Proceeding of
7th National Conference
on
Innovative & Emerging Technologies
(NCIET-2021)
IN ASSOCIATION WITH

Gujarat Council of Science and Technology, Gandhinagar, Government of Gujarat

UNDER THE SUPPORT OF

ORGANIZED BY

Smt. S. R. Patel Engineering College
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Vice-Chancellors's Message

I am very pleased to learn that Smt. S. R. Patel Engineering College (SRPEC) is organizing NCIET-2021 for dissipating the knowledge among researchers and scholars who would present their research findings at this conference.

Such event at the institute level nurture a learning environment that culrriinates into research findings useful to mankind and nation.

I am sure the proceedings of this conference will bring together the research articles of experts from well-known academic institutions and leading industries.

I convey my best wishes for the success of NCIET-2021 as it reflects the efforts put in by the faculty members/staff and students in particular.

Prof. (Dr.) Navin Sheth
Vice-Chancellor
Gujarat Technological University Ahmedabad

Dr. Narottam Saho's Message

I am delighted to know that Smt. S. R. Patel Engineering College, Unjha, Mehsana is organizing the second National Conference on "Innovative and Emerging Technologies (NCIET-2021) during 21st-22nd May 2021.

Innovations are the drivers of development and growth and are is the currency of the present century. With their cutting-edge role in enhancing productivity, boosting growth, increasing efficiency and creating new economic opportunities, the culture of innovation as well as innovative mindset promises to offer cost-effective and efficient solutions to the society.

Gujarat Council on Science & Technology (GUJCOST), working under the aegis of the Department of Science & Technology, Government of Gujarat, is committed to establish institutional mechanism to encourage innovations, characterized by scientific temper and a spirit of inquiry and reform.

I hope that the NCIET-2021 will bring together the nationwide leading researchers, engineers and academicians to exchange their innovative ideas in the fields of technology for futuristic development and human welfare.

I congratulate the Principal and the staff members of SRPEC for organizing NCIET-2021. My greetings and best wishes are due to all the delegates, distinguish faculties and students for attending this conference.

I wish the NCIET-2021 a Grand Success.

Dr. Narottam Sahoo
Advisor & Member Secretary
Gujarat Council on Science & Technology,
Dept of Science & Technology
Govt of Gujarat

Dr. Dinesh O. Shah's Message

Dear Colleagues and students,

It is a great pleasure for me to write this message. I spent nearly fifty years in wide ranging research career. I have first- hand knowledge of what innovation and novel inventions are! Invention and innovation do not happen unless you strive for it. Innovative research has to become your passion and only then you will be able to make it happen. You must fall in love with your research work. To fall in love means that it is your first thought when you wake up in the morning and it is your last thought when you go to bed!

In every technology, the innovation has taken place continuously from food, pharma, petroleum, plastics, biotechnology and biomedical devices mainly from countries like USA, Europe, Scandinavia, Japan, Korea and now China. In spite of our 1.2 billion persons in the country, we are filing less patents than Sweden or Finland (which has less than five million population) in getting the number of patents or innovative ideas or devices. The question is why? It is our lack of emphasis on asking questions about how and why? Are students encouraged to ask questions about molecular mechanisms for observed phenomena? Also our traditions stand in the way! We wash our clothes by using wooden 'dhoka' without asking why? Does it really wash clothes better? What is the optimum number of blows for cleaning clothes? No one is encouraged to ask such questions. We must introduce a new culture of asking how and why and constantly make things better. Ask yourself, how can I make things better, more convenient, more efficient, then we will come with innovative solutions and products!

We do not define our goals for research that can benefit society. For example, How to reduce evaporation of water from soil so that you can promote the growth of plants? How to breakdown organic molecules in effluents from industries using solar energy? How to design a sensor or an instrument to determine amount of water added to milk by a milk vendor? How to convert waste from sugar, rice or dairy industries into detergents? How to make dustless chalk rather than dust producing chalks? How to convert some of the unburnt carbon into energy in internal combustion engine? We have addressed these problems at SSCSSN-DDU, Nadiad. Gujarat, India.

I am pleased to share good news that last year on June 6, 2016, I was awarded a major international award, K. Mittal Award for outstanding research contributions in Surface and Colloid Science at International Conference in China (SIS-2016). This award is given every alternate year and I am the first recipient of Indian heritage. I am sharing this good news with all of you so that one of you will aspire to be recognized with such awards. My daughter and two grandsons will join me to travel to China for this event.

I hope you will initiate creative research at your institutions and make significant progress in the coming years. With best wishes and good luck,

Dr. Dinesh O. Shah
Founding Director
Shah-Schulman Center for Surface Science and Nanotechnology, DDU, Nadiad
Gujarat India.

Professor Emeritus,
Department of Chemical Engineering and Department of Anesthesiology,
University of Florida, Gainesville, FL 32610 USA.

Visiting Senior Professor,
Columbia University, New York, NY, USA 10027.

Chairman's Message

I am pleased to welcome you to the "National Conference on Innovative & Emerging Technologies 2021" organised at Smt. S. R. Patel Engineering College during 21st-22nd 2021.

This conference is to offer an energetic environment for the exchange of information with emphasis on new developments, services and applications by bringing together researchers, scientists, professionals, academicians, corporate & industry professionals, technically sound students and entrepreneurs from various organizations all over the country under one roof. This conference aims at easing the participants to reveal and exchange their pioneering works on their appropriate topics of interest in various disciplines of engineering. Prospective authors shall be able to present all aspects pertaining to their findings in the innovations and challenges in their area of research.

We aim to create a podium for blending the best minds from the academia with the trend of the industry and market and to invoke the passion for pristine wisdom and the resolution to achieve better and newer technological standards.

I would like to express my thanks to all authors for their outstanding contribution. All the key note speakers and experts are also thanked, as they are going to deliver their wonderful experience. Lastly, I would like to acknowledge all of the persons involved with the conference, for their efforts put in the grand success of the event.

Shri Rameshbhai H. Patel
Chairman
Smt. S. R. Patel Engineering College (SRPEC) Dabhi-Unjha
Mehsana Gujarat India

Principal's Message

Smt. S. R. Patel Engineering College (SRPEC) has constantly been putting efforts to impart technical education of present demands and time. With each and every passing day a number of findings and discoveries are taking place in the various fields of science and technologies. If we remain indifferent to the areas of research, then we will lose the opportunity of our own development. In line with above idea a "National Conference on Innovative and Emerging Technologies (NCIET-2021)" is being organized at SRPEC. This is the fifth National Conference which is being organized by the institute.

The purpose of NCIET-2021 is to provide a common platform to varied researchers and scholars of different fields to share their findings, thoughts and research works with one another. The event will also serve as an opportunity to the technocrats to disseminate their knowledge among themselves and to the students as well as faculties of their respective field.

Our vision is to be vital to the technical society and professionals around the country to revolutionize the technology of the era and encourage the improvisation of expertise in the multitude of technical disciplines.

Our strategy is to congregate different knowledge sources to a single coherent channel accessible to all affiliations.

I hope that NCIET 2021 will provide a healthy opportunity to its participants for sharing their innovations and developing their insight in the present research scenario. I appreciate the level of research work carried out by the authors and sincerely thank them for presenting their novel research. I express my best wishes to all the participants and every person who have directly or indirectly contributed to make this a fruitful event.

Dr. A. H. Shah,
Principal
Smt. S. R. Patel Engineering College (SRPEC) Dabhi-Unjha.
Mehsana Gujarat India.

About SRPEC

The institute “Smt. S. R. Patel Engineering College” was established in the year 2009 at Dabhi, about 4 Km. away from Unjha and about 28 Km. away from Mehsana. The institute is promoted by Smt. Sushilaben Rameshbhai Patel Charitable Trust and supported by Ajay Engi-Infrastructure Pvt. Ltd., Mehsana. The lush green campus is spread over in a twelve acre area. The beautiful landscaping and peaceful environment provide a true feeling of closeness to the nature. The institute offers four years degree engineering programs in Civil, Mechanical and Computer disciplines at under graduate level.

The institute is approved by the All India Council for Technical Education (AICTE) and affiliated to Gujarat Technological University (GTU), Ahmadabad. All these programs are designed to enable learning in application based environment through a combination of teachers and hands-on-experience in well-equipped laboratories.

