



AISSMS

COLLEGE OF ENGINEERING

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DEPARTMENT OF FIRST YEAR ENGINEERING'S
TECHNICAL MAGAZINE

"TECHNICAL TRENDS"

2019-2020



Our Inspiration



Shri Shahu Chhatrapati Maharaj
President, AISSMS

From Principal's Desk



Dr. D S Bormane
Principal AISSMS COE, PUNE

I'm glad to signify that with commencement of this year 2017, AISSMS College of Engineering has completed 25 grand years of its establishment. AISSMS COE as an outcome of academic excellence achieved, is consistently producing University gold medallists and top rankers in different branches of engineering. Faculty is actively involved in research and development. College has number of very high-end analytical, computational and experimental facilities at the disposal of students. We are going to concentrate more upon the Engineering Research activities and use those for students and society welfare. I am confident that the College is in a position to deliver the best theoretical and practical training to the students and offer the best talent to the employers. I wish all the best to the aspiring students, employers and all other stake-holders in achieving their goals.

All India Shri Shivaji Memorial Society's College of Engineering

Vision

Service to Society through quality education.

Mission

- ☐ Generation of national wealth through academics and research.
- ☐ Imparting quality technical education at cost affordable to all strata of the society.
- ☐ Enhancing quality of life through sustainable development.
- ☐ Achieving the distinction of highest preferred engineering college by stake holders.
- ☐ Carrying out high quality intellectual work.

Goals:

- ☐ To inculcate learning habits
- ☐ To create an environment to make the students creative and innovative
- ☐ To promote project based learning.
- ☐ To strengthen industry – institute interaction.
- ☐ To ensure continuous improvement in quality.
- ☐ To develop entrepreneurship skills.
- ☐ To nurture the spirit of team work.
- ☐ To catalyze all – round development of students.
- ☐ To develop technologies for sustainable development.

From Editorial Desk.....

Technical Trends is a magazine that speaks volumes about the hard effort taken by the faculty members and students to plunge into the areas of research, environmental awareness and latest technologies. We at the department of First Year Engineering, draw the advantage of being multidisciplinary, leading to diverse projects from students and faculty. We represent a bouquet of vivid specialities showcased through one magazine “TECHNICAL TRENDS” This magazine will be published every semester enhancing the zeal within its stakeholders to achieve beyond the established benchmarks. Let’s raise the bar of our magazine by being an inevitable part of it. Remain Blessed!

Prof. Shilpi Bhuinyan

Prof. M A D’Cruz.

From FE Head of Department's Desk.....

First Year Engineering plays a pivotal role in ushering the students to be a prospective engineer. The department nurtures and molds the students to enter in the rapid fast changing pragmatic world yet maintaining the sensitivity in them. The teaching –learning methodology used by staff boosts the students thinking potential and lifts their critical analyzing skills .As most of the students come from the diversified social environmental it becomes a need for the department that they are mentored by the staff with whom they can share their thoughts,expectations,express themselves and would feel comfortable away from home.

What the stakeholders are usually interested in is the staff, isn't it? So we as the department is the family of 32 faculty and 5 supporting staff for 11 divisions each with 60 students. The department has well qualified and experienced staffs that is always on their toes. The faculties have excellent academic records and are highly regarded amongst students. The various subjects offered to students in First Year, though common to all branches ,essentially lays a strong foundation to emerge as a potential engineer.Hence,Our Self –motivated staff wholly dedicated to the first year department, do their best and try to make the subjects simple and interesting.

The activities like Expert Lectures, Site Visits, Technical Events, Sports and Cultural Events, Soft Skills etc widens their horizon and avert them from being monotonous with academics.

To conclude, the department Catalyzes and assures a very healthy, amicable but a competitive ambience for our future engineer.



Prof V.R. Patil
Head FE Department

Department of First Year Engineering

Introduction

As the students are now geared to Explore the vast ocean that invariably Allures them and have gamut of Rainbows to be coloured, we too as the department also have certain specific Vision & Missions to be accomplished in the precincts of the department.

Vision

Impart students with pre-requisites of technical knowhow's to expedite.

Mission

- ☐ Embed crucial thinking and analytical reasoning ability required by respective disciplines/courses/branches.
- ☐ Cultivate students to deal with stress and anxiety imposed by academics and social milieu.
- ☐ Nurture students to emulate and inculcate the judicious nature demand by the multifaceted world.

Short Term Department Goals:

1. Modernization of Laboratories
2. Improvement in University Results
3. Emphasis of ICT for improvisation of Teaching –Learning Methodology
4. Strengthening Collaborative Research across various Institutes, Colleges, Industries, etc
5. Motivating all the PG faculty for pursuing PhD

Long Term Departmental Goal:

1. Development of e-classrooms
2. Promote every student to higher class
3. Embed the quest for knowledge amongst faculty
4. Resource generation through Consultancy & Research
5. Comprise of Counselling and Mentoring Cell for students & faculty.

