better positioning and navigation service to users globally like any other GNSS. When GNSS signals are weak in reception, receivers are vulnerable to interferences like jamming and spoofing. Thus, GNSS receivers experience challenges in civilian and defence applications. Spoofing is the intelligent type of interference to GNSS receivers by sending false signals intentionally by the attacker. Most of the receivers are unable to detect the spoofing interference and differentiate between genuine signal and false signal. GNSS false signals can be easily generated by making modifications in navigation data. The navigation data is generated for a newly developed Beidou navigation satellite system (BDS-3) for spoofing applications. Initially, Beidou's RINEX navigation file of one day is read to extract navigation data. BDS-3 satellite PVT is computed for all possible PRN's and validated using ephemeris parameters from extracted navigation data. These ephemeris parameters are used in construction of navigation messages. B2a open service signal transmits B-CNAV2 navigation message by performing 64-ary non-binary LDPC (96, 48) error correction encoding. The navigation data is generated and evaluated for spoofing operation by the pseudoranges and computed satellite positions. BDS-3 satellite positions and desired/spoofing position are used to compute pseudoranges. The pseudoranges and satellite positions are used to estimate the desired/spoofed position by the Least squares position estimation algorithm. This algorithm gives an estimated static spoofed location i.e., the false position is compared with the true position. The navigation data generated by relevant algorithms can be used to implement a low-cost software simulator for IF signal generation. This work also serves to implement a spoofing attack for a dynamic location by transmitting RF signals using the Hack RF SDR device.

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Hardware implementation and VLSI Realization of ECC cryptosystem for Security

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Security plays a crucial role in transmission and reception of data. Security is about protection of data by preventing unauthorized access to systems websites and databases. The ECC is used for encryption and decryption of data to communicate secretly in Internet of Things(IoT). The process of encryption and decryption is performed at the transmitter and receiver sides of both ends so that information remains completely desired during the transmission. The improvement has to be carried out in terms of chip area, energy and power. We are going to implement the project on Xilinx Vivado suite by writing a verilog code.

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Electrical and Electronics Engineering

A Voltage Balancing Circuit for Efficient and Global Peak Operation of Solar PV Arrays during Partial Shading

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The power generation from the solar PV system directly depends on the performance of the PV arrays connected to it in term of power generation. However, the arrays suffer from a major demerit of partial shading caused by the shadow of neighboring infrastructures, tress or clouds resulting in severe reduction in the power output. Also, the bypass diodes that are integrated with the PV modules to minimize the formation of destructive hotspot add additional problems to the system by reducing the voltage level of the shaded module. So, there will be a voltage misbalance between the modules of the strings of PV array that leads to non-convexity of the characteristics curves of the array by forming multiple peaks in the system. Also, the non-convex curves complicate the operation of maximum power point trackers (MPPT) that fails to track the real power peaks instead tracks the lower power peak resulting losses. So, the voltage imbalance among the modules can be reduced by implementing a voltage equalizer circuit in parallel with the array that aims to maintain voltage ratios of the modules, improve power generation, forming convex curves and hence, improving the overall system efficiency during partial shading. The circuit adopt the concept of charge redistribution and uses parallel capacitors which will be switched continuously to compensate the reduced voltage. The circuit will operate only during the occurrence of partial shading by using voltage sensors in the array to the track the voltage reduction in any module that adds an additional advantage to the system. Also, the circuit will operate with efficiency higher than 98% during all type of shading scenarios without encountering any losses.

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SOC and SOH Monitoring of PV Bidirectional Converter Based Battery Charging Circuit Using Fuzzy Logic

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This paper is about a fuzzy logic controlling of SoC (State of Charge) and SoH (state of health) of a bidirectional dc-dc converter based battery charging circuit. This also includes the estimation of remaining useful life (RUL) of a battery. A bidirectional dc-dc converter with galvanic isolation is best used as wireless battery charging circuit. First the output of PV array is converted into AC through Full Bridge Symmetrical Circuit -1. Through galvanic isolation it is transferred to charging circuit without direct electrical power transfer. A Full Bridge Symmetric Circuit – 2 converts AC into DC. A li-ion battery is directly connected to output of the Full Bridge Symmetric Circuit - 2 without any chopper circuit. Two symmetrical single-phase voltage-source full bridge converters, SCR is used at the low voltage side bridge converter because it is sufficient for low voltage applications and IGBT used at high voltage side because of its features i.e., high switching speed and low ON-state losses. State of Charge (SoC) is the parameter which specifies the life of a battery. Here we are designing a fuzzy logic control in order to maintain the required %SoC. In MATLAB we have a function called REGRESS. The no of cycles can be estimated by extrapolating the curve when battery reaches minimum value of SoH. Now we add uncertainty with the future profile. The remaining useful life (RUL) can be obtained between two limits i.e., RUL_{max} and RUL_{min}. MATLAB is used to design the circuits and to see the results obtained at different operating conditions.

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Development of Railway HPQC using half bridge RPC and multilevel topologies to enhance the overall performance of conditioner

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In recent years, the traction power circuits has developed by implementation of FACTS devices which includes static var compensator, static synchronous compensator and RPQ conditioner which have been proposed to improve the system stability and power quality in railway traction power. Gaining benefit from the development of power electronic techniques, FACTS device has been proposed a unified solution to different power quality problems in various area. Taking this into consideration at present RPC is most commonly used. But considering usage of device ratings which are high rated resulting in more heat losses. Compromising the device ratings the dynamic compensation is low. For a good selection of FACTS device which involves usage of low no .of components, high dynamic compensation, and low device ratings and also low switching losses. Considering these parameters, the development of a HPQC with using half bridge RPC and also the multi-level converter topologies which enhance the overall system performance and as we use the half bridge RPQ the usage of device ratings and no. of devices decreases and as we go for multi-level converter topologies there will be high dynamic compensation.

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Optimal Combined-coordination of Overcurrent and Distance Relays using JAYA Algorithm Technique

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The over current relay in combination of distance relay is the best strategy for the high voltage transmission lines protection in the inter-connected power systems. Therefore, they should be operated in a coordinated manner with a definite time interval so that the total damage that occur during the failure of primary, be reduced. This paper suggests an approach for obtaining the Time Multiplier Settings for these over current relays using eight intelligent relay characteristics. For this, the JAYA algorithm is applied here. Jaya algorithm is very useful and effective in this context. The effectiveness of this method is explained with the help of the results obtained for standard IEEE test system. Through this suggested methodology, it can be profoundly observed that Jaya algorithm is superior among the contemporary algorithms with respect to the speed of the process. The detailed results along with comparison with other methodologies are shown with the help of a standard IEEE-9 and 14 test systems.

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Design of power unit for wireless sensor networks for uninterrupted operations and reduce energy compensation without losing accuracy

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Wireless sensor networks has emerged as the powerful technology in the recent times which has many major applications in the fields like military operations, surveillance system and Intelligent transport system (ITS). In Wireless sensor networks units involve sensing unit, processing unit, transceiver and power unit. Power unit is the most prominent unit in any sensor node. Once the battery is exhausted, it can't be replaced for unattended applications. Sensor node life time shows a strong dependence on the battery life time. There are several various ways to reduce the energy consumption where some includes usage of microprocessors in multiple sates of operation, selection of proper node deployment, selecting proper control topologies keeping energy conversion in mind where more sensors involved in a combination. A proper power unit can be designed using special cell PV batteries whose depth of discharge is high or continuous power by implying proper frequency converters, Buck converter as a charger which helps in both charging and also safe guarding the power unit.