The institute lays emphasis on the all-round development of the students. For this, expert lectures, short term field training, industrial visits, seminars, workshops, model making and other short term programs for students and staff members are regularly organized and/or they are deputed to attend the same. Along with the above activities annual events like national level symposium- “PRAKRUST”, blood donation camp, sports events, cultural days and annual day are also organized. The college regularly rewards the deserving students and staff members for their encouragement.

About NCIET 2021

7th National Conference on Innovative and Emerging Technologies (NCIET- 2021) has grown to become a flagship event of Smt. S. R. Patel Engineering College (SRPEC), Sihi, Unjha. NCIET-2021 is a multidisciplinary conference encompassing themes related to Innovation & Emerging Technologies, such as Information Technology / Computer Science and Engineering, Mechanical Engineering and Civil Engineering.

The conference is a humble effort to provide common platform to research scholars, experts, academicians, scientists and engineers to present their novel innovation and to bring together to exchange their innovative ideas in the fields of technology for futuristic development. To motivate the researchers to overcome the challenges, increasing innovation and to inspire them to advance emerging technologies, which are critically needed at this juncture of competitive scenario. The program consists of peer-reviewed paper presentation of technical research articles in four tracks. In addition, keynote speech will be delivered by eminent expert of respective field from IIT's, NIT's and various Universities. Such interaction will facilitate better understanding about technological research developments among the participants.

The conference is in technical association with Gujarat Technological University (GTU), and Indian Society for Technical Education (ISTE) –Gujarat Section, Gujarat Council on Science & Technology (GUJCOST), Student Startups and Innovation Policy (SSIP) & International Association of Engineers (IAENG). Accepted papers are published in conference proceeding with ISBN No: -978-81-925650-0-2.

Following are Tracks for the conference:

Track 1 : Civil Engineering.
Track 2 : Computer Engineering / IT.
Track 3 : Mechanical Engineering.

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Vice Chairman, Smt. S.R.Patel Charitable Trust, Mehsana.

Convener

Dr. A. H. Shah Principal, SRPEC, Unjha.

Coordinator

Dr. Ankur Jain
Assistant Professor, Computer Engineering Department, SRPEC, Unjha.

Co- Coordinator

Prof. Ankit Jain
Assistant Professor, Civil Engineering Department, SRPEC, Unjha.

Organizing Committee

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Principal & Head Civil Engineering Department, SRPEC, Unjha.

Dr. Ankur Jain
Assistant Professor, Computer Engineering Department, SRPEC, Unjha.

Prof. Ankit Jain
Assistant Professor, Civil Engineering Department, SRPEC, Unjha.

Prof. J. Rana
Assistant Professor, Mechanical Engineering, SRPEC, Unjha.

EXPERT LECTURES

Date & Time	Branch	Name of Expert	Venue
21st May, 2021 (9:30 a.m. to 10:45 a.m.)	COMPUTER	Dr. J.P. Singh NIT, Nagpur	Google Meet
	CIVIL	Dr. J.N. Patel SVNIT, Surat	Google Meet
	MECHANICAL	Dr. S. K. Bopche NIT, Hamirpur	Google Meet

PANEL OF REVIEWERS

Track 1: Civil Engineering

- Mr. Vineet Jain — BIT, Jhansi
- Mr. Niyazuddin Ansari — NIT Warangal
- Mr. Khailesh Khatri — NIT Warangal
- Mr. Abdul Rehman — IIT Guwahati
- Ms. Rashmi Yadav — SVNIT Surat

Track 2: Computer Engineering/IT

- Dr. Sunil Soni — Government Polytechnic Rajkot
- Dr. Rajan Patel — GIT Gandhinagar
- Dr. Sunil A. Patel — GEC Patan
- Dr. Ramesh Prajapati — L. J Institute of Technology, Ahmedabad
- Mr. Suketu Nayak — CEO, Gatewing Technologies
- Prof. Hardik M Patel — Bapu College of Engineering, Gandhinagar

Track 3: Mechanical Engineering

- Mr. Randheer Chahar — Phd, IIT Gandhinagar
- Mr. Abhishek Srivastava — Phd, IIT Gandhinagar

SUMMARY

Summary of Research Papers -1

Track/No. of Papers	Number of Research papers received	Number of Research papers selected	Selection Ratio (%)
Track 1 : Civil Engineering	49	24	48.97
Track 2 : Computer/IT Engineering	41	18	43.90
Track 3 : Mechanical Engineering	27	7	25.92

Summary of Research Papers Papers -2

Description	No. of Papers
Number of research papers received from Gujarat	87
Number of research papers received from out of Gujarat	30

CONTENT

Track 1: Civil Engineering

Track 2: Computer Engineering

Track 3: Mechanical Engineering

A SPATIO-TEMPORAL PERUSAL OF LAND USE/COVER CHANGES IN SOUTH DANG, GUJARAT

[1]Nikul Panchal, [2]Dhruval Patel, [3]Bankim Joshi
[1] *Student Scholar, CED, SNPITRC, Umrakh, Bardoli, India*
[2] *Student Scholar, CED, SNPITRC, Umrakh, Bardoli, India*
[3] *Asst. Prof., CED, SNPITRC, Umrakh, Bardoli, India*

Abstract: One of the healthiest forest-covers of South Gujarat is under continuous manipulations. This is observed as a result of the various anthropogenic activities such as, urbanization and deforestation as a by-product of the conversion of forest cover for human needs, which may be regarded as a violation of the valuable asset of the state. This research is objectified to create Land Use and Land Cover (LULC) maps of The South Dang forest, identify the LULC, and to determine the Spatio-temporal variation characteristic yearly for the years 2013 to 2019. The implementation of open-source data, available from the United States Geological Survey (USGS) - Earth Explorer website (Landsat Satellite imagery), is collected to carry out the analysis work. The Maximum Likelihood image classification technique is performed to classify six land use land cover types namely, Water, Forest, Grassland, Agricultural Land, Residential & Commercial Land, and Barren Land and to obtain the area covered under each type, whose description can be found in TABLE I. It is reckoned that, over 7 years, the area under evaluation, presented the highest increase of 22.419% and 15.094% in Grassland and Barren Land respective land-use types. Furthermore, a drastic decrease of 19.989% and 8.872% is noted in Agricultural Land and Forest respective land-use types. In general, it is perceived that there is an increase in Water, Grassland, and Barren Land feature class types. Contrarily, Forest, Agricultural land, and Residential & Commercial land-use types presented a diminishing trend.

Keywords—GIS, LULC Map(s), Spatial Analysis, Land Use, Land Cover.

EFFECT OF TEMPERATURE CHANGES ON THE ELASTIC MODULUS OF FLEXIBLE PAVEMENT

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Abstract: The stiffness of the flexible pavement is typically determined by environmental modification, which affects the asphalt and the non-asphalt coating as the subgrade temperature and rainfall. Temperature impact can normally be calculated by two methods on the flexible pavement. First of all, the destructive test is performed using a universal test machine to test the core samples in a laboratory (UTM). Second, an in-situ, non-destructive test with instruments including an FWD, Benkelman Beam Deflection (BBD), and surface wave spectral analyses (SASW). This study provides an assessment of E modules using deflection calculated in two seasons on the same project road by Falling Weight Deflectometer (FWD). The total effective length of 5.210 Km of 4 lanes for the study purpose. It is observed that different tension levels and testing result in various elastic modulus values of flexible pavement. Different tensile ratios and testing results in different durable pavement elastic modulus values. The higher the temperature of the flexible floor plate, the lower the elastic module values. In comparison, the lower the temperature on the flexible pavement layer, the greater the value of the elastic modulus.