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A Study on Performance and Emission Characteristics of Diesel Engine for Lower Blends of Karanja Biodiesel

V. R. Patil, S. S. Sane, and S. S. Thipse

Abstract: Increased numbers of vehicles are causing higher consumption of petroleum fuels leading to depletion of conventional fuel reserves. Hence, there is a need for alternative fuel, which will fulfil the demand. Biodiesel is one of the environment-friendly, renewable alternative biofuel which can be obtained from vegetable oils. Blends of various bio fuels were used by researchers but there are limitations on the percentage of vegetable oil in diesel as emission norms are becoming stringent. Recently, the Government of India has announced that country is going to implement BS VI emission norms by 2020 and higher blends, i.e. B20 and above B20 are not satisfying these norms. Presently, very limited information is available on the use of lower biodiesel blend as a fuel in diesel engines. In this work, efforts are made to study the effect of lower blends of Karanja biodiesel as a fuel in a diesel engine to evaluate its performance and emission characteristics. The engine performance test was conducted on single cylinder four stroke diesel engine with lower blends of Karanja biodiesel (B5, B7, B10), B20 and diesel fuel to find brake thermal efficiency and BSFC. HC, CO, CO₂ and NO_x emissions also have been monitored. Results showed the brake thermal efficiency of all lower blends (B5, B7, B10) is high compared to diesel fuel at full load of the engine. BSFC of all lower blends (B5, B7, B10) is low at part load and almost the same as that of diesel fuel for maximum load. HC and CO emissions were less compared to diesel fuel. Also, a significant reduction of NO_x was observed for B5, B7, B10.

Keywords: Biodiesel · Higher blends · Lower blends · Diesel engine · Emission

On coefficient inequalities for certain subclasses of meromorphic bi-univalent functions

Amol B. Patil¹, Uday H. Naik²

Abstract: In the present paper, we investigate and define two subclasses of meromorphic bi-univalent function class Σ' which are defined on the domain $U^* = \{z \in \mathbb{C} : 1 < |z| < \infty\}$. Further, by using the well-known coefficients estimates of the Caratheodory functions (i.e functions with positive real part) we obtain the estimates on the coefficients $|b_0|$, $|b_1|$ and $b_2 + b_0^3$ for functions in these subclasses.

Keywords: analytic function, meromorphic function, univalent function, bi-univalent function, meromorphic bi-univalent function.

Improved Estimates on Initial Coefficients of Certain Subclasses of Bi-univalent Functions

Amol B Patil¹ and Uday H Naik²

Abstract: In the present paper, we derive estimates on initial coefficients $|a_2|$, $|a_3|$ and $|a_4|$

For functions belong to the two well known subclasses $T\Sigma(\beta)$ and T_Σ^α of the bi-univalent function class Σ defined in the open unit disk U . These estimates show improvements in the earlier known estimates for the two subclasses.

Keywords: Analytic function, Univalent function, Bi-univalent function, Coefficient estimate.

Mathematics Subject Classification 2010: 30C45, 30C50

Study of Micro Hydro Power Plant for Rural Electrification

Prof. P. Satarkar¹, Rahul B. Lonkar², Hrishikesh D. Sargar³, Rakesh R. Sarda⁴,

Shubham B. Yadav⁵

Abstract: Energy generation through water is one of the most economic sources of power. Among the hydro-power plants, micro-hydro power plants are more preferred since they require lower heads and smaller flow rates to generate electricity. The main advantage of micro-hydropower plants is the combination of feasibility, ease of installation, efficiency and economy into a single source of power. In the category of micro-hydro power plants, gravitational water vortex power plants are emerging currently due to their ease of installation, reduced setup time and minimal expertise required for installation. The Parabhani, Nanded, Jalna region in Maharashtra has water resources with low head and medium to high discharge conditions. Hence, the people of these regions are not being able to utilize the water resources available near them due to the limitation of technology. This study is intended to serve the purpose of further research of ultra-low head gravitational water vortex turbines useful for power generation in these regions.

Key Words: Gravitational vortex turbine, Micro hydropower plant, Electricity generation.

Economical Design of Bridge Component

Aditya Nanaware¹, Mahesh Neman² Prof. P. Satarkar³

Abstract: Bridges are the lifelines and supporters for the improvisation of the road network. Not only do the bridges help in traffic flow without any interference but also maintain the safety of roads. Due to this reason the bridges design has gained much importance. This paper is basically concerned about the analysis and design of Component Bridge using Staadpro and IRC-6 1966. The focus of this paper is designing the bridge component as per relevant IRC code & comparing Economical of design with software analysis. Factor considered during Economical of design are accuracy and complexity of design. Above key factors should help to propose economical way of design of bridge component.

Keywords:- IRC6-1966, Staad pro V8i

Investigation of host-guest complexation of the ternary model: p-Sulfonatothiacalix [4] arene-fluorescein-M2+

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Abstract: In comparison to traditional calix[4]arene, thiacalix[4]arene is unique due to its bridging S-atoms. Therefore, functionalized p-sulfonato thiacalix[4]arene has been used for the detection of some transition metal ions. The inclusion behavior between the important water soluble p-sulfonato thiacalix[4] arene with fluoresce in and M2+ (Co2+, Ni2+, Cu2+, Zn2+) ions has been studied using a spectro fluorometric method. 1H NMR, 2D NMR and IR spectra also supported the complexation. The complex stability follows the order Cu2+ > Zn2+ > Co2+ > Ni2+, which is supported by the Irving-Williams series. The combined results demonstrate the cooperative interaction of the M2+ ions with p-sulfonato thiacalix[4] arene and this is further supported by a molecular docking study.