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1. 'A Brief research study of wireless sensor networks' Preetkamal Singh1 , Dr. OP Gupta2 and Sita Saini3 1Department of Computer Science and Engineering, LGC Chaukimann, Ludhiana, Punjab, India. 2PAU, Ludhiana, Punjab, India. 3 Department of Computer Science and Engineering LGC Chaukimann, Ludhiana, Punjab, India.

Optimal Capacitor Placement for Radial Distribution System

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This research is about a strategy for determining the ideal locations and sizes of capacitors in distribution networks in order to achieve maximum energy savings. The optimum capacitor placements are determined in the first stage using a loss sensitivity factor. Then after, a new analytical approach is proposed to discover the ideal sizes of capacitors. Later the proposed technique is tested on standard radial distribution networks with 15 buses, 34 buses, and 69 buses. The cost of installation and operation, as well as the cost of energy savings, were included in this analysis. The results of this tests shows that the proposed strategy is more effective at conserving energy than other options.

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Efficient Partial Shading Mitigation by Reconfiguration in PV Arrays.

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Solar PV array formed by connecting modules is one of the major and costliest components of the PV system that are installed to generate maximum power equivalent to the receiving irradiance and temperature. However, the arrays experience a major problem of partial shading that reduces the overall performance of the system by reducing power generation and creating complexities for maximum power point trackers (MPPTs) by introducing multiple peaks in the characteristic curves. This problem can be solved by introducing the concept of reconfiguration in which the location of the modules are altered permanently in order to disperse the effect of shading into the complete array. The technique uses a renumbering algorithm to renumber the position of the array and place them accordingly. The technique will generate higher power with lower losses during all shading scenarios as compared to the conventional connections i.e. Series-Parallel, Bridge-Linked and Total Cross Tied.

Optimal Placement of PMUs for the Design of Wide-area Measurement System

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The Wide Area Monitoring, Protection and Control (WAMPAC) of power systems are becoming essential tools for the system engineers in preventing blackouts. Whenever the power system operates in stressed mode and if suppose an event happens on a system element (particularly critical element), it may initiate cascading of events. At this condition, if the system engineers are unable to protect the rest of system and, control the abnormalities the system loses the power supply completely. This particular situation where the system loses generation-load balance is said to be Blackout condition. Interestingly, the WAMPAC schemes can enable the engineers to take remedial actions to avoid Blackouts by providing the synchronous data. This synchronized data will be provided by the device called Phasor Measurement Unit (PMU). So, the PMUs should be deployed in such a way that they could observe the system completely and economically. And, the process of installing of PMUs is subjected to different constraints. This thesis presents an Optimal PMU Placement scheme (OPP) to obtain the minimum number of PMUs for system complete observability. It considers the observability constraints under both normal and abnormal conditions. This OPP problem also considers zero-injection buses for placing PMUs. This algorithm applies a Binary bat algorithm (BBA) technique to solve the OPP problem. The suggested method is tested on few standard IEEE test systems and has been practiced for Indian Grid. The obtained results are also compared with the BBA, PSO and GA Algorithms that have been already applied for standard IEEE test systems and were proved to be the best and effective.

Power Quality Analyzer – An FPGA based modeling

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This paper deals power quality analyzer. Power Quality Analyzer (PQA) is essential in today's world to give quality power uninterruptedly. We discussed about the hardware design of PQA and the software used. It is used to measure all the powers (P, Q and S) in three phases. Voltage profiles, %THD, power factor, harmonic profile and load curves can be obtained with this type analyzer at cheaper cost.

This equipment can be used to analyze the output of any machine like alternators transformers etc. Through the harmonic profile we can measure which order of harmonic is more in the output of these machines.

It uses Hall sensors (HE055T01) for current sensing and PT (230/9V) for voltage stepping down and 7840 IC voltage sensing. These sensed analog signals are converted to digital signals with help of ADC (AD7366). These digital signals are given to FPGA (Field Programmable Gate Array) – SPARTAN 6 model. FPGA processes these signals based on FIFO algorithm and through USB port it is connected to Personal Computer.

"Key sight VEE pro" is the software used to analyze the power signals. We can measure Active, Reactive and Apparent powers, THD of all three phase and also 'live load variation tracing' through this software. This analyzer costs very less when compared to Fluke power quality analyzer.

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Switching And Speed Control Of Single Phase Induction Motor Using Gsm Technology

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In most of the applications, AC machines are preferred over DC machines due to their simple and robust construction without any mechanical commutators. This calls for effective speed control of induction motors. The paper proposes to control the speed of the induction motor remotely(motor could be controlled from any distance). The project uses voltage control method operated using a microcontroller and TRIAC at power stage to achieve the speed control of the induction motor and remote control is achieved using GSM(Global System for Mobile Communications),facilitating the effective speed control of the induction motor. The outcome is focussed on precise speed control of the induction motor below the rated speed, Switching and controlling of motor from anywhere at any-time.

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Information Technology

Right Leader- A website for Team Leaders

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This is the era of startups. Startups play a vital role in making the 'Make in India' Mission successful.Communication, being the most important part in the success of any organization, Startups are no exception for this. Startup necessarily need not be for tech savy kind of people. A startup starts with an idea and later the admin or CEO has to keep his members updated about the goals, deadlines and official information and also it is the responsibility of the CEO or the admin to have the detailed information of the employees or members of the company. Gone are the days of maintaining books or notes. There is the need of database and website which has to do things at a click.

So, this web application '**Right Leader- A website for Team leaders'** can help in establishing and constant maintenance of the company by providing the admin or CEO the following features.

Each of these actions are done at a click with user-friendly UI.

(i) Make a Todo/Reminder List or Notes with text or voice input

(ii) Add Departments of the Team

(iii) Add members under respective departments

(iv) Can mail the saved note/reminder to the members at the time of saving or whenever needed by a single click.

(v) Manage (Update/Delete) the details of the members anytime.

(vi) Mail any particular note/reminder from the list of saved notes or reminders to a single or multiple members of the company.

(vii) Update, Mail, and delete saved reminders or notes anytime.

COVID-19 Tracking System

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We are living in a world of uncertainty, with the covid-19 ravaging through the entire world. Having accurate information and statistics is going to help us plan a better plan of action for the foreseeable future. **COVID-19 Tracking System,** procures the information that has been verified by multiple resources including the John Hopkins University among others.My website procures the information in real-time (updating every 10 mins) to provide the most accurate information for the requested region. As of right now, my website provides detailed statistical information of 193 countries in a manner which is easy to read and understand. I have also interagreated a map module which shows us the most affected countries since the beginning of the pandemic. The website goes ahead and shows us all the 193 countries in the descending order of the no. of COVID cases. Going further I have integrated a graphical representation of the data which shows the progression of COVID in the selected region in the recent past.