Keywords: Temperature, Stiffness, Moduli, Falling Weight Deflectometer (FWD)

TRAVEL DEMAND MODELLING - A CASE STUDY OF VADODARA CITY

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Abstract: The main objective of this study is to present an overview of the travel demand modeling for transportation planning. Mainly there are four stages model that is the trip generation, trip distribution, modal split, and trip assignment. Various types of surveys are included in this study like House Hold, Online Questionary through Google form. As the data is the essential input for the O-D matrix, this article provides a framework for the trip distribution for the city of Vadodara based on the HH Survey. Work travels, educational trips, retail excursions, recreational travels, and religious excursions are all part of Trip Distribution. This research focused on the city's 19 wards, which are split by the municipal government. The Multinomial Logit Model was employed in this study to examine commuters' mode choice behaviour in the metropolis. HH survey was conducted in the city surveying approximately 4200 households for the socio-economic, travel, and mode-choice data. Origin-Destination (O-D) trip matrix for different modes was generated with the survey data. Utility and Probability of different modes were calculated using Travel Time, Travel Cost, Travel Distance, and Delay as the functional parameters. MNL model was thus calibrated and validated using SPSS. Traffic Assignment is done by using growth factor and expansion factor methods. And form the results of this data we can make forecasting of travel demand modeling for future years.

Keywords: SPSS, Travel Demand Modeling, Trip Generation, Trip Distribution, Model Split, Traffic Assignment, Multiple Liner Regression, O/D Matrix, Gravity Model, Desire Line Diagram, MNL Model, Growth Factor, Expansion Factor.

ANALYSIS OF SIDE FRICTION IMPACT ON URBAN ARTERIAL ROAD CAPACITY

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Abstract: In current, A series of traffic field surveys were used to examine the effect of side friction activities on speed. Pedestrian movement, vehicle parking and un-parking, and wrong side movement are all observed and evaluated in order to determine the weighing factor. To investigate the combined effects of all the events, the weighing factor is used to measure the overall value of friction on the lane. The research proposes a model for estimating the stream's mean speed reduction. It was discovered that as side friction rises, vehicle speed reduces and road capacity reduces at all different levels of traffic volume.

Keywords: side friction, urban arterial roads, speed, traffic capacity, mixed traffic.

ANALYSING DRIVING BEHAVIOUR IN YELLOW PHASE AT SIGNALIZED INTERSECTION UNDER HETEROGENEOUS TRAFFIC

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Abstract: Field observations were conducted using the videography approach at 5 (five) intersections in Gujarat, India (Ahmedabad, Vadodara). The observations were primarily based on each driver's deception behaviour for two separate events: a) prior to the start of the green phase (early vehicle movement for determining approach speeds) and b) prior to the start of the yellow period (where drivers take decisions to stop or go). Traffic data extractors from time-lapse videography were used to conduct the analysis, and various models were created to reflect driver actions in mixed traffic conditions across Gujarat's cities. Distance to stop line, time to stop line, approach speed, acceleration/deceleration rate, perception reaction time and vehicle category were among the parameters used in the model. SPSS Statistics is used to build models with different accuracy rates. With a 71.5 percent accuracy rate, a binary logistic model was created. A multilayer perceptron neural network was built with an accuracy rate of 72.4 percent. A radial basis neural network built model with a 74.4 percent accuracy rate.

Keywords: Driver Behaviour, dilemma Zone, Yellow Light, Stop/go decisions.

ANALYZING MIXED TRAFFIC CHARACTERISTICS ON INTERCITY EXPRESSWAY – A CASE STUDY

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Abstract: Multilane freeways are common in developed countries like the United state but finite in developing countries like India. There are very limited researches on the expressway in developing countries. For proper understanding and analysis of traffic stream characteristics and determine the capacity and LOS are necessary for design, analysis, operation, and management facilities. The study is focused on analyzing the traffic flow parameters on the Mahatma Gandhi expressway and derives the capacity and level of service threshold. For the study, vehicles are categories into small cars, big cars, trucks, light commercial vehicles (LCV), and buses. The variation of the speed is observed among mixed traffic vehicles. So that fast-moving vehicles are trying to overtaking the slow-moving vehicles so that there is not follow lane following by the drivers so lane changing behavior is also important for safety purpose. Speed-flow-density relationships were generated from the traffic flow parameter. Capacity was estimated at 5032 PCU/hr/direction from the speed-flow curve. The composition of heavy vehicles is also high. So that the effect of composition and speed variation is affected the capacity of the expressway.

Keywords: expressway, traffic flow parameters, speed-flow-density relation, capacity.

HOT IN-PLANT RECYCLING OF PAVEMENT – A CASE STUDY

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[2]Senior Principal Scientist Pavement Engineering Area CSIR-Central Road Research Institute New Delhi.
[3]Professor and Head, Civil Engineering Department. B.V.M. Engineering College Vallabh Vidyanagar, Gujarat, India.

Abstract: A good road network is a vital infrastructure requirement for rapid economic growth. There is a vast road network in the country, but it is still inadequate to meet the accessibility and mobility requirements. The National Highway Development Program, the Pradhan Mantri Gram Sadak Yojna, and the Special Accelerated Road Development Programme in the North-Eastern Region are also some of the current highway projects (SARDP-NE). Massive quantities of materials and energy are needed for these. The traditional method of applying bituminous surfacing to flexible pavements necessitates a significant amount of energy and materials. Pavement recycling technology could thus be used on Indian roads to minimize fuel and aggregate usage. It saves a lot of time, money, and effort to recycle existing bituminous pavement materials to make new pavement materials. Reclaimed Asphalt Pavement (R.A.P.) is an innovative technique in the current days. The Reusing practice of the material from compounded asphalt is called Reclaimed Asphalt Pavement (R.A.P.) is mostly or entirely reused in new development. A flexible pavement with Reclaimed Asphalt Pavement (R.A.P.) in Bituminous Mixes, Bases, and Sub base serves best to satisfy the reduction in the use of naturally available materials the cost of construction. Since the use of R.A.P. is dependent on its gradation

and amount of aged bitumen, a proper mix design with Virgin Aggregate and Binders is needed before using it in the pavement. Regarding resurfacing on an urban road, keeping in view not to raise the level much of this road, we can propose Hot in-plant recycling, which is easy to perform with milling machine only and is widely being done & popular in India. This research study focuses on "Hot in-plant recycling of pavements- a case study," which is a formal pavement recycling process that also helps to minimize the cost of maintaining our existing pavement network. The present study involves the Hot in-plant recycling of Noida Authority Road pavements in Delhi, India. To collect R.A.P material from the top layer of the Flexible Pavement. Milled material has to be transported to Hot mix plant and mixed with a fresh bituminous mix (70% new and 30% old R.A.P. with Rejuvenator). Bituminous mix design for D.B.M. (Dense Bituminous Macadam) grade II was completed using a blend of 30% R.A.P. and 70% virgin aggregates, as well as a new binder. (In the new binder, we will use VG-30). To analyze the R.A.P. binder's properties, such as softening points, penetration, and viscosity.

To check the physical engineering properties of the aggregate. To find out the enhanced physical properties needed in the mix design using Marshall mix design, a laboratory investigation on V.G. 30 grade with and without a percentage of "RECLAIMED ASPHALT MATERIAL" must be carried out in the research. To carry out D.S.R. (Dynamic Shear Rheometer) test for the Recovered R.A.P. binder. Also, to perform chemical tests like SARA. The various tests carried out to assess the performance include testing for Indirect Tensile Strength (ITS), Tensile Strength Ratio (T.S.R.), Retain Marshall Stability Value, Resilience of modulus, Moisture Induced Susceptibility Test (MIST).

Furthermore, recycled pavement construction is becoming more common due to its advantages over conventional materials, including natural resource conservation, energy conservation, environmental preservation, lower life-cycle costs, and the protection of depleting oil-based hydrocarbon binders. In developing countries, using recycled and secondary materials in pavement design has already been standardized. Pavement recycling has thus become a popular rehabilitation and maintenance option.

Keywords: Recycling Asphalt Pavement (R.A.P.), Hot In-Plant Recycling, Dense Bituminous Macadam (D.B.M.), Rejuvenator, Optimum Binder Content, Marshall Mix Design.

A CASE STUDY OF IDENTIFICATION AND IMPROVEMENT OF ACCIDENT PRONE LOCATION OF MEHSANA TO RADHANPUR HIGHWAY

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Abstract: Mehsana is a city and municipality in Mehsana district in the Indian state of Gujarat, India. The city is the center for social, educational, commercial, residential, cultural, political and economic activities of Mehsana district. Mehsana has seen rapid economic growth during last decade. The city is facing problems of traffic, parking, and pedestrian‟ safety on certain stretches of roads in the city. This Experimental work attempts to identify the accident prone Locations on selected stretches on Mehsana to Radhanpur road in the Gujarat state. Growing number of road accidents needs to be controlled by identifying the accident prone locations on Mehsana-Radhanpur road. Road accidents data of selected stretch of Mehsana to radhanpur road (97km) selected and road accident data of five years collected.