Keywords: p-sulfonatothiacalix[4] arene, ternary system, molecular docking, cooperative binding

pH Dependent Self-Assembly of Single-Pyrene-Armed Calix [4] arene: Modulation and Complexation with p- Sulfonatocalix[6]arene

Vrashali S. Kalyani,^{*[a, b]} Sharadchandra T. Gawhale,^[c] Nilesh V. Rathod,^[a, d] Prabhat K. Singh,^{*[d, e]} and Dipalee D. Malkhede^{*[a]}

Abstract: The photophysical behaviour of a single Pyrene substituted calix[4]arene derivative (MPCX4) has been investigated, as a function of pH, using steady state fluorescence and time-resolved emission spectroscopic techniques. An interesting dimer emission band has been observed exclusively in the alkaline solution (pH > 8) which has been attributed to the hydrophobic and stacking interaction between the pyrene moieties of the adjacent MPCX4 molecule. The self-assembled MPCX4 is disrupted by the introduction of another calixarene based host, p-sulfonatocalix[6]arene (SCX6), which eventually leads to the 1:1 complex formation between MPCX4 and SCX6, which is further characterised by 1 HNMR, FT-IR and HR-MS techniques. This complexation between MPCX4 and SCX6 also leads to the modulation of the prototropic equilibrium of MPCX4.

The investigation of cooperative binding between p-sulfonatocalix[6]arene and fluorescein with transition metal ions by spectrometrically

Sharadchandra Gawhale^a, Nilesh Rathod^b, Sanhita Patil^c, Rupali Thorave^e, Vrashali Kalyani^e, Rajesh Sapkal^c, Vilas Sapkal^c, Gajanan Chaudhari^{d,*} And Dipalee Malkhede^{e,*}

Abstract: The ternary complexes are formed by self-assembly through cooperative hydrogen bonding between p-SCX6-FL and M^{2+} through water molecule which is reinforced by columbic and electrostatic interactions. The binding efficiency of Cu^{2+} and Zn^{2+} is observed at a greater extent than Co^{2+} and Ni^{2+} . Furthermore, the kinetic study of p-SCX6-FL- Cu^{2+} 2? and Zn^{2+} reveals that the process of complexation is slower than the binary system (FL+p-SCX6).

Keywords. p-sulfonatocalix[6]arene; ternary system; cooperative binding.

Recommendation System Using Sentiment Analysis

Supriya Manglekar, Shrutika Kakde, Pragati Kumar, JSS Krishnakanth

Abstract - In this quickly developing period of advances, clients or customers assume an exceptionally essential job in basic leadership then it is possible that it will be for business associations, corporate associations or other individual shoppers. Consequently for business development or shopper fulfilment it is important to make strategies or systems that naturally takes a shot at characterization about any items. This technique can be accomplished by building a proposal framework utilizing an ebb and flow look into point in the field of content mining known as slant examination. An effective suggestion framework can be characterized as a framework which encourages client to settle on choice in numerous viewpoints. In actuality, building such a framework will be an extremely troublesome methodology. In this venture, we will attempt to discover the answer for conclusion in various areas, Sentiments of clients with respect to the items gave by sites like Twitter, Amazon, Flipkart, Oyo, Zomato, Olx are considered. Assessments of the clients are as appraisals and surveys. The principle objective of this work is to consolidate suggestion framework and feeling examination to get a progressively precise framework for clients.

Keywords- Natural language processing, polarity, support vector machine, opinion classification, statistics (key words).

DCRM Analysis Using MATLAB Programming

Bhagyashree Bobdey

Abstract— Circuit Breakers are mechanical device used to interrupt electrical current. In power system, it is often necessary to switch on or off various electrical devices and circuits like generating plants, transmission line, distribution systems, etc. either in normal operating conditions or under abnormal situations. In this paper, the circuit breaker's condition is assessed by analysis of non linear signature of its contact resistance and contact travel.

Keywords— circuit breakers (CBs), Dynamic contact resistance measurement (DCRM), contact resistance, contact travel

Survey on Clustering Methods for Intelligent Data Mining

Aradhana. S. Ghorpade

ABSTRACT: In this paper we take into cautious ideas utilized for algorithmic and information mining Point of view of Social Networks.. Barely any such factors incorporate the accessibility of colossal measure of online information, the portrayal of Online Social Network (OSN) information as diagrams, etc .the diverse information mining systems and Restriction looked by this strategy are talked about subsequently, this paper gives a thought about the key subjects of utilizing Information mining in OSNs which will assist the scientists with solving those issues that still exist in mining OSNs. New methodology is presented for mining web based life.

KEYWORDS: clustering, Online Social Networks, Data Mining, network based modeling.