CALM Racing

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The foundation of any online multiplayer game is designing and networking. Game designers take the creative lead in imagining and bringing that to reality. In fact, creating video game is a long and complex process with many subsequent tasks and roles required to make a complete playable product. It is an individual who presents comprehensive artistic vision, while also possessing the technical skill to oversee and contribute to programming, image rendering, level design, digital editing, and other constructive aspects of game design.

Networking makes it possible for gamers to play with each other**.** It plays an important role in keeping the in-game environment in sync across all clients by transferring huge amounts of data through servers alongside ensuring all have the latest data possible with least or no loss of data**.** It's one of the most complex areas of game planning as programmers not only need to have an excellent understanding of game scripting but also of network protocols and client/server-side engineering.

Online multiplayer games are leading in the E-Sports communities, as the demand is increasing rapidly, the perfect balance of smooth user experience and low-latency networking became tough to achieve on mid-range PC's.Our aim is to achieve the balance while considering the specifications of Lower End PC's/Laptops. Working on networking with Mirror had a major issue i.e., 'Self–Hosting'. Hosting on a single server using GCP/AWS is not advisable as it can affect the player's game experience (network packet loss/ high ping). The primary technologies used are Unity and Photon PUN where Photon PUN replaced Mirror and solved network related problems, as it also hosts games on servers all around the world by managing low latency globally. Additionally, it has optimized code for data transfer and is easy to implement.

CALM Racing is a 3D-Multiplayer car racing game. Players can host or join rooms and play among friends online. The players can compete by clearing all the checkpoints and experiencing diversified landforms. This game was made from scratch with the help of above-mentioned technologies.

Methodology for building question & answer system over sub-graph match

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RDF question/answering (Q/A) permits users to raise queries in natural languages over a knowledge domain drawn by RDF. To answer a language question, the present work takes a two-stage approach: question understanding and question analysis. we tend to propose a linguistics question graph to model the question intention within the language question in an exceedingly structural approach, supported that, RDF Q/A is reduced to sub-graph matching drawback. Significantly, we tend to resolve the paradox of language queries at the time once matches of question area unit found. The value of elucidation is saved if there are not any matching found. We have conjointly achieved the multi-lingual based mostly question and answer system which may take question in any language and response in any language. In this project we have took a sample of questions and try to check the average response time for the different test cases and for different category of the questions asked and the response time is taken into consideration for only the questions which was retrieved the answered and the response time which it got retrieved is of acceptable value of 7.08seconds.

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MOTION DETECTION AND ALERTING SYSTEM

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The Security is not only for the technology purpose but also for personal life. For example if a thief or any intruder enters into a house at any tome where the house members may not be in their house and then the intruder can easily executes his plan and goes off from house. When the house owner enters into his house he knows that he lost everything so to avoid this problem and crimes we have came up with the motion detection and alerting system in which it detects the intruder and alerts the authorized person about the intruder. This can also be used in crowed places, prohibited places, schools, colleges and everywhere. It also useful for detection of unauthorized person in the restricted areas. In this we go with OPENCV to implement Detection System.

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Prediction of water consumed pattern and leakage localization

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The main aim of this paper is to presents the feasible design, modeling, and optimization of the wireless smart water meter and water distribution network. Collecting structured data and will store in cloud storage based on second billing. The prime features are pulse rate, flow rate, altitude, leakage localization, and estimation. In order to facilitate the research gaps like Real-time flow monitoring over an entire network, provision to leakage identification and position estimation is possible in a water distribution network, Consumption patterns can be predicted for future needs, Advanced billing system can be implemented and Built-in power generation in the smart meter avoids replacing batteries periodically. A laboratory setup has been built and experimentally tested to examine the proposed system and also experimental results are needed to be tested.

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Web Read

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The thesis of this project is to develop a website for Writers and Readers titled Web-Read. The goal is to bring the community of writers and readers on a platform that enables writers and poets to create, share and read the data inventory. It opens the possibilities of sharing and reading at the comfort of sole resources.

Web-Read website has two main pages: Homepage (or Main page) and Writer's page. The homepage allows the user to select from a range of authors and poets. The homepage features the **"FEATURE YOUR WRITINGS"** column, which lets the new writers share their writings with the Web-Read team to make them visible to the readers. The Writers page gives the user to peruse the works. Readers will interact with the profile and the writings published by the authors and poets. The profiles come with respective social media handles, making the readers connect and peruse their other publications.

The goal is to make publications available in digital form, consisting of texts, images, and e-books. The web application has been developed by using inexpensive services. The Front-End uses HTML, CSS, and JavaScript languages, and the Back-End is supported using the GetForm.io's Database. Users will be able to share their works by filling the **"FEATURE YOUR WRITINGS "**column.

For the early stages of hosting, **Netlify**, a San Francisco-based cloud computing company, offers hosting and server-less backend services for web applications and static websites free of cost by computing storage and offering free security for sites.

Healthspace

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Health is a state of physical, mental, and social well-being in which disease and infirmity are absent. For a smooth lifestyle, a healthy system is of necessity. A health system is an essential socio-economic activity and therefore it requires rational and effective management especially for hospitals. Hospitals act as the main actors of the healthcare systems and consequently generate an essential volume of information. They're the sole holders of medical administration. Unfortunately, in most cases, this vital information is dispersed or is not available in the necessary time and format, leading to fatal peccadillos. This is where hospital management systems come into picture.

'Healthspace' has its roots from hospital management systems from where it branches out to not just being a robust health experience but also a catalyst for unhindered interaction between doctors and patients. Its value also notices a surge considering the ongoing pandemic as it facilitates virtual communication. It makes use of tools such as database management systems, Java, and a proper java database connectivity to efficiently manage crucial information about medical records, patients, doctors, and bills, by having a database of each model implemented and displaying them accordingly. Being a user-friendly application, 'Healthspace' provides segregated domains for doctors and patients for their information to be stored and accessed easily. In addition, "Health space" controls and schedules online appointments in such a way that the patient is allowed to look at the information and qualifications of the doctors available before actually booking an appointment with them. This increases the customer satisfaction. All in all, 'Healthspace' acts as the most effective interface between doctors and patients which is why it truly is your personal healthcare companion!

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Mechanical Engineering

Adaptive Bionic Replacements for Amputees

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Over the past 50 years, the need for immediately and efficiently replacing integral body parts lost in unfortunate events, has risen at a steady pace. The introduction of light weight prosthetics over half century ago was the solving the first hurdle in the way of many to come.

The present day prosthesis options available in the market utilise the advancement in material science by implementing feather weight Standard Grade Polypropylene for external attachments and metals such as stainless steel, cobalt-based alloys, and titanium for internal replacements (bones) and new age technologies such as 3D-Printing so that engineers can meticulously design multiple drafts and prototype with high efficiency. The prosthesis is carefully designed according to the patients need and therefore increases production cost and time invariably.

I would like to propose a design that incorporates part by part assembly of sections of the arm with each section fitted with its own array of sensors and specialising in its own pseudo muscle group providing haptic feedback to the person so that the physical aspect/realism is achieved as much as possible. Furthermore, with the addition of data collecting sensors such as mocap and IMU, all working in unison to understand the arm better. The Same data from this pipeline can be pushed into research for mimicking human movements in robots having anatomical similarities to humans.