To identify the accident prone locations the total stretch is divided into smaller section of 5km each. Total accidents and accident severity value has been used to rank the accident prone locations.

A field study has been conducted to compare the analysis with field results. This thesis contains the data collected from Mehsana to Radhanpur road of Gujarat state. Their analysis and results are derived the study is divided in four section; at each section study is conducted by accidental statistics reports and usage studies which further contains accumulations studies and duration studies.

POROUS ASPHALT MIX FOR PAVEMENT: A LABORATORY PERFORMANCE STUDY

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Abstract: the aim of this study is to investigate the durability, maintenance needs, hydrologic benefits, and environmental implications of a full-depth porous asphalt (PA) pavement built on a low-volume lane. These asphalt mixes have a high porosity, which means they drain much better than standard mix designs. These materials, however, have low durability and strength, which limits their use in pavement applications. Polymer binder inhibitors have been suggested as a solution. Since applying polymer modifiers, they almost doubled the power and permeability, as well as increasing the air voids. Open graded pavements have a dual purpose: they act as parking and road pavements as well as storm water collection and infiltration systems. They're in high demand because they enable site planners and public works officials to handle storm water in a more ecologically friendly manner. Open graded structures can provide cost-effective, desirable parking lots with a long life span, as well as storm water collection systems that allow penetration and help increase water quality with proper implementation and maintenance.

Keywords: Open graded mixes, porous asphalt, polypropylene fiber storm water management.

CAPACITY ANALYSIS OF UNCONTROLLED INTERSECTION UNDER HETEROGENEOUS TRAFFIC CONDITIONS

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Abstract: This study is mainly focused on a different method for capacity analysis which is referred to as practice for analysis under heterogeneous traffic conditions at uncontrolled intersections. The current traffic behavior in urban cities is high density, mixed land use, short trips, and mixed traffic conditions. The common rules of priority and give way are not fully followed in most cases. Gap acceptance behavior is very uncommon in India, especially during peak hours. Methods used in this research for capacity estimation are Gap Acceptance and Conflict technique. This method is based on the method "Addition of critical movement flows" The model takes into account all possible traffic flows and conflict points at intersections with conflict areas. The results of capacities derived from two different methods at unsignalized intersections under mixed traffic flow were compared in the study.

Keywords: Uncontrolled intersection, Capacity, Conflict stream, Heterogenous traffic, Critical gap

EFFECT OF INFLUENCE ZONE RELATED TO SIZE OF DRAIN

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Abstract: Consolidation due to radial flow is the process of simultaneous dissipation of pore water pressure and compression of soil skeleton in presence of vertical central drain which leads to volumetric strain resulting into vertical settlement of soil under static loading. The Central drain facilitates acceleration in dissipation of pore water pressure. The inherent permeability of soil mass in horizontal direction is more than in vertical direction thus results into faster rate of radial dissipation of pore water from soil towards central drain. Moreover central drain reduces the drainage path. The gain in strength of soil mass treated is due to consolidation of the soil (reduction in Voids) and due to lateral stresses transferred by central drain under consolidating load which is resulting into increase into the modulus of the soil mass (E- value) which is more nearer to the drain and least away from the drain, thereby the soil sample in the device: Oedometer/ prototype setup is a reinforced soil bed.

The aim of the present research work is to study consolidation of soft clay by radial drainage using sand drain on zone of influence and strength of consolidated soil mass. The hydraulically pressurized Rowe-type Oedometer was developed in the Applied Mechanics Department of M.S. University of Baroda, India.

Keywords: Consolidation due to radial flow, n-value, Ground improvement technique, shear strength.

DEMONSTRATION OF HDM-4 IN EVALUATING DIFFERENT INVESTMENT ALTERNATIVES FOR UNPAVED ROAD

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Abstract: In the context of under developing countries like Afghanistan, poverty can be reduced by proper management and effective use of infrastructure budget, and provision of labor-intensive construction projects. The labor-intensive works approach can bolster livelihoods in the immediate term, create new small businesses in road maintenance and works, encourage workers to save and invest wages in other kinds of new micro-enterprises, and improve critical road infrastructure to sustained economic growth. In this study, the use of the HDM-4 model is demonstrated in defining the road improvement and maintenance works and selection of optimum maintenance and rehabilitation strategies available for the road sector under constrained budget available for the road sectors in Afghanistan. This study presents the economic analysis and justification of upgrading an existing engineered gravel road to a paved standard evaluating 8 different investment options. The existing road is 22.02 km long and passes through hilly topography.

Keywords: labor-intensive, HDM-4, constrained budget, investment options.

ESTIMATION OF TRAVEL TIME, SPEED, AND DELAY AT CONGESTED LINKS ON URBAN ARTERIAL

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Abstract: In the urban area the complicated problem of the highly growing vehicle population and other transportation-related problems like traffic congestion, travel time delay, and accidents, etc. year to year increasing population requires more systematic transportation systems to provide safe and economic and profitable goods and passengers transport. So that needs to study existing traffic conditions, traffic characteristics on the road network. For this study survey of traffic is carried out on selected congested stretches of modasa city. The main aim of this research study is to determine travel time delay and causes of delay on selected stretches. To determine the relationship between travel time, delay, and volume of vehicle data per five-minute data interval and show by graphical format. Traffic volume count by videographic method for two hours from 10 AM to 12 noon and 4 PM to 6 PM during evening peak hours for three different stretches of modasa. Travel time and delay data were collected by the moving car observer method to take a total of 10 samples per stretch during morning and evening peak hours. With the use of best fitting of the curve, all relationship of flow-delay is established and model equation for three stretches developed for heterogeneous traffic condition of modasa city. Found that causes of delay occur and proper traffic regulations provided in modasa city.

Keywords: Travel time and delay, Moving car observer method.

ANALYSIS OF COMMUTERS' MODE CHOICE BEHAVIOUR – A CASE STUDY OF RAJKOT

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Abstract: A well-functioning transportation system is critical for a developing country like India's economic development and growth. The population of emerging cities in India, such as Rajkot, is steadily growing. It is important to gain a better understanding of urban residents' mode preferences by identifying the various factors that influence mode selection. The study of mode preference is an important part of transportation planning. The number of private individuals who own two- and four-wheeled vehicles is steadily growing. The behaviour of city residents in terms of mode preference has a significant impact on transportation planning decisions. The mode of transportation chosen has an impact on the overall efficiency of travel within the region. Various techniques for mode option modelling are available. In a situation where a trip maker has more than two modes of transportation to choose from, the Multinomial Logit Model (MNL) is effective in estimating the different mode shares. For the creation of the utility function model for various modes of travel, socio-economic parameters and trip details are essential factors. Travel time, travel cost, travel distance, and delay in travel time are all important factors in determining which mode of transportation to use in a city. These parameters are used to create utility functions. SPSS software is used to develop Utility Model.

Keywords: Mode Choice, Multinomial Logit Modal, SPSS.

EFFECT OF HEIGHT OF PIERS ON THE SEISMIC RESPONSE

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Abstract: Piers being the critical components of the bridges play a predominant role in transferring the loads from the superstructure to the foundations, the failure of which can expedite the complete collapse of the bridge which is a lifeline structure & needs to be functional post-earthquake. The bourne of this research is to check over the seismic response of reinforced concrete bridge piers and to assemble the data for developing seismic fragility curves (which aid in the assessment of the probability of exceeding a specific damage state when subjected to specific ground motion intensities in terms of peak ground acceleration) & log-normal cumulative distribution functions were acquired for the five damage states by taking into account the maximum drift ratio. A computer program, named SEISMOSTRUCT, was used for carrying out the nonlinear dynamic time history analysis (which establishes the probabilistic characterization of the demands on the structure) of existing bridge piers of different heights by using a Latin hypercube sampling simulation procedure & the damage indices for the bridge piers were obtained. Material nonlinearity is taken into account & the fiber modeling approach is incorporated. The proposed probabilistic method for the prediction of seismic behavior for reinforced concrete bridge piers is found to be more reliable than other analytical methods. Here a Probabilistic Seismic Demand Model (PSDM) for piers of the same cross-section but different heights are obtained which are used in the assessment of the probabilistic seismic performance.