Review on Numerical Modelling Studies to Optimize the layout of Fishery Harbour on the West Coast of India

Prof. Shilpi S. Bhuinyan¹, Dr. Prabhat Chandra², Mr. Amol Borkar³, Ketan Jadhav⁴,
Pranav Vaishampayan⁵, Varun Khengare⁶, Abhishek Deshmukh⁷

Abstract - For any harbour, one of the main criteria is to ensure safe ship berthing and achieve an acceptable level of wave disturbance within the harbour basin for better optimization of the harbour layout. The breakwaters sheltering, wave reflection, wave transmission studies are considered to achieve the above. In the paper, a site along the West coast of India is selected to carry out such studies. The study was carried out in 2 parts include; using MIKE 21-SW model (wave height transformation from deep water to 10m depth) and MIKE 21-BW model (for determination of near shore wave climate). A modified layout of the site was prepared to check the possibility of reduction in the breakwater lengths. The suggested layout as well as the modified layout was analyzed for tranquility condition. The mathematical model studies were carried out for the two layouts; and the layout which was within the permissible limits of the studies was determined.

Key Words: Harbour, MIKE 21, Wave tranquility.

Efficiency of Ecosphere as cement replacement material for strength performance of siporex and Conventional Red Brick

Shilpi Sippi Bhuinyan¹ K N Kulkarni² S P Khedekar³

Abstract: Cement and aggregates are important constituents of concrete production. The aggregate's share is 75 percent in concrete; and offers concrete volume; these aggregates have the natural resources. It takes enormous amounts of natural resources to produce these constituents. The adverse effect on the ecosystems due to this large quantity depletion of natural resources. The concrete has some of the above-mentioned disadvantages such as heavy weight, low resistance to sulphate or chemical attack, deterioration in the marine structure, enhancing the use of materials other than concrete components and having the same chemical and physical properties. There are many admixtures, polymers, minerals, and by-products used in the present industry to improve above concrete drawbacks, as well as physical and chemical properties.

Keywords: ECOSPHERE, compressive strength, water absorption, density

Design of EPS Geofoam as a Pavement Block

Prof. Shilpi S. Bhuinyan¹, Shantanu Dahatonde², Ashutosh Jagtap³, Shubham Baghele⁴,
Shubham Bhang⁵

Abstract- Expanded polystyrene Geofoam (EPS) has offered solutions to many civil engineering problems associated with pavement construction. Issues, such as the construction of pavements on low bearing capacity sub grade soils (such as peats and clays), or in regions with severe winters, and the construction of pavements over underground services, these all have been overcome with the use of EPS Geofoam. From this paper it is concluded that this material is used for many pavement applications and these include the use of EPS Geofoam as a lightweight fill, as a thermal insulator, a vibration dampener, and for the protection of underground services. But, there are a number of barriers that are stopping the use of EPS Geofoam from becoming standard worldwide. Thus it requires a development and proliferate technical knowledge to avoid the inefficient, and even the incorrect use of EPS Geofoam and there is also room for research in the development of latest and innovative applications for the use of EPS Geofoam, and for the development of updated standards and test procedures. To facilitate research in these areas, this review paper discusses the design considerations.

Keywords: - Expanded polystyrene, densities of Geofoam, design consideration.

*“Make your life a Master piece Imagine no limitations on
what you can be, Have or Do”*

-Brian Tracy

STUDENTS' TECHNICAL ARTICLES

Adaptive Headlamps Using Arduino

Ameya Kulkarni, Kunal More, Ansarali Nadaf, Samarth Nirali, Aniket Kinkar

Adaptive headlights are an active safety feature designed to make driving at night or in low-light conditions safer by increasing visibility around curves and over hills. When driving around a bend in the road, standard headlights continue to shine straight ahead, illuminating the side of the road and leaving the road ahead of you in the dark. Adaptive headlights, on the other hand, turn their beams according to your steering input so that the vehicle's actual path is lit up. Similarly, when a vehicle with standard headlights crests a hill, the headlight beams temporarily point upwards towards the sky. This makes it difficult for drivers to see the road ahead and for oncoming motorists to see the driver approaching. In contrast, adaptive headlights use a self-levelling system that points the light beam up or down, according to the position of the vehicle. Adaptive headlights are also sometimes called active headlights or adaptive front-lighting systems. Adaptive headlights also benefit other motorists on the road. For example, when a vehicle turns around a bend in low-light conditions, standard headlights will temporarily point directly at oncoming traffic. This can lead to discomfort and temporary blindness for oncoming motorists. This problem is avoided with adaptive headlights, since their beams stay on the road and do not point at oncoming traffic. In addition, since headlight beams do not point at other motorists, it is safe for drivers who own a vehicle with adaptive headlights to use bi-xenon lights. Emitting a slightly bluish tint, these lights are brighter than standard lights and offer a clearer, more distinct view of the road ahead. Adaptive headlights are now listed as standard equipment on many top-spec vehicles, but they're still so new, they remain unfamiliar to most drivers. An active safety feature which enhances the field of vision in night driving, adaptive headlights allow the driver to quite literally see around corners or far into the distance. Manufacturers have different systems using either sensors or cameras - or a combination of both - to monitor the car's position and alter headlight function accordingly. As we know we lose many lives in road accidents now a days and almost 50 % of night road accidents happen due to dim illumination by car lights. On the other hand, we have all been dazzled by headlights at some point, whether it's from oncoming traffic or someone behind, only to discover that the offending car is actually on dipped beam.