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Importance to avoid mechanical difficulties in the Satellites

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Satellite is an artificial moon which is manually placed into the orbit. The bird's-eye view that satellites have allows them to see large areas of Earth at one time. This ability means satellites can collect more data, more quickly, than instruments on the ground. Satellites also can see into space better than telescopes at Earth's surface. Hence it is mandatory to make sure the satellite is placed safely in the orbit and lands securely on the moon (in some cases).

We need to make sure there are no technical and mechanical difficulties in the satellite for it to work in its full potential. Chandrayaan-2, India's second lunar mission, has three modules namely Orbiter, Lander & Rover. The lander was named Vikram after Dr Vikram A Sarabhai, the Father of the Indian Space Program. It was designed to function for one lunar day, which is equivalent to about 14 Earth days. The rover of was named Pragyan. The Orbiter and Lander modules will be interfaced mechanically and stacked together as an integrated module and accommodated inside the GSLV MK-III launch vehicle. Chandrayaan-2 was launched from the Sri Harikota on 22nd July, 2019. It entered the Moon's orbit on 20th August, 2019 and it landed on the moon's surface on 7th September, 2019 after midnight according to Indian standard time (1800 GMT) which is a month after it was first shot into space. After it landed on moon's orbit, we lost the connection with lander. The orbiter spotted the lander on the surface of the Moon unbroken but tilted on its side.

So far, the scientists have not been able to establish contact with it. We could have avoided this situation with a possible solution which I would like to present in my research paper.

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Development of Aluminium Based Surface Nano – Composites using Friction Stir Processing

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Friction Stir Processing (FSP), a relatively new technique developed for microstructural modification of metallic materials, has been used in the current investigation to develop defect-free Aluminium based surface nano composites, with different volume fractions of second phase particles. These secondary phase, hard powder particles, when introduced into the Aluminium matrix as secondary particle reinforcements, using Friction Stir Processing, develop a hard and wear resistant surface layer, thus a surface nano-composite. The nano-composite developed is restricted to the surface and sub-surface layers of the material only. This enables the bulk of the material to retain its original properties.

Most of the engineering materials, when used in various structural and mechanical applications, demand a need for their component surfaces to be resistant to wear and corrosion. Enhancing the wear and corrosion properties of such components through other secondary fabrication routes results in compromising the actual properties of the bulk of the material, as demanded by the application.

Hence in order to modify only the surface of an engineering component, making its surface stronger, without effecting the bulk material properties, it is intended to develop surface nano-composites using FSP. These novel composites developed using a sequential combination of Ball Milling and friction Stir Processing are expected to serve as practical materials for their resistance to wear and corrosion.

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Intelligent Automotive Air Conditioning System

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The invention that not only controls the temperature, but also the humidity of a space, cooling the air by flowing it over cold coils, allowing them to control the moisture in the air is Air Conditioning System. Shortly after, air conditioning was introduced to cars and also to improve home comfort, over the years, the sales of air conditioning units increased dramatically as a result of consumer needs.

Sensors on which the present Air Conditioning Systems of Automobiles work are Evaporator Sensor, Integral Sensor, Solar Sensor, Design flexibility, External temperature sensors and Icing protection switches.

The automatic air conditioning systems installed in the present generation automobiles, give passengers the convenience to set the temperature of the air flowing out through their vents. Further innovations have enabled the flow of air through the seats by ventilating them so as to avoid sweat. The driver and the passengers in general keep directing the vents, fan speed and temperature more often, as the system does what the driver / the passenger wants, but lacks the ability to do what is essential.

Thus, the current innovation deals with making the air conditioning system intelligent by installing sensors, that can regulate the fan speed and the temperature, based on what is required for the people travelling, to be more comfortable. The prime motive of the present innovation is to maintain the cabin temperature more ambient.

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Master of Computer Applications

Predicting Employability using Machine Learning

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From the dataset built by studying various LinkedIn profiles of the users, we want to predict someone's job category based on his job summary.
Job summaries are created by users to describe their skills and tasks. Our goal is to use NLP to extract information from these free-form text fields and predict the occupation of the user. Job-titles appear in many variations. Our first task has been to classify a large number of job titles into categories from the ISCO 2008 Standard Classification. From there, we want use neural network to classify the associated summaries. Summaries provide an interesting platform for testing text understanding and classification techniques. Since the summaries provided by the users in their LinkedIn profiles are in the form of a paragraph, it becomes difficult to train the data which is the form of a paragraph. Which indirectly leads to incorrect results and miss classification.
In order to overcome this we have come up with a solution that enables the user to enter all his details in textboxes and details that are entered will be retrieved and based on the details he enters, the user will be classified accordingly. Later on ,we predict the occupation of the user using KNN algorithm.

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Home Automation Using IOT

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Abstract In this technological advancement world, everyone is speaking about automation in every field for free-flowing operations. Due to the increase in internet service and reduction in cost Technologies like IOT (INTERNET OF THINGS) were used vastly. One of the applications of this IOT technology is home automation. This is used for reducing wastage of electricity by automating the various kinds of home appliances like smart led light, smart fan, smart-water mortar.

In this IOT project code we will give the threshold values to every sensor if any sensor value contradicts with a threshold value, then automatically respective action is made by a microcontroller. Like switching on a fan if humidity or temperature values cross the threshold values this process is done with help of Wi-Fi or mobile hotspot network. For this, we use the Blynk app for visualizing the data of sensors or for doing any added operations like power-up light using on and off buttons and can be used for sending alert messages through mail related to threshold values.

The microcontroller is Node-MCU, Code is executed in Arduino software. To convert 220v to 5v of power we use a relay module and sensors like DHT11 for measuring temperature and humidity, LDR for detecting brightness, an Ultrasonic sensor for measuring water level, Air quality sensor for measuring the quality of air in an indoor home if any abnormal leakage of gas or any wire burning smell, sensor will detect and at once an alert message will get to our mail and automatically alarm will on. Thus, the main aim of this work is to make our home automation system energy-efficient, secure and intelligent.

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An Image Steganographic Technique using more Cover Images to Embed the Source Image data at Random Locations

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In the area of Very Large-Scale Integration (VLSI) design, summing circuits are one of the most widely used entities in processor data path architecture. With the advances in VLSI technology, research works are emerging on to design an architecture with low power consumption, high speed, less area or the combination of them.

In this paper, we have presented the implementation of various 16-bit adder architectures of Ripple Carry Adder (RCA), Carry Lookahead Adder (CLA) and Carry Skip Adder (CSA) and also including Parallel Prefix Adders like Spanning Tree Adder (STA), Kogge Stone Adder (KSA), Sparse Kogge Stone Adder (SKA) and Brent Kung Adder (BKA).

The comparative analysis of different adders has performed with respect to the performance parameters – area, delay and power. All adder designs have been simulated, synthesized and implemented on Xilinx Virtex-7 board using Xilinx ISE 2014.7 design tool. Programming language used is Verilog HDL.

Keywords— parallel prefix adders, Kogge Stone adder, Sparse Kogge Stone adder, Brent Kung adder, FPGA, power, delay, area.