Keywords: peak ground acceleration, seismic fragility analysis, damage state, seismic demand, nonlinearity, sampling.

STRUCTURE HEALTH MONITORING SYSTEM BY SELF-SENSING CONCRETE

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Abstract: Smart concrete also known as self sensing concrete refers to the structural materials which can sense the changes in stress, strain and temperature and suggest making suitable remedial measurement to maintain value of stress and strain with in permissible limit. The 'sensing' properties of concrete are achieved mainly by combining some functional filler materials with conventional concrete material, thus leading to the concrete possessing sensing ability. Compared to conventional concrete, a properly designed self sensing concrete can be applied to optimize the safety, longevity and function of infrastructures which will used for building smart cities. In past few decades, sufficient endeavors have been done toward the research of self sensing concrete and many innovative achievements have been achieved to the development and application of self sensing concrete. Different method to preparing the self sensing concrete and find a new and unique method for preparing self sensing in most effective and economical way. Then after compression test on concrete cubes are conducted to measure the different values of resistance corresponding to different values of stress to establish the relationship between stress and resistance of concrete cube.

Keywords: Smart concrete, Workability, Self sensing concrete, carbon fiber, CNT (Carbon Nano Tube), etc.

RURBANISATION OF DABHI VILLAGE (UNDER VISHWAKARMA YOJNA)

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Abstract: Gujarat Technological University has been allotted witrh important and prestigious project of Vishwakarma Yojana by the Government of Gujarat for the year 2020-2021. The first phase project is aimed to study the present status by techno-economic survey of villages in area of the state in terms of basic and public services, essential commodities, and other infrastructural facilities for the need of people and to prepare report on adequacy of the available resource with reference to population of the village and growth of the area. Dabhi is the village which allocated to us by GTU. It is a village in Unjha Taluka of Mehsana District of Gujarat State, India. It is located 30 km away from Mehsana city. Major population of the village is attached to agricultural activities. The basic facilities are available in the village like R.C.C. road, drainage facilities, school, panchayat building, village gate, basic transportation, water supply, etc. In the village water supplied to the people is adequate. Around 80% of the closed drains are available and 20% is absent (Inadequate). The condition of roads is good at entrance and RCC road is available in some roads. Bus service is available to reach village. In the village, there is lack of basic facilities like community hall, public library, digital center etc. For development of the village infrastructure facilities or smart village facilities like digital hub and public facilities like Public garden can be provided. For sustainable development of the village public library, bus stand may be provided. For sanitation purpose public toilet should be provided. Based on the survey we tried to give design of required basic facilities to fulfill their needs. By providing these basic facilities to villagers migration rate will be decreased. This is ultimate aim of the Vishwakarma Yojana.

Keywords: Rurbanization, Village Development, Reduce migration, Sustainable Development, Rural soul.

SEISMIC FRAGILITY ANALYSIS OF HIGHWAY RC BRIDGES

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Abstract: During any EQ event bridges are one of the life-line structures which are severely affected due to which post-earthquake measures like supply of medicines, food, etc is affected. Also, as in recent time frequency as well as the intensity of EQ has increased which is an alarming sign to shift our focus to seismic response of bridges. SFC is one of the tools to assess the seismic response of the bridges which is the graphical representation of variation of probability of exceedance of damage state with PGA. Here in this paper an existing bridge is selected and SFC is developed for different damage states defined by Dutta & Mander. The uncertainty considered for the bridge model are Fck, Fy and damping ratio with the damage parameter be the drift ratio of piers. Here SFCs are also compared for different piers of the same bridge.

Keywords: Fragility curves, Probabilistic seismic demand model, Dynamic time history analysis, peak ground acceleration.

STUDY OF LAND USE TRANSPORT INTERACTION

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Abstract: Rapid urbanization in the developing country like India leads to many complex transportation available multimode transportation options. Gujarat is the fastest growing State with the population about 5.5 million. The State is growing very rapidly due to the different service sector like Information Technology, Banking and telecommunication along with a wide spread manufacturing activities. These transformations have made very positive impact in the economic status of the population. The rise in middle class income group has made significant impact on the travel pattern of individual due to the change in that's socio economy status. The frequencies, punctuality and service attribute like comfort and convenience are considered as important factors in the choice of mode of travel.Unjha is part of the dedicated Mehsana Special Investment Region of Gujarat. Located near the city of Mehsana.

In case of Unjha, the developments in its adjoining region are the major contributing factors for population growth in Unjha. The distribution of the land use structures is a major phenomenon which controls the spread of the city as well as mobility within the city.In order to understand landuse transport interaction of Unjha, the study has been carried out which leads to evaluate the present context of high mobility need in the different developmental problem which needs to be addressed immediately in order to understand its impact on land use and the accessibility and mobility of individually in the context of activities in and around Unjha. The study also leads to access the mass transportation facilities needs for the movement towards the nearby city Mehsana.

Keywords: land use, transport, traffic, land use transport interaction.

UTILIZATION OF WASTE & RECYCLED MATERIAL IN CONCRETE

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Abstract: More production equals more waste, more waste creates environmental concerns of toxic threat. An economical viable solution to this problem should include utilization of waste materials for new products which in turn minimize the heavy burden on the nation's landfills. Recycling of waste construction materials saves natural resources, saves energy, reduces solid waste, reduces air and water pollutants and reduces greenhouse gases. The construction industry can start being aware of and take advantage of the benefits of using waste and recycled materials. Studies have investigated the use of acceptable waste, recycled and reusable materials and methods. The use of swine manure, animal fat, silica fume, roofing shingles, empty palm fruit bunch, citrus peels, cement kiln dust, fly ash, foundry sand, slag, glass, plastic, carpet, tire scraps asphalt pavement and concrete aggregate in construction is becoming increasingly popular due to the short age and increasing cost of raw materials. In this study a questionnaire survey targeting experts from construction industry was conducted in order to investigate the current practices of the uses of waste and recycled materials in the construction industry. This study presents an initial understanding of the current strengths and weaknesses of the practice intended to support construction industry in developing effective policies regarding uses of waste and recycled materials as construction materials.

Keywords: Recycle, Low Cost, Waste Material use, Light Weight Concrete, PPC, Glass, Quarry Dust, Aggregate.

AUTOMATION OF IRRIGATION AND SOIL MOISTURE BY USING SOIL MOISTURE SENSOR

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Abstract: The most important thing in our lives is water.We won't be able to live without it. As we all know, most gardeners water their plants in the garden using a manual method. This is a wasteful scheme. When we water by hand, the risk of overwatering is high. When we give plants too much water, they will drown. The key cause is a shortage of rain and a scarcity of water in land reservoirs. Water wastage is caused by the constant extraction of water from the earth and the unplanned use of water. Drip irrigation systems are used in modern irrigation systems. The most important benefit is that water is delivered to the root zone of the plants drip by drip, saving a significant amount of water. This method can use a lot of water, or it can take a long time for the water to reach the crops, causing them to dry out. Plants may be harmed by a lack of water until they show signs of wilting. Following a minor water deficiency, the growth rate is slowed, and the fruit is lighter in weight. This problem can be fully solved by using an automated controller-based drip irrigation method, in which irrigation occurs only when there is a high demand for water. An automated watering system is used to solve this problem. Sensors like the soil.

Keywords: Arduino, Irrigation Engineering, Soil Moisture Sensor, Automated Irrigation Mechanism.