To put this whole system into practical use, there is a critical function that needs to be analyzed, which is to determine maximum turning angle of the car, which ranges from 32° to 36° for either side. As the steering wheel angle is limited to 36° per side, the headlights which are mounted on the shafts of the servo motor and it rotates along with the turns of the servo motor for turn angle of 20° per side. Moving the headlight from left to right or vice versa continuously corresponding to a steering sensor is achieved. The system is to improve the visibility of the drivers particularly during the night, thereby avoiding accident more efficiently. Furthermore, the system is of inexpensive simple and dependable assembly.

Construction Contract: - Litigation and Liability Issues

One of the primary purposes of a construction contract is to allocate risk and define the respective responsibilities of the parties. And lawsuits based on negligence are today considered the most common kind of civil action in the area of tort law. It occurs when a person fails to exercise the standard of care that a reasonable, prudent person would have exercised in a similar circumstance (this is sometimes called a lack of “due care”). Very often the bottom line in assigning culpability for failure issues or construction disputes is narrowed down to a result of negligence, ignorance, or incompetence. In fact, property developers and project owners every now and then argue that a construction contractor or the contractor’s principles was negligent in the execution of the construction work. This argument may be a result of the owner’s failure to protect or preserve his/her rights under the contract. Tort law in the United States is generally defined by state rather than federal law. Negligence cases often get to federal court through diversity jurisdiction, even though the case will typically be tried with some state’s negligence law as the basis for decision. It should also be noted that the state law of negligence is usually common law rather than statutory law, with the effect that what is determined to be a lack of due care will differ from one jurisdiction to another. Moreover, in a negligence suit, the plaintiff has the burden of proving that the defendant failed to act as a reasonable person would have acted under the circumstances. The court will be expected to instruct the jury as to the standard of conduct required of the defendant.

Gross negligence is when a person or party shows unrestrained disregard of consequences; where ordinary care is not taken in circumstances where, as a result, injury or grave damage is likely. A determination of gross negligence is a legal conclusion that can only be arrived at by a court of law. The distinction between ordinary negligence and gross negligence amounts to a rule of policy that a failure to exercise due care in such situations as where the risk of harm is great and will give rise to legal consequences harsher than those arising from negligence in less hazardous situations. Negligence is also said to occur when something is omitted that ought to be done.

With respect to design professionals, evidence of negligence is often noticed in the preparation of contract documents. For example, where there is a lack of coordination between construction drawings and site conditions or in evident discrepancies between building plans or specifications and shop drawings. When a design professional can be shown to be negligent, his/her license to practice may be temporarily or permanently revoked. However, while design professionals are required to possess and apply the same degree of skill, knowledge, and ability of other members of their profession and are required to exercise a standard of care and expected to apply their best judgment in executing the assignment, they cannot assume or guarantee that a perfect set of plans or contract documents will be provided or guarantee that the outcome will always totally achieve the owner’s or consultant’s objectives. It is important therefore that design professionals not undertake projects that clearly exceed their technical abilities or exceed those of the personnel available to work on the project. Only experienced, competent, and qualified staff should be assigned to a task. Junior and inexperienced personnel must be carefully supervised by fully qualified professionals. Outside consultants may be required to supplement the firm’s own capabilities to achieve optimum results...

***:-Patil Kalpesh P.
F.E. (CIVIL-B)***

3D Crosswalks Design

Janhavi C Thakare, Rutuja S Wagh, Radhika S Mache, Prajakta H Dalvi

One of the biggest problems in road traffic is the large number of Accidents involving pedestrians, since the probability of An accident Result in the death of the pedestrians is very large. Although the Road environment contains horizontal signalling like the white Strips present on the crosswalks, according to some surveys, 37% of The pedestrian injury accident happened AT the crosswalk. In Portugal At 2016, there were 32.299 roads accidents resulting in 445 deaths and 2102 serious injuries. Pursuant to ran over, there were 5090 accidents resulting in 79DEATHS And 437 Serious injuries. In other countries such As china, where the crashes Between motor vehicle And pedestrian / cyclist account for 30.6%Of fatal injury on china's' urban roads and About 12.4% of these Accidents occur on crosswalks And the USA, where in 2013 , there Were 4735 pedestrians killed in traffic crashes and pedestrian Fatalities account for 14% of All USA traffic fatalities. A highly dynamic relationship between vehicles, road Environment and other road users (pedestrians and non-motor Vehicles), being difficult to control and predict, And so, pedestrians Being the most vulnerable in this dynamic because of their light And fragile bodies, low travel speeds And lack of protection in Accidents. Among other causes like poor visibility of pedestrians, driving on the Alcohol effect, disobedience of pedestrians, vehicle speed is considered the major cause for this type of accident, according to girder there is A strong relationship between vehicle-pedestrian crash severity And speed, At A collision speed of 50km/h, the risk of pedestrian fatally injured is almost eight times of 30km/h.