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School of Management Studies

A Study on Perception of Investors on Different Investment Avenues during Covid-19

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There is a shift in the investment pattern among the people during the pandemic situation. This study is all about different investment avenues which investors in Hyderabad choose. This research's main aim is to find the preferred investment avenues in Hyderabad, the respondents' behaviour towards the investment alternatives and also to know the misperceptions they had before. The study focuses on understanding the investment pattern of the respondents during Covid-19.

A structured questionnaire was prepared and circulated among various employees of the private and government sector organisations. A total of 116 responses were received. Through the study it is found that the most preferred investment option is investing in shares, mutual funds, and fixed deposits. It is also interpreted that most of the respondents are diversifying their funds in different alternatives available.

Keywords: Investment, misconceptions, shares, diversify, behaviour.

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A study on identifying Factors affecting Customer Satisfaction for BSNL Broadband Service

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As India is moving towards Digital economy at a rapid rate. The Government of India along with private Internet Service providers has been undertaking so many programs to penetrate Internet connections across country. The compound growth of data consumption is expected to grow by 72.6 % by 2022. BSNL Broadband Service provide is the market leader among Internet Service Providers in India. Thus, the present study is aimed to identify the factors that are responsible for customer satisfaction of BSNL. The present study is undertaken by collecting primary data from 150 BSNL Broadband Service customers. Factor analysis is employed to identify factors that impact the customer satisfaction level. "Accurate Information and ease of Portability" has found to be most influencing factor for BSNL customer's satisfaction level. BSNL should focus more on brand awareness, promotion and availability of plans in the service provider. The service providers should strive to satisfy their customers by providing value to them so that the customers can spread positive word of mouth for their service providers.

Key words: Broadband Services, BSNL, Customer Satisfaction, Factor Analysis

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An Investigative report on the Tourism Industry in India

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Tourism industry is the largest service industry in India as it is contributing nearly 6.5% to the national GDP and up to a total of 9% (40 million) of the employment. Every year for almost 5 million foreigners and 570 million domestic tourists visits different places in India. To develop tourism in India, the Indian government has developed and promoted a campaign named "Incredible India", which has created enough awareness among the domestic and international tourists. Till 2019 Indian Tourism Industry has witnessed its highest 10 years growth potential.

The main attraction of India are geographically diverse, attractive beaches, nearly 37 world heritage sites, 80 national parks, 10 bio-geographical zones, and 441 sanctuaries. It also has big coastlines which are the main attractions in Indian Tourism. Tourists come here even because of varied cultural practices and the beauty of nature in villages.

To further enhance the attractiveness the Indian Government is providing free loans to MSMEs to help them deal with crisis and revive the economy including the tourism sector. They even launched a campaign called "Swadesh Darshan" a theme-based circuit to harness the tourism industry's potential.

This paper highlights the status of the tourism industry, initiatives taken by the government of India to further enhance its attractiveness and discusses the overall possibilities of tourism industry growth in India.

Key words: Tourism industry, Tourism in India, Incredible India, Swadesh Darshan, service sector.

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A study on Diffusion of liquid hand wash into rural markets

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The purpose of this study is to understand how the liquid hand wash entered into the rural markets with a very low penetration rate of 10% when compared to 99.9% for soaps. And did the companies succeed in marking people aware of their product with their product strategies by facing competition from their big brand companies. The main objective of this research was to find out the number of brands that the people in rural areas of Andhra Pradesh are aware of, how they use the product, what are the factors influencing them to buy the liquid hand wash and their perception towards the liquid hand wash. On the basis of the study it was I found that the hypothesis was properly justified. Among the respondents, majority were aware of Liquid hand wash, and Hygiene influenced the purchasing behaviour of the buyer. This study shows that the people in rural areas are aware of liquid hand wash, they use liquid hand wash as it is more hygienic and helps them stay healthy. Also, price, natural ingredients, packaging, foaming and fragrance are some of the factors that influences them during the buying process.

Keywords: Perception, Penetration, Sustainable Development

Digital Payments in India: Status Quo

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India one of the developing nations in the world. All developed nations successfully implemented digital payments after many experiments. Now its India's turn to implement better digital payments. Currency demonetization, Digital India program and setting up Unified payments interface (UPI) are the key steps towards digital payment era. In India at present digital payments means UPI based, card-based payments, Internet based banking transactions. Though government whopping lot of advertisements about digital payments in all over India, payments wise different states stood different positions according to RBI data. This present research all about status quo of digital payments in various states in India.

Key words: Digital payments, RBI statistics

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Impact of COVID 19 on Online Education System

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Corona Virus (COVID-19), the recent disaster in recent times has created havoc in all the operations worldwide. One amongst those areas is education system. Education plays a vital role in everyone's life.To bridge this gap, online education system is used as a medium of learning. COVID19 has showed a different way of learning things in ongoing digital world. Online education has its own pros and cons. This research study aims at knowing how COVID 19 impacted Online education System. This study is limited to the extent of response received in given time period. Using Descriptive Research Methodology, this study reveals better utilization of the opportunities as well as how to overcome hurdles. Questionnaire was used to collect data. A sample of 107 people was chosen using convenient sampling. The study was conducted at Chaitanya Bharathi Institute of Management (CBIT) & other Colleges in Hyderabad only. Analysis was categorized into effective and convenience based.

The main objectives of the study focuses on understanding the importance & effectiveness of online education, identifying the gaps between Online & Offline education systems,assessing the understanding levels of Students during online sessions, know whether students are facing any health-related issues due to online mediums, know pros and cons associated with the use of digital platforms, determining whether the current academic structure require any changes and the financial capacities of parents to afford online education.

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A Study on Employee Satisfaction towards Select HR Practices

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Workers contentment towards their job and related aspects is known as Employee satisfaction. Measuring the employee satisfaction is necessary as there is evidence from literature review that satisfied employees form the core competence to any kind of Organization. There are various factors that affect an employees' job satisfaction. One amongst those factors are HR practices of an Organization. The current study is aimed at understanding employee satisfaction towards the select HR practices at PLR Foods. Human Resources department have great role to play in managing the organizations effectively and efficiently. The HR practices have huge impact on the employee performance and Organizational productivity. The present research work is case approach which was aimed to gain an understanding of select Hr practices and employee Satisfaction towards them. The study is confined to recruitment, selection, training and compensation practices of PLR Foods Pvt Ltd. The survey method is used for data collection. The sample size of 154 employees was taken. The collected data is analyzed using T-Test, ANOVA Test and descriptive statistics using SPSS software. From the study it can be inferred that employees are satisfied towards the HR practices. They are highly satisfied with Compensation and then recruitment process, selecting process and the training which increases the performance of the employees. Theresultofthestudyrevealsthatthereisnobiasedprocessandemployees feel that the company should implement the non-compensation benefits. The findings of the paper also give the inferences about employee satisfaction along the demographic profiles of the employees

Keywords: Employee satisfaction, Recruitment and selection, Training, compensation

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A Study on the Stock Prices of Bank Nifty Pre And Post Financial Crises with reference to the Global Financial Crisis (2007-08) and Covid 19 Pandemic (2019-20)

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A Stock is a Security That Represents the Ownership of a Fraction of An Organization. Stock Price Refers to The Present Price That a Share of Stock Is Trading for On the Market. When Any Mishap Takes Place, It Will Lead to An Effect on The Stock Prices. One Such Mishap Is a Financial Crisis. So Far, We Have Seen Around 8 Such Financial Crises.