ANALYSIS OF EXISTING WATER DISTRIBUTION AND DRAINAGE SYSTEM OF UNJHA CITY

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Abstract: In urban area due to water demand is increasing day by day. In Unjha city water distribution network plays role in supplying water to end to user. With the help of some software which is used for analysis and design of water distribution system. The result may got checked that the pressure at all junction and the floes with at all pipes are feasible enough to provide water to the network of city. The result is help to understand the pipelines system of city in a better way. Rainfall- discharge relationship has very useful parameters for designing storm water drainage network. This research has explained by existing drainage network and problems occur during rainy season. In this research, the selected problem areas are at Unjha city, District Mehsana, Gujarat, India are Umiya mata area (0.174374 km²) & Visnagar chawkdi area (0.194882 km²). By taking an effective step for designing storm water drainage system for analyzing topographic condition i.e. contour map & discharge of rain water over two given area and reduce the effect of high inflow results in downstream side. Based on the rainfall pattern, the runoff will generate throughout the catchment. The rainfall data of 49 years (1965, 1966, 1972 to 2019) has been collected from Gujarat state water data center. To calculate the discharge, rational method becomes safe because as compare to another method, it gives optimum discharge. So by rational method, discharge has been calculated over the two catchment for 49 year of rainfall data. Discharge of Umiyamata area & Visnagar chowkdi area have been determined as 3.04812 m³/sec and 3.055255 m³/sec respectively. Review of source, quantity and quality of water distribution network. To supply safe and wholesome water to consumers. To supply adequate quantity of water. To make water easily available to consumers so as to encourage personal and household cleanliness. To supply water act convenient points and timing. To supply water reasonable cost to the users. To examine previous time drainage system and find out the problems of drainage system in Unjha. To find the runoff of the rain water to analyze the possibilities for redesigning the drainage network system and understand the topographic characteristics. To analyse the storm pattern and respective runoff exerted by analyzing previous years data.

Keywords: Water, Distribution system, Drainage, Rain water, Runoff, Discharge, Velocity.

REDESIGN OF THE DRAINAGE SYSTEM AND FLOOD FLOW OF THE PALANPUR CITY

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Abstract: Rational method has been worked out for calculation of runoff generation in the study Area, Palanpur town, Gujarat which is frequently flooded by mean o f rain in lower topographical area. Whereas the mean annual rainfall in Gujarat nation is 1107mm whereas the study area has mean annual rainfall of 519 mm. The maximum hourly intensity of one hour derived from 40 years rainfall data (provided by SWDC, Gandhinagar) is 33.363 mm/hour. Palanpur Municipal Business Corporation & engineers utilizes the intensity of 55 mm/hour with a repetition c programming language of 3 years. Even metro logical has implied 18.4mm/hour intensity for the take a look at place. The current decomposition demands rainfall intensity of 33.45mm/hour with a repetition interval of 5years the use of facts of 40 years. The beneficial for computing design runoff or discharge. The measured hurricane can be used in storm community designing inside the current decrease flooding zones & its remedial measures has been carried out. The supported rainfall acuity is of 18.Four mm/hour and it can be taken into consideration for the design & it would be sufficient to drain typhoon from city at some stage in heavy rainfall.

Keywords: Rational method, precipitation, hurricane water, Rainfall, Rainfall Decomposition

SMART WATER TAP AND CYBER PHYSICAL SYSTEM FOR DRINKING WATER LEAKAGE DETECTION, MONITORING AND CONTROL

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Abstract: There are many places where in the one can notice drinking water getting leaked or the water tap is intentionally kept open in a casual manner. The single drop of water is precious. Therefore, it is suggested to have some kind of monitoring mechanism to be deployed at appropriate places wherever there is a possibility of water tap being leaked or kept open. Such places could be railway stations, bus stations, hospitals, schools or malls. The idea is to monitor the leak using either camera or electronic sensor. Once the electronic information is available, it can be transmitted using wired and wireless connections to monitoring stations. The action can be initiated by monitoring stations to close the water tap using control signals sent over network with actuators fitted locally. Thus, smart water tap can be designed with integrated electronic sensors and actuators with control signals sent over cyber space or internet. Thus, a kind of Internet of water taps leading to Cyber Physical System for water leakage detection, monitoring and control can be developed.

Keywords: Cyber-physical system, water leakage.

TELEMED DOC- A SAFE AND SECURE SYSTEM FOR MEDICAL DOCUMENTS

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Abstract: In today's time, where handling files has been a task and especially medical reports. It is not feasible to take your reports with you at every place. But your smart phone is with you all the time. We thought of developing a system which stores and secures your medical details and reports and helps you go through it any time. Our "TeleMed Doc" application is the solution to the problem. You can make PDFs by scanning it in the application. You can even upload a PDF or photo from your phone storage. This application will have different folders for your reports and prescriptions. From your basic details to your allergies and medical problems everything is accessible just by one touch. You can view it to figure out the health progress. So, in any case of urgency you can still have access to your reports and is easier for doctor to give you treatment.

Keywords: Reports, medical, PDF, scanning.

STATIC ROUND ROBIN LOAD BALANCING ALGORITHM IN CLOUD COMPUTING ENVIRONMENT

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Abstract: Distributed computing has as of late arose as a trendy expression in the conveyed registering local area ,numerous individuals accept that the distributed computing will reword the IT business as a revolution. It's gives us the methods by which we can get to the application as use our web. In addition, alludes the controlling arranging and getting to the application on the web. Distributed computing is a model for empowering widespread, helpful, on-request network admittance to a common pool of configurable registering resources.(e.g., networks, workers, stockpiling, applications, and services)that can be quickly provisioned and delivered with negligible administration exertion or specialist organization collaboration. . Since all most every one of the enterprises now a days need to utilize these administrations to decrease foundation and support cost, thusly the heap on cloud is expanding step by step. . Adjusting load is one of the greatest issue that distributed computing is confronting today. It just implies that there ought to be an arrangement so no hub is over-burden .Cloud registering is a developing help figuring pattern that offers clients a scope of on-request assortment of administrations from applications, preparing capacity, and capacity dependent on the idea of the "Pay-As- Per-Use" model. Associations from each area are presently understanding the advantages offered by distributed computing innovation and moving towards the cloud. Distributed computing offers various benefits over traditional.

Keywords: Static round robin, Load balancing

CREDIT CARD FRAUD DETECTION USING MACHINE LEARNING

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Abstract: Credit card fraud detection is the most frequently happening issue in the current world. This is because of the ascent in both online exchanges and web based business stages. Credit card fraud occurs for the most part happens when the card was taken for any of the unapproved purposes or in any event, when the fraudster utilizes the credit card data for his utilization. In the current world, we are confronting a great deal of these issues. To distinguish the fake exercises the credit card fraud detection discovery framework was presented. This project motto for focus on machine learning algorithm. The Algorithms utilized are decision tree Algorithms, KNN Algorithms, SVM Algorithms, Logistic regression Algorithms, Random forest Algorithms and the XGBoost Algorithms. The results of these Algorithms depend on accuracy, confusion matrix, and F1-score. XG Boost considered as the best algorithm that is used to detect the fraud.

Keywords: Credit card, Decision Tree, K-Nearest Neighbors (KNN), Support Vector Machine, Logistic regression, Random forest, XG Boost

SENTIMENT ANALYSIS ON SOCIAL MEDIA DATA USING SUPPORT VECTOR MACHINE (SVM)

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Abstract: A social media platform serves as a conduit for people to communicate with one another. Twitter is one of the most widely used social media platforms. Users of all kinds should express their thoughts and opinions on different aspects of daily life. As a result, social media platforms are viewed as valuable data sources for opinion mining. Such information is ideal for sentiment analysis. The computational study of an entity's thoughts, perceptions, and emotions is known as sentiment analysis or opinion mining. The entity may be used to describe an individual, an event, or a subject. The proposed work uses a Support Vector Machine to extract sentiment from tweets about a US airline. The Support Vector Machine (SVM) will find the separated hyperplane that maximizes the margin between the various groups. As a feature extractor, N-gram (bigram and trigram) is used, and the proposed approach's output is calculated in terms of accuracy.

Keywords: Opinion mining, sentiment analysis, sentiment, twitter, Support Vector Machine (SVM), text classification, n-gram.

STOCK MARKET PREDICTION USING FUSION OF CNN+LSTM

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Abstract: Traders have become increasingly reliant on the stock market. However, humans find it difficult to predict the best stock script at the right time to buy or sell from thousands of stock scripts. So, by extracting features from both CNN and LSTM, we expect to forecast stock script selection based on market movement. To improve accuracy in forecasting stock prices, we propose a feature fusion model that combines a CNN and an LSTM to fuse features of different representations from financial time series data. This proposed model is known as a function fusion LSTM-CNN model. When we equate this model to individual CNN and LSTM models, we find that CNN-LSTM outperforms the other two.