There are several types of strategies to try to reduce the number of accidents such AS speed controlled traffic lights and light elements next to the crosswalks. The result of his study suggested that the use of parallelogram-shaped pavement markings reduced both the frequency AND severity of crashes AT pedestrian crosswalks, and A significant effect on reducing the vehicle–pedestrian crashes. Countries such As India, South Africa, Iceland and France have changed the design of the crosswalks to A three-dimensional ASPECT so that the visual stimulus is greater in the eyes of the drivers.

3D crosswalk is a method that can reduce the speed of Cars and that due to the optical effect only working from A Certain angle there is no need for sudden braking which could Cause accidents. One of the ways to verify if the visual stimulus is greater And If this stimulus influences the behavior of the driver is to evaluate the reaction time in each type of crosswalks. According to ANSR, national highway safety Authority from Portugal, there Are several factors that Influence the increase of this time, such AS Alcohol intake, Fatigue, intake of drugs, Aging, And the use of the mobile Phone while driving.



3D Password Authentication

Saba Syed, Tanvi Paigude, Gunjan Sharma, Lakshmi Panch, Tejal Thakare

Normally the authentication scheme the user undergoes is particularly very lenient or very strict. Through out the years authentication has been a very interesting approach. With all the means of technology developing, it can be very easy for 'others' to fabricate or to steal identity or to hack someone's password. Users nowadays are provided with major password stereotypes such as textual passwords, biometric scanning, tokens or cards (such as an ATM) etc. Mostly textual passwords follow an encryption algorithm as mentioned above. Therefore we present our idea, the 3D passwords which are more customizable and very interesting way of authentication. Now the passwords are based on the fact of Human memory. Generally simple passwords are set so as to quickly recall them. The human memory, in our scheme has to undergo the facts of Recognition, Recalling, Biometrics or Token based authentication. Once implemented and you log in to a secure site, the 3D password GUI opens up. This is an additional textual password which the user can simply put. Once he goes through the first authentication, a 3D virtual room will open on the screen. In our case, let's say a virtual garage. Now in a day to day garage one will find all sorts of tools, equipment's, etc. Each of them having unique properties. The user will then interact with these properties accordingly. Each object in the 3D space, can be moved around in an (x,y,z) plane. That's the moving attribute of each object. This property is common to all the objects in the space. Suppose a user logs in and enters the garage. He sees and picks a screw-driver (initial position in xyz coordinates $(5, 5, 5)$) and moves it 5 places to his right (in XY plane i.e. $(10, 5, 5)$). That can be identified as an authentication. Only the true user understands and recognizes the object which he has to choose among many. This is the Recall and Recognition part of human memory coming into play. Interestingly, a password can be set as approaching a radio and setting its frequency to number only the user knows. Security can be enhanced by the fact of including Cards and Biometric scanner as input. There can be levels of authentication a user can undergo.

The 3D password can have a password space that is very large compared to other authentication schemes, so the 3D password's main application domains are protecting critical systems and resources.



Face recognition

Pratik Jagdhane, Suyog Choudhari, Fardin Deshmukh, Nikhil Gandhile, Vaibhav Barbade

In Face Detection and Recognition systems, the flow process starts by being able to detect and recognize frontal faces from an input device i.e. mobile phone. In today's world, it has been proven that students engage better during lectures only when there is effective classroom control. The need for high level student engagement is very important. It is a combination of face detection and recognition techniques in image analyzes. Detection application is used to find position of the faces in a given image. Recognition algorithm is used to classify given images with known structured properties, which are used commonly in most of the computer vision applications. Face recognition technology has come a long way in the last twenty years. Today, machines are able to automatically verify identity information for secure transactions, for surveillance and security tasks, and for access control to buildings etc. These applications usually work in controlled environments and recognition algorithms can take advantage of the environmental constraints to obtain high recognition accuracy. However, next generation face recognition systems are going to have widespread application in smart environments – where computers and machines are more like helpful assistants.

To achieve these goal computers must be able to reliably identify nearby people in a manner that fits naturally within the pattern of normal human interactions. They must not require special interactions and must conform to human intuitions about when recognition is likely. This implies that future smart environments should use the same modalities as humans, and have approximately the same limitations. These goals now appear in reach -- however, substantial research remains to be done in making person recognition technology work reliably, in widely varying conditions using information from single or multiple modalities.

I'VE GAINED A NEW PHILOSOPHICAL STANDPOINT ASIDE FROM PHOTOGRAPHY SKILLS."

– MARK ALLEN

The Rolling Bridge

Harshavardhan S Ket, Gaurav R Katke, Arbaj B Korabu, Rushikesh A Jagtap, Tejas D Khedkar

The Rolling Bridge is a type of curling moveable bridge completed in 2004 as part of the Grand Union Canal office and retail development project at Paddington Basin, London.



While its designer refers to this particular structure as; The Rolling Bridge, this should probably be regarded as the name for this particular bridge rather than a term to refer to its type, which could be more accurately described as a curling bridge. This name is used by some to refer to this bridge. At present, this curling bridge is the only one of its type known to be in existence. Traditional use of the term “rolling bridge” dates from at least the Victorian era , and is used to describe a type of retractable drawbridge used to span a ditch or moat surrounding a fortification. That type of bridge is not hinged, and remains horizontal when it is rolled inside the gates of a fort. Modern versions are called retractable bridges or thrust bridges. One particular version of the rolling bridge type was known as the Guthrie Rolling Bridge, examples of which may still be seen at Fort Nelson, Portsmouth. Certain types of bascule bridges roll on an arc; an example is the Pegasus Bridge.