This Study is Done Within the Two Financial Crises I.E., The Global Financial Crisis (2007 – 09) And Global Pandemic (2019 – Till Date). This Study Is meant To Conduct an Exploratory Analysis and Acquire Insights into How a Financial Crisis Impacts the Stock Prices of Nine Banks from The Nifty Bank. This Study Gives a Visual Understanding of Important Factors of The Stock Prices. A Financial Crisis leads to A Fall In GDP, A Fall in Stock Prices, Withdrawal of Foreign Investments.

This Study Will Help Future Generations Own an Understanding of How the Market May Fall During a Financial Crisis and Can Help Them in Taking Investment Decisions During Any Such Crisis Within the Future. The Analysis Has Given Deeper Insights into The Fluctuations Within the Stock Prices. It's Been Found That When Compared With One Another, Both the Crises Show Up Similar Results, Like Fall in The Stock Prices, Increase in Risk for Investing In Stocks, Fall In Gross Domestic Product, Fall In Nifty Bank Index.

Keywords— Stock Prices, Financial Crisis, Bank Nifty, Global Pandemic

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Stock Price Prediction using ARIMA, Facebook's Prophet, XGBoost, SVM, LSTM, KNN and Linear Regression Models

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A stock is a security that represents the ownership of a fraction of an organization. Stock price refers to the present price that a share of stock is trading for on the market. The most reliable way to forecast the future is to try to understand the present and thus, accordingly we have set our prior objective as the analysis of the present scenario of the Indian Stock Market so as to understand and try to create a better future scope for investment. Prediction of future movement of stock prices has always been a challenging task for the researchers.

In this study various models like: ARIMA, Facebook's Prophet, SVM, LSTM, KNN, Linear Regression, XGBoost have been used to analyze and forecast the stock prices. From this study it can be concluded that the best models to predict future prices of stocks are: Facebook's Prophet, LSTM and ARIMA Models. It can be seen that Linear Regression Model couldn't predict the future but has been 99% accurate to predict the existing data.

Keywords— stock, stock prices, forecast, analysis, present scenario, Indian Stock Market, prediction,ARIMA, Facebook's Prophet, SVM, LSTM, KNN, Linear Regression, XGBoost.

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Humanities
(English, Mathematics and Physics)

Reading strategies for Engineering Students

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This paper tries to present different reading strategies to improve the reading skills of the students. It is very essential for the students to improve their comprehending skills because they may be required to read different kinds of materials and books which are essential for them in academics and even for professional purposes students need to possesses good comprehending skills in order to achieve their goals and become successful in their career.

Globalization brought many changes in the in the field of science, technology and in the fields of business and industry and it has changed the way of receiving and interpreting the information. As future professionals students need to learn good reading strategies because they need to understand technical materials and information , analyze complex data , scientific materials etc. Applying different reading strategies will help the students to comprehend the material, analyze different types of materials and will help them in problem solving and come up with multiple solutions.

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Rayleigh- Benard convection in the presence of synchronous and asynchronous thermal rigid boundary conditions

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This paper investigates the effect of time-periodic temperature modulation on Rayleigh Benard convection using rigid isothermal boundary conditions [1,2]. The time-periodic temperature modulation has been considering in three different modes, out of phase (OPM), Lower boundary (LBMO), and in phase modulation (IPM). Heat transfer results are calculated in terms of the Nusselt and mean Nussult numbers through the finite amplitude of convection which is derived from the Ginzburg-Landau equation (GLE). The Ginzburg-Landau equation has been derived from the Fredholm solvability condition [2] at third order. The GLE is a function of the system parameters and solved numerically. The present study shows that heat transfer results are controlled effectively by out-of-phase and lower boundary modulations [1]. The modulated amplitude of convection enhances heat transfer for low frequencies and diminishes for high frequencies. Further, it is found that rigid boundary conditions are diminishing heat transfer than free boundaries. Finally, it is concluded that heat transfer results are controlled by rigid isothermal boundary conditions and modulation.

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Impact of Blended learning in the study of Engineering Mathematics

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Advancements in the field of digital technologies and the emerging needs of using such technologies for teaching-learning at all levels of education has generated scope for blended learning. The NEP 2020 has recommended use of blended models of learning. In this situation of pandemic face-to-face in-person learning is not possible. Education system has transformed to online mode. But at the same time the importance of traditional method of teaching cannot be ignored. Blended learning is the use of traditional classroom teaching methods together with the use of online learning methods. This paper investigates the impact of Blended learning in the study of engineering mathematics .Pre test and Post test approach is adopted to study the difference in outcomes of two methodologies. A group was constituted and students were taught the about the Matrices ,a concept of linear algebra through e- learning methodology and another group is taught using some approach from Blended learning methods. Though the topic taught was same but the learning and the understanding levels were high in latter case . The pre test and the post test results were compared and result was computed . It can be certainly justified that the Blended learning does play an important role in education system. It has the benefit of flexibility to blend according to needs of the learner.

Keywords—Blended learning, Engineering mathematics,e- learning , traditional teaching etc.,

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Cwebs at Four Loops in Multiparton Amplitudes

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Correlators of Wilson-line operators in Quantum Chromodynamics (QCD) are known to exponentiate, and their logarithms can be organised in terms of collections of Feynman diagrams called webs.We introduce the concept of Cweb, or correlator web, which is a set of skeleton diagrams built with connected gluon correlators, and we computed the mixing matrices for all Cwebs at four loops. Here we complete the evaluation of four-loop mixing matrices, presenting the results for all Cwebs connecting two and three Wilson lines. We checked the correctness of our results by checking all the known properties of the webs. We observe that the conjectured column sum rule is obeyed by all the mixing matrices that appear at four- loops. We also showed how low-dimensional mixing matrices can be uniquely determined from their known combinatorial properties, and provided some all-order results for selected classes of mixing matrices. Our results complete the required colour building blocks for the calculation of the soft anomalous dimension matrix at four-loop order.

In this talk, I will review the general singularity structure of multiparton amplitudes and discuss the work of two articles which are already published in The Journal of High Energy Physics (JHEP) in 2020 and 2021.

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Power Corrections to Event Shapes using Eikonal Dressed Gluon Exponentiation

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Event shapes are classical tools for the determination of the strong coupling and for the study of hadronization effects in electron-positron annihilation. In the context of analytical studies, hadronization corrections take the form of power-suppressed contributions to the cross-section, which can be extracted from the perturbative ambiguity of Borel-resummed distributions. We propose a simplified version of the well-established method of Dressed Gluon Exponentiation (DGE), which we call Eikonal DGE (EDGE), which determines all dominant power corrections to event shapes by means of strikingly elementary calculations. We believe our method can be generalized to hadronic event shapes and jet shapes of relevance for LHC physics.