Keywords: Stock Market Price Prediction, CNN, LSTM, CNN- LSTM, Machine Learning Methods

EIOT: EDGE COMPUTING WITH INTERNET OF THINGS

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Abstract: The Edge computing paradigm has gained extensive popularity in academic and industrial groups. It serves as a key enabler for many future technologies like 5G, Internet of Things (IoT), and vehicle to vehicle communications by connecting cloud computing facilities and services to the end users. Edge computing has emerged as a new example to solve IoT and localized computing needs. Edge computing will migrate data computation or storage to the network "edge", near the top users. The Internet of Things (IoT) now permeates our daily lives, providing important measurement and collection tools to tell our every decision. The Internet of Things (IoT) and edge computing are related because edge computing addresses IoT challenges like network congestion and latency. Network congestion results from a high density of IoT devices, their performance requirements, and therefore the sheer amount of knowledge they generate. The Internet of Things (IoT) is integrating the physical world with the knowledge world. As more and more sensor devices are deployed in the IoT, It faces several challenges, such as transmission delay, data storage redundancy, and computing delay. The emergence of edge computing can address these challenges possibly. In this paper, we present an in depth survey of the mixing of edge computing and IoT. We briefly introduce the architecture of IoT and discuss a couple of challenges of IoT. Here we conduct a little one survey, analyzing how edge computing expands the performance of IoT networks and breaking down how edge figuring extends the presentation of IoT organizations.

Keywords: Edge Computing, Internet of Things, Security for Intelligent, Edge-Node Vulnerabilities

SECURITY AGAINST DDOS ATTACK TO DEFEND MULTILAYERED ATTACKS USING LINUX FRAMEWORKS

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Abstract: Service availability is very important for any service. Distributed Denial of Service (DDoS) is an attack to diminish or crash service of the victim machine. There are various prevention and mitigation techniques to avoid DDoS attack and it's harmful effect to the victim service. There are mainly two types of DDoS service as per protocol layer which are network or transport layer DDoS attack and application layer DDoS attack. There are various types of attacks as per the type of the protocol they are using like SYN flooding, UDP flooding, ICMP flooding, DNS flooding etc. The techniques like rate limiting, filtering, stateful packet inspection, CAPTCHA etc can be employed to defend and prevent DDoS attack in the network and application layer individually but doesn't work for multilayered attack. So, we have devised an integrated technique which can prevent and mitigate both transport layer DDoS attack and application layer DDoS attack at the same time and thus we can achieve the desired availability of the service.

Keywords: DDoS, Detection, Prevention, Mitigation, Flooding, TCP, UDP, ICMP.

DEVELOPMENT OF CHATTERBOT USING PYTHON

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Abstract: Over recent years we have seen various customs for conversational agents. Chatterbots are conversational agents where a computer program is designed to vitalize an intelligent conversation with the users [7] . These are virtual person who can effectively talk to any human being using interactive textual skills. These are programs that work on Artificial Intelligence (AI) & Machine Learning Platform [1] . NLP plays an important role in training the chatbot. The concept of chatbots came into existence to check whether the machines could trick users and make them think that they are actually talking to humans and not robots. As this idea grow popularly, many different companies started developing chatterbots for different needs [6] . There are many platforms to build the chatbot, this paper mainly concentrates on developing chatbot using python.

Keywords: Artificial Intelligence (AI), Natural Language Processing (NLP).

ONLINE EXAM SYSTEM

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Abstract: Online examination system is a web-based examination system where examinations are given online through the intranet using a computer or system. The main goal of this online examination system is to effectively evaluate the student thoroughly through a totally automated system. It not only reduces the required time but also obtains fast and accurate results.The system can set different authorities for different user groups by various requirements.

Keywords: Exam system, internet, database

ANDROID BASED PLACEMENT MANAGEMENT SYSTEM

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Abstract: The project named "Placement Management System", a student/company information system is a web based system. The project is developed on the basis of "III Cell" being presently used in the University for storing and retrieving the information of students and companies who are registered in III Cell. The III Cell maintains a large database of students wherein all the information of student including the personal records and the academic performance in terms of the SPI and PPI is stored and company information including profile of company, eligibility criteria and facilities it provide etc. The software retrieves this data and displays as per the user requirement.

NEWPIPE-THE SMART AND LIGHTWEIGHT MEDIA PLAYER

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Abstract: The purpose of this project NEW PIPE: is a lightweight YouTube frontend application. This application has been created with the purpose of getting original YouTube experience on your smartphone without annoying advertisement, questionable permission, and many more features. The resolution and codec of the video and audio can be set to save data volume in mobile network. App does not use any Google framework libraries, nor the YouTube API. Websites are only parsed to fetch required info, so this app can be used on devices without Google services installed. Also, you don't need a YouTube account to use NEW PIPE, which is copylefted libre software.

COVID-19 PREDICTION USING X-RAY IMAGES

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Abstract: Covid-19 is a rapidly spreading viral disease that infects not only humans, but animals are also infected because of this disease. The daily life of human beings, their health, and the economy of a country are affected due to this deadly viral disease. Covid-19 is a common spreading disease, and till now, not a single country can prepare a vaccine for COVID-19. A clinical study of COVID-19 infected patients has shown that these types of patients are mostly infected from a lung infection after coming in contact with this disease. Chest x-ray (i.e., radiography) and chest CT are a more effective imaging technique for diagnosing lunge related problems. Still, a substantial chest x-ray is a lower cost process in comparison to chest CT.Deep learning is the most successful technique of machine learning, which provides useful analysis to study a large amount of chest x-ray images that can critically impact on screening of Covid-19. In this work, we have taken the PA view of chest x-ray scans for covid-19 affected patients as well as healthy patients. After cleaning up the images and applying data augmentation, we have used deep learning-based CNN models and compared their performance. This is presents an approach which utilizes a Convolutional Neural Network (CNN) to classify whether the covid-19 positive or not. The accuracy obtained by means of CNN, which is more efficient when compared to accuracy obtained by the traditional neural network systems.

BREAST CANCER DETECTION USING MACHINE LEARNING CLASSIFIERS

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Abstract: In today's world cancer is the most common diseases which lead to the greatest number of death. Cancer is not one disease; it is a group of more than 100 different and distinctive diseases. Cancer can involve any tissue of the body and have many different forms and in each body part. Breast Cancer is a grim disease and it is the only type of cancer that is widespread among women worldwide. As the diagnosis of this disease manually takes long hours and the lesser availability of systems, there is a need to develop an automatic diagnosis system for early detection of cancer. So in this project, we are developing a web-based diagnosis system for which we have done the comparative study of the supervised machine learning classifiers to get to know which classifier is giving the best accuracy. For that, we have taken a dataset from the Wisconsin breast cancer database (WBCD) which is the benchmark database for comparing the results through different algorithms. In which we will use the following classification techniques of machine learning like Support Vector Machine (SVM), K-Nearest Neighbor (KNN), Random Forest (RF), Adaboost Classifier, and XGboost Classifier for the classification of benign and malignant tumor in which the machine is learned from the past data and can predict the category of new input.

REAL TIME OBJECT DETECTION

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Abstract: The purpose of this project is to implement a machine learning algorithm in Python that can recognize objects in a live video stream. The algorithm will be similar to You-Only-Look-Once (YOLO) algorithm, but there will be various optimizations that will be implemented in order to make the algorithm faster and detect objects more accurately. This project will use Artificial Intelligence to allow the user to detect changes in the environment that the user might miss otherwise. The quick detection system can be very useful in providing an autonomous vehicle with a vision to analyze its environment and war the driver of any possible obstacles that are in the car's path. This project can also be used for security surveillance with the ability to notify a user when an intruder is detected.