Advantage

Movable bridges are generally found spanning waterways, providing land traffic with a safe means of crossing water while at the same time serving to allow water traffic, such as large freighters, passage in situations where a fixed bridge would not. Movable bridge design also offers the advantage of lower price, due to the absence of high piers and long approaches.

Disadvantages

The principal disadvantage to movable bridges is that the traffic on the bridge must be halted when the bridge is opened for passages.

Earthquake Detector Using Arduino Uno

Neha Pawar, Sharyu Patil, Ruchita Rananaware, Hasari Petkar

An earthquake is an unavoidable and unpredictable natural phenomenon that sometime's causes damage to lives and property. We can not stop this phenomenon but we can stay alert and aware using technology. This project is an initiative ,to be stay alert and aware before the earthquake come. Technology we use in this module is very cheap and handy all the components are easily available in the market and less power consuming , so that a user do not have any problem to run the device 24*7 for all 365 days. This module cotains Arduino UNO chip as a central component of device , MPU6050 sensor is the brain of module which detects all the motions in three dimentions, inductor and capacitors to match the impedance with the input impedance of module so that it can not damage device , transistor used for switching the circuit, wires for connections, LED and Buzzer used as aoutput indicator, LED display to get the output figures of motion in 3-D, At last a Breadboard to impliment all the components to complete the desired circuit. Now this device is used to be in the buildings, Buzzer and led light will aware the member of the building about the earthquake with all parameters so that they can evacuate.

Earthquake is the trembling caused in the surface of the earth, which is caused by immediate energy released plates in the lithosphere layer of the earth which is resulted into creating waves refer to as seismic waves.

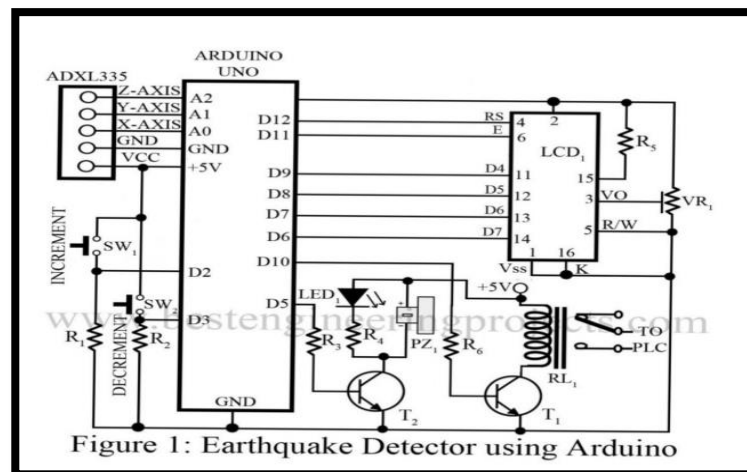
Earthquake is caused by a vibration that occurs on the earth surface. It is the shaking of earth surface that is refered to as the earthquakes. Earthquake differs in parameters from the ones that can be hardly felt to the ones that are capable of tossing buildings around.

Earthquake can also leads to landslides and can often cause volcanic activities. It is capable of even causing up tsunami as with the earth's tectonic plates shaking it can lead to raised water levels and therefore various water calamities. The point where the earthquake is caused or the initial rupture is refered to as the focus or hypocenter epicentre. Many much casualties occurs during this time including the loss of lives and properties. Hence, the earthquake detector.

Earthquake detector is a safety that can be used in homes as it senses the earth's seismic vibration which can be used to alert the people of few seconds an earthquake occurs. The waves that emitted by this device are of two types: Dangerous waves and small waves that can be used to vacate accordingly. As the small waves travels faster, so it is easier to br detected first if your house is located a few kilometres away from the center of the earthquake to occur. It can be used to monitor entry passages and therefore it is an ideal device for the detection. It has been depicted as a design to sense the compression wave which is refered to as a small wave of an earthquake which comes before the more destructive wave refer to as the shear wave. This circuit removes the guess work as it saves worthy seconds in earthquake detection.

Methodology: The primary techniques used in developing earthquake detector is the motion in 3-D for this we use Arduino uno and a highly sensitive accelerometer MPU6050 is presented that can indicate vibrations, We know accelerometer like MPU6050 are highly sensitive to knocks and vibrations in any of the three physical axes so this device can be modified and used as a knock and shake detector of ATM's. vehicles or door break alarm. But

MPU6050 gives analogue voltage imposed to equivalent acceleration, it has three output one each for three X-,Y-,Z-axes, three analogue outputs are input to Arduino uno ADC pins. By this way acceleration is detected by accelerometer and simultaneously by Arduino ADC pin. If motion is violent enough during an earthquake and crosses the threshold value alarm light LED glows, a buzzer sounds as an indicator of earthquake in the core of the land where the building is situated. Threshold adjustment button is there to carry out different task. An LCD is used to verify threshold value and to make system user friendly.