Keywords— NLO computations, QCD Phenomenology, Event shapes analysis, Eikonal, Dressed gluon exponentiation

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Acknowledgments

Details of the Main Contributions by Conveners and Research Coordinators to the Success of the Research Day-2022

S. No	Dept.	Name of Convener / Research Coordinator	Responsibilities
1.	Biotechnology	Dr Y. Rajasri	• Circulated the Brochure to various organizations • Involved in screening the abstracts • Communicated with the Session-chair • Coordinated the Session-2 • Coordinated with key note speaker for inaugural function • Coordinated with chemical engineering dept for organizing the program
2.		Dr Bishwambhar Mishra	• Circulated the Brochure to various organizations • Involved in screening the abstracts • Communicated with the Session-chair • Coordinated the Session-2
3.		Dr C. Nagendranatha Reddy	• Circulated the Brochure to various organizations • Involved in screening the abstracts • Communicated with the Session-chair • Coordinated the Session-1
4.	Chemistry	Dr. D. Saritha	• Acted as one of the conveners for the event • Circulated the brochure among the department students, faculty and outside to various organizations • Involved in screening the abstracts. Abstracts Review, Scrutiny, Plagiarism Check and Pagination according to format. • Communicated with the Session chair and coordinated the Session chair • As per the session chair evaluation sheet identified best presenter and shared information with R & D Team
5.		Dr. T.V. Surendra	• Abstract's selection • Coordinated with the Session chair

		Dr. Satish Kumar	
6.	CSE	Dr. Rupesh Mishra	• Coordinated Inaugural session and Keynote session • Coordinated Spot Registred Students • Presented Paper • Coordinated Velidictory sessions
7.		Dr. Kolla Morarjee	• Coordinated Inaugural session and Keynote session • Coordinated Spot Registred Students • Organizer Department Paper Presenttaions Offline Session • Coordinated Velidictory sessions
8.		Dr. Sangeeta Gupta	• Encouraged all the department faculty and students to present their abstracts • Worked towards the abstract selection, scrutiny, plagiarism check for the CSE Dept • Coordinated with the Resource Person and other research coordinators for smooth conduct of the online and offline session • Organizer for Department Paper Presentations Online Session • Coordinated Valedictory session
9.	IT	Dr Ramakrishna Kolikipogu	• Research Day Call for Abstracts/Posters/Products Promotion & Raising participation. • Abstracts & Posters Review, Scrutiny, Plagiarism Check and Pagination according to format. • Session Chair arrangement from PSU, Sessions Coordination • Mobalizing students & staff to both Inaugural & valedictory sessions & Keynote speeches. • Report preparation & filing for Dept. • Coordinated all the works & fecilitated participants, guests from dept of IT
10.	Physics	Dr. S. Shanmukharao Samatham	• one of the conveners. Has been active in wide publicity of the Research-Day among the scientific communities. • Submission, sorting out and communication of selected abstracts to applicants. • Inviting the guest speaker to deliver a

			talk in the Department of Physics. Coordination, organization and monitoring of sessions both in the main seminar hall and in the department. • Preparation and online distribution of certificates to the participants.
11.	Physics	Dr. Santhosh Kumar A	• Abstract scrutinization, plagiarism checking and finalizing the selected list. • Mobilization of students and ensuring the smooth conduction of inaugural session • Instrumental in coordinating the inaugural session • Coordinating the Departmental oral sessions •
12.	Chemical Engineering	Dr. M. Mallaiah	• Circulated the Brochure to various organizations • Abstracts Review, Scrutiny, Plagiarism Check and Pagination according to format. • Information passed to students to attend the event Coordinated with the oral presentation
13.	MCA	Dr. B. Indira (Research Coordinator) & Ramesh Ponnala (Research Day 2022- Coordinator)	• Circulated the brochure among the department students, faculty and outside to various organizations • Scrutiny and selection of abstracts by verifying plagiarism • Encouraged students to contribute abstracts. • Invited the session Chair • Coordinated with the Resource Person for smooth conduct of the offline session • Mobalized students & staff to both Inaugural, Keynote speeches, and & valedictory session
14.	English	Dr. Diya Panjwani	• Circulated the brochure among faculties of CBIT and other various organization • Scrutiny and selection of abstracts by verifying plagiarism • Encouraged students to contribute abstracts. • Coordinated the Departmental oral sessions

15.	EEE	Dr. T Sudhakar Babu	• Coordinated the Departmental oral sessions • Giving Wide publicity for the event Consolidated received the Abstracts. • Checked the Plagiarism • Selection of the Abstracts received, in consulting with the convener. • Selection of the Abstracts received, in consulting with the convener. • Follow up the registration process with the Authors. • Scheduled the meeting, moderation and recorded the session proceedings. • Communicating the schedule of session with the Authors. • Prepared the list of Abstracts presented in the session • Coordinated with the session chair for the event and arranged necessary things for him • Meeting link prepared and shared with all the participants, departments faculty members ad for session chair • As per the session chair evaluation sheet identified best presenter and shared information with R & D Team
16.	SMS	Dr. S. Saraswathi	• Shared the Research Day brochure. • Updated the status of abstracts received. • Motivated the faculty to ensure the contribution, they shared and also motivated to contribute abstract. • Consolidated all abstracts as per the template. • Formed a committee consisting of three members to shortlist the Abstracts. • Conducted meeting at department and shortlisted the abstracts based upon the plagiarism report. • Communicated the information about the Shortlisted candidates and the guidelines for presentation • Scheduled the Oral presentations. • Shared a link for online session to the Chair session, participants and audience • Communicated in brief about Research

			Day and the Oral Presentations participants list along with guidelines and evaluation sheet. • Conducted the Session successfully • Submitted the evaluation sheet and the best paper award to announce in the Valedictory Session of Research Day.
17.	Civil Engineering	Dr. T. Chaitanya Srikrishna	• Circulated the brochure among the faculty and students of the department and various other organization. • Conducted a meeting in the department with all the faculty members to submit abstracts for the research day. • Encouraged students to contribute towards paper, poster and product presentations. • Worked towards the abstracts review, scrutiny, plagiarism check and pagination according to format. • Follow up the registration process with the participants. • Scheduled the meeting for Oral presentations (online) shared with all the participants, session chair and faculty members of the department. • Coordinated with the session chair and communicated the schedule of session with the participants As per the session chair evaluation sheet, identified best presenter and shared the information with R&D Team.
18.		Dr. A Supraja Reddy	• Circulated the brochure • Encouraged faculty and PG students to contribute abstracts. • Communicated with Chief guest and Guest of Honour. • Contributed to smooth conduct of Inaugural function.
19.	ECE	Dr. Vinodh Kumar Minchula	• Scrutiny and selection of abstracts by verifying plagiarism check • Communicated with the session chairs. • Contacted and confirmed the participation of each author. • Hosted and conducted the ECE session I online from 2-4 PM on Research Day. • Coordinated the assessment in both the