HOUSE RENTAL MANAGEMENT SYSTEM

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Abstract: This Web Application helps user to register individual home or apartment to assist you in finding the perfect rental home or property. Also we can find your next rental from search view in your targeted area. This website is designed to attend to all our needs from buying property, selling property or renting/leasing of property in India. Here we found the better opportunity to invest our value of entire life. Property helps us to maintain the database of various property & agents information. It not only helps us to maintain the agent information but here we also allow agents to access the portal updated information across the global environment. We know it is a tiring to call individual property agents, arrange appointment, finding better time for appointment and they will assist you. For such complex process we provide a one simple online form which requires your basic information and we will assist in sort time period.

SKIN LESION CLASSIFICATION USING GAN

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Abstract: Early detection and frequent monitoring are critical for survival of skin cancer patients. Unfortunately, in practice a significant number of cases remain undetected until advanced stages, reducing the chances of survival. An appealing approach for early detection is to employ automated classification of dermoscopic images acquired via low-cost, smartphone based hardware. By far, the most successful classification approaches on this task are based on deep learning. Unfortunately, most medical image classification tasks are unable to leverage the true potential of deep learning due to limited sizes of training datasets. Investigation of novel data generation techniques is thus an appealing option since it can enable us to augment our training data by a large number of synthetically generated examples. In this work, we investigate the possibility of obtaining realistic looking dermoscopic images via generative adversarial networks (GANs). These images are then employed to augment our existing training set in an effort to enhance the performance of a deep convolutional neural network on the skin lesion classification task. Results are compared with conventional data augmentation strategies and demonstrate that GAN based augmentation delivers significant performance gains.

EPASS: ONLINE GRIEVANCE REDRESSAL SYSTEM FOR BUS PASS

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Abstract: Online Government Bus Pass Generation system as SAAS for users to get bus passes through online. This system is accepted to develop an application for state transport corporations to perform functionalities like accessing the basic information of a student from educational institutions for authentication and provide Bus pass to a particular student without placing him/her in a queue for a long time and additionally can be extendable for passengers too. This system is helpful to students/passengers to get Bus pass from anywhere in the state and no need to worry about the renewal of Bus pass. Still today in 2021 the controversy is that the manual process is used to do the process of issuing the Bus pass to the students/passengers. This Manual process requires manpower and more time-consuming. To avoid such difficulties we idealize to implement this system.

DESIGN AND DEVELOPMENT OF SEMI-AUTOMATIC EXTERIOR WALL PAINTING MACHINE

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Abstract: The main objective of the project is to design, develop and implement a semi-automatic wall painting machine that can be used to make inexpensive painting equipment. The aim of this machine is to simplify wall painting, which is a cumbersome and time consuming activity. Color chemicals can cause hazards such as eye and breathing problems for human painters. Also, the nature of the painting process, which requires repetitive work and lifting by hand, makes it tedious, time-consuming, and effortless. When construction workers and robots are properly integrated into construction tasks, the entire construction process can be better managed, resulting in labour and time savings, and the ability to reduce human exposure to harsh and hazardous environments or eliminate most problems and Security questions.

Keywords: Wall Painting Machine, Semi-automatic, Exterior Wall.

RECOVERY OF OIL SPILL IN SEA-OIL SEPARATOR

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Abstract: Up to the present day, a large number of significant marine oil spills had devastating consequences for the maritime and coastal environment followed by economical disasters for the local fishing industry and tourism. The risk of further oil spills is present every day in the future. Water is heavier than oil so the oil will float on the top. If there is a container with a bottom drain and filled with water and oil mixture, the oil will float to the top and water can be drained from the bottom. This floating oil can be separated by designing such boats which can extract the oil from the surface of the water. Such devices are called oil skimmer or oil water separators. They extract and separate oil from water by skimming operation. Floating oil is extracted from the water surface by skimming.

Keywords: Oil separator, Oil collector from sea, Water and oil separator

DESIGN AND DEVELOPMENT OF MULTIPURPOSE AGRICULTURE WHEEL SPRAYER

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Abstract: In India agriculture is primary sector. About 60% of population engaged in the activity of agriculture. It makes the majority of people in this sector. Now-a-days, mechanization has stepped in to many sectors. To increase the production rate in agriculture, it becomes necessary to adopt new technology. Overall production which depends on agriculture has been decreased due to various reasons like climatic changes, draughts, etc. But, still it is largest employment source and significant piece of the overall socio-economic development of India. The yield in agricultural crops has been increased compared to past decades. When it comes to the increase in yield of the agriculture product, the main reasons which directly increase yield of crops are water, soil fertility, and pesticides. In many agricultural activities, pesticide spraying is one of important activities. It helps the farmers to save the crops from many insects. Hence, we developed a multiple purpose pesticide sprayer, which helps the farmer to save the time and to increase the quality of spraying. It also reduces the effort done by human. It is good to attach weed cutter below side. Accordingly, huge freedom rests with comprehension with the effect of a pesticide spraying in the field. A pesticide sprayer must be compacted and with an expanded tank limit just as should bring about decreasing of cost, labor and spraying time.

DESIGN AND FABRICATION OF FOUR SIDE SHAPER MACHINE

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Abstract: This paper describes about four side shaper machine using a scotch yoke mechanism which can be used in industries for cutting process. A Shaper is a machine used for shaping (metal removal) operation on the work piece. A usual shaper machine operates by a principle of whit worth quick return mechanism where materials are processed at one end and other end remains idle and in a dual side shaper machine, materials are processed at both ends. But four side shaper machine, materials are processed at four end which become advantageous when compared to usual shaper. Nowadays, Industries try to achieve high production rate at a minimal amount of time, cost etc. Usage of four side shaper machine eliminates most disadvantages faced by a single side shaper. The main advantage of four side shaper is that it decreases time as well as production cost. Thereby it increases productivity. Another advantage is that number of moving parts is less when compared to usual machine. This model uses a single power source which can be connected to gears for increasing or decreasing the speed of cut.

AUTOMATIC HAND SANITIZER DISPENSER AND OBJECT STERILIZING UNIT

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Abstract: An automatic hand sanitizer dispensing machine is automated, non contact, alcohol based hand sanitizer dispenser, which finds its use in hospitals, work places, offices, schools and much more. Alcohol is basically a solvent, and also a very good disinfectant when compared to liquid soap or solid soap; also it does not need water to wash off since it is volatile and vaporizes instantly after application to hands. It is also proven that a concentration of >70% alcohol can kill corona virus in hands. Here, an ultrasonic sensor senses the hand placed near it, the Arduinouno is used as a microcontroller, which senses the distance and the result is the pump running to pump out the hand sanitizer. Sterilization and disinfection are the basic components of hospital infection control activities. Every day, a number of hospitals are performing various surgical procedures. Even more number of invasive procedures is being performed in different health care facilities. The medical device or the surgical instrument that comes in contact with the sterile tissue or the mucus membrane of the patient during the various processes is associated with increased risk of introduction of pathogens into the patient's body.

Keywords: Dispenser, Hand sanitizer

DESIGN AND DEVELOPMENT OF MODERN FIXTURE FOR WIRE CUT EDM

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Abstract: In machining fixtures, minimizing work piece deformation due to clamping and cutting forces is essential to maintain the machining accuracy. The various methodology used for clamping operation used in different application by various authors are reviewed in this paper. Fixture is required in various industries according to their application. This can be achieved by selecting the optimal location of featuring elements such as locators and clamps. The fixture set up for component is done manually. For that more cycle time required for loading and unloading the material. So, there is need to develop system which can help in improving productivity and time. Fixtures reduce operation time and increases productivity and high quality of operation is possible.

Keywords: Fixture, EDM, wire cut, work piece holding, angular cutting, Fixturing principles: Fixture configuration: Modular fixtures CAD/ CAM integration

AUTOMATIC MASK VENDING MACHINE AND HAND SANITIZATION MACHINE

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Abstract: The main objective of the project is to design, develop the automatic mask vending machine and automatic hand sanitization machine that can be used to simplify selling of mask and to stop the spreading of corona virus due to hand to hand transformation of any things and goods. corona virus is spread by hand to hand transformation and people cloud at one spot also, the selling process, which require repetitive works and time consuming and hand to hand transformation of virus. When construction workers and robots are properly integrated into construction tasks, the entire construction process can be better managed, resulting in labour and time savings, and the ability to reduce hand to hand transformation of virus or eliminate most problems and Security questions.

Keywords: arduino, corona virus, solenoid valve, sanitizer, dispenser circuit