			sessions in the department and updated to R&D immediately after completion of the sessions. • Prepared the abstracts as per the template received from R&D."
20.		Dr. Marepally Bhanu Chandra	• Circulated the brochure among the faculty and students of the department. • Keynote speaker - arrangement, co-ordination and hospitality
21.	EEE	Dr M Balasubbareddy	• Acted as a convener for the event • Prepared the event Brochure • Prepared Google sheet for the Registration of Award, submission of abstracts and registration for the event • Arranged two session chairs from IIT-Hyderabad and OU • Participated to the preparation of the programme schedule • Participated to the preparation of the Inaugural and concluding session schedules • Proposed the vote of thanks for the inaugural function. • Participated in the process of arranging an honorarium for the session chairs.
22.	MED	Dr. Rahul Dr. Vamsi Krishna	Conducted the department presentation session. Motivated students to present in the department.
23.	Mathematics	Dr. Palle Kiran	Circulated the brochure among the faculty and students of the department Abstract selection
24.	R&D Centre	Sri. K Lakshmanna	• One of the convener for the event. • Participated in the process of preparing the event Brochure. • Participated in the process of sending research day invitations to all the teaching and non-teaching staff of CBIT and other institutes Principals. • Daily arranged a meeting with convenors with Director R&D. • Daily updated the status of abstracts received by R&D from various departments. • Daily updated Registration status to Research Coordinators.

			• Responded to research day emails daily. • Participated in the process of preparation of Chief Guest and Guest of Honor and keynote speakers invitation letters and sending invitation letters to Guests. • Downloaded and segregated all submitted abstracts department-wise. • Participated in the process of framing guidelines to Scrutiny of Abstracts. • Prepared draft letter for arrangement of session chairs by individual departments. • Sent received abstracts for scrutiny to individual heads of the departments. • Provided Turnitin anti-plagiarism login credentials to Heads of the departments. • Daily updated the status of 'Scrutiny abstracts' to Research Coordinators. • Accepted / Rejected Abstracts information sent to participants. • Participated in the process of preparation of Programme schedule. • Prepared online link for Research Day event pre-trial meeting with Guests and invited Speakers and also the Research Day team. • Participated in the process of sending schedule to Participants, Directors, Heads of the departments, and all teaching and non-teaching staff. • Made calls personally to Directors, H0Ds, and Research Coordinators and requested to join the meeting. • Participated in the process of Compilation of a list of Best papers from various departments. • Participated in the process of selection of Awards to faculty (Most Contribution to NIRF ranking (2018, 2019 and 2020) • Participated in the process of prepared draft template for presented Abstracts. • Compilation of presented abstracts.

R&D Centre, CBIT

Celebrating the 4th Research Day on 17 December 2022

General Guidelines

- Abstracts are invited from Students, Research Scholars, Academicians and Industry Persons.
- The Abstract should be limited to a maximum of 300 words
- Submitted Abstracts should not have been previously published in any other conference, journal, book chapter etc.,
- Authors should satisfy the standard norms of plagiarism.
- All submitted Abstracts will be reviewed by expert committee members.
- Atleast one author should register for the Research Day 2022.
- E-Certificate will be provided through email only.
- All accepted, registered and presented abstracts will be published in e-Souvenir

Link for Abstract Submission

https://forms.gle/TwqxknQ171wqyFCd7

Registration Fee

Category	Author (INR)
Industry	Rs. 500/-
Faculty Member	Rs. 300/-
Research Scholar and Student	Rs. 200/-
Others	Rs400/-

Online Payment Details

Acc. Name: CBIT Recurring Expenditure
Account Number: 180401001258
RTGS / NEFT IFS Code: ICIC0001804

Organizing Committee

Chairperson

Dr. P.Ravinder Reddy
Director & Head of R&E Hub

Advisor

Dr. A.D. Sarma
Director R&D

Conveners

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4. **Sri. K. Lakshmanna**
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For further details please contact:

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Important Dates

Last Date for Submission	:	18 November 2022
Acceptance Intimation	:	01 December 2022
Last date for Registration	:	07 December 2022
Event/Presentations	:	17 December 2022

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A)
COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 44 years

Research and Development Centre

R&E Hub

4th Research Day-2022

(Hybrid mode)

Saturday, 17 December 2022

10:00 AM – 5:00 PM

Chaitanya Bharathi Institute of Technology
(Autonomous under UGC)
Affiliated to Osmania University
Kokapet (Village), Gandipet,
Hyderabad – 500075
Telangana State, India.
www.cbit.ac.in

ChaitanyaBharathi Institute of Technology (CBIT)

CBIT is one of the premier Engineering Institutes in India, pioneer in Telangana State, which is at idyllic surroundings of Gandipet Lake, Hyderabad. The college offers Nine UG and Eleven PG programs. It has been standing as a temple of knowledge for the past 43 years by producing about 25,000 Eminent and skillful Graduate Engineers, who are successful in their Careers, serving all over the Globe. CBIT Students are prepared and perfected to secure Placements in reputed MNCs. The Institute has been accredited by NAAC – UGC with 'A' Grade and various programs are accredited by NBA – AICTE. The UGC has granted Autonomous Status from the Academic Year 2013-14 onwards. Stringent Academic Standards, Industry Compliant Teaching Methodology, Research Projects from Private and Public Sector organizations Industries in Engineering and Management and Consultancy Practice, enabled the Institute to establish its Identity in the Technical Education and is ranked as one of the best amongst the Private Engineering Colleges in both the Telugu Speaking States.

About R and E Hub

To enhance research activities and cultivate pleasant research atmosphere, a multi-crore state of the art building with all modern technical facilities was established in the year 2018. It facilitates all departments to carry out advanced research, establish incubation cells and start-ups. The R&E Hub, with its State-of-the-Art Infrastructure, helps to promote Research and Innovations amongst the Faculty and Students by identifying new Research Areas, developing Projects leading to Publications, Products, Innovations and Start-Ups. All research activities are being streamlined to make a mark in 'Make in India' concept of Indian Government.

It has two main wings namely Research and Development (R&D) Centre and Innovation and Incubation Center (IIC).

About Research Day

RESEARCH DAY, the focused initiative by the Institute is being Celebrated with an Objective to not only change the image from an Under Graduate Engineering College to Research focused Institute but also to expand the base to encourage Research Scholars, Students, Faculty to showcase their Research. The event facilitates the participants to network with faculty, fellow students and local industry who are sharing the same vision from India and abroad and learn the quality of Innovation - including the quality of scientific publications, the quality of Universities and patent related filings and recognize their own research while respecting others research in a Win-Win situation for all.

Research Participants

Each of the Participants interested to showcase their work should submit an Abstract of the Research papers not exceeding 300 Words in the prescribed format available in the registration form and submit the same on or before 18 November 2022. Exciting Prizes will be awarded to the best Research Papers under various Categories. For details, please visit the Website: www.cbit.ac.in

R&E Hub Front View

Resource Persons

Resource Persons will be from Renowned Institutions and Industry in India and Abroad.

Emerging Areas to be Covered

With a view to understand the impact of Government, Corporates, Educational Institutions, Investors on Innovation Ecosystem, the following areas will assume importance for extensive and intensive coverage:

1. Developing Entrepreneurship Capabilities
2. Establishing "Start Ups" – Experiences by Promoters
3. Current Status of Research in Industries
4. Launching of Research based Projects

R&E Hub Back View

R&E Hub Top View