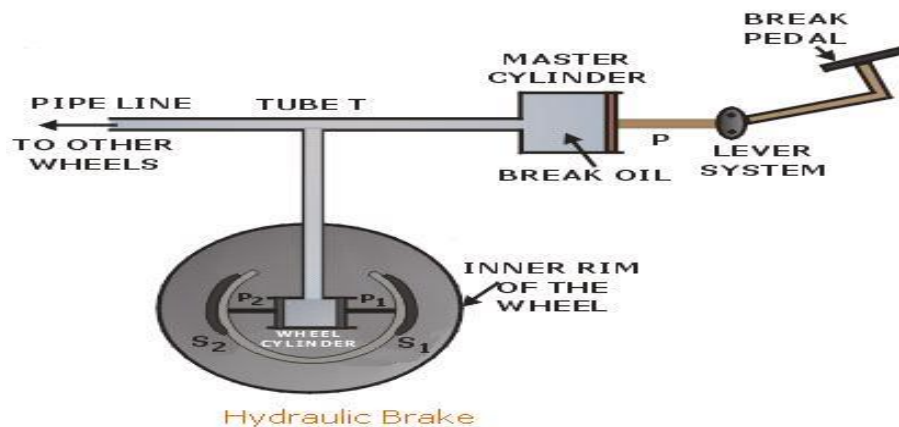
Conclusion

- Earthquake has been a very often occurring disaster which needs proper alarming devices.
- Since digital devices available in the market are rather expensive, the technology we offer is comparatively very cheap and easily accessible.
- Since it is a light weight device it can be carried along and can be readily used.
- This device also ensures information or detection and alarming at the level where only minor shocks occur, the inhabitants can take action accordingly and can inform others and generate awareness among others.
- It is more reliable as the circuits used are easily available and because of its small size and lightweight it is mobile which makes using this device a lot easier.
- It can be used by anyone and anywhere as the usage of this device is not very technical and can be easily used by anyone anywhere.
- The device contains an LED which glows red even when the minor shocks occur and the buzzer can alarm from a distance and even when the residents are sound asleep.

Hydraulic Braking System

Aditya More, Aditya Padvi, Prashik Nikhade, Mubashir Jaan, Najum Shaqib Bhaat

The hydraulic brake is an arrangement of braking mechanism which uses brake fluid, typically containing ethylene glycol, to transfer pressure from controlling mechanism to the braking mechanism. In hydraulic system, fluids do not compress or produce any measurable friction. Also, fluid pressure does not diminish when transferred within a closed system. That means that if there is no leak in a system, the pressure at the wheels will be the same as the pressure from the master cylinder.



In this braking system, the pedal force is transmitted to the brake shoe by means of a confined liquid through a system of force transmission. The force is applied to the pedal which is transmitted to all the brake shoes.

This system is based on Pascal's law which states that "pressure exerted anywhere in a confined incompressible fluid is transmitted equally in all directions throughout the fluid."

This principle is stated mathematically as:

$$P = \rho gh$$

Where, P is the hydrostatic pressure (given in pascals in the SI system), or the difference in pressure at two points within a fluid column, due to the weight of the fluid.

ρ is the fluid density (in kilograms per cubic meter in the SI system).

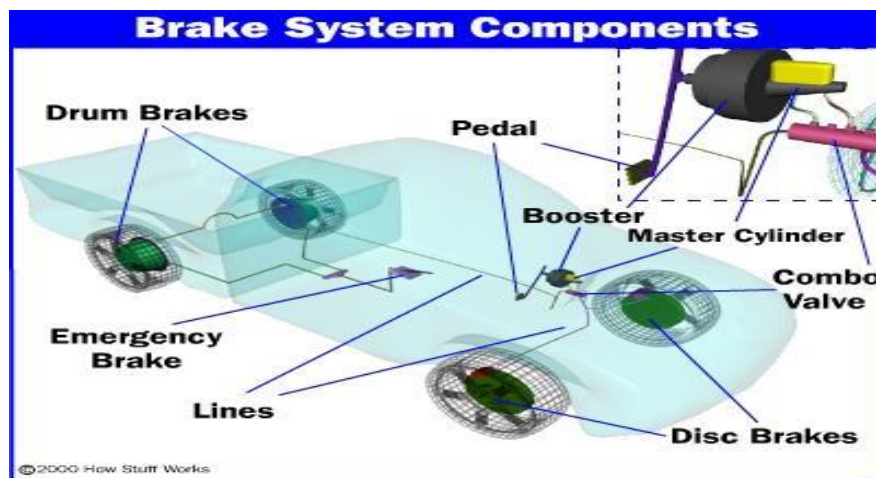
g is acceleration due to gravity.

h is the height of fluid above the point of measurement, or the difference in elevation between the two points within the fluid column (in metres in SI).

Construction of Hydraulic Brakes

The most common arrangement of hydraulic brakes consists of the following:

1. Brake pedal
2. A pushrod
3. A master cylinder assembly
4. Brake caliper assembly usually consisting of one or two hollow aluminum or chrome-plated steel pistons (called caliper piston), a set of thermally conductive brake pads and a rotor (also called a brake disc).



At one time, passenger vehicles commonly employed drum brakes on all four wheels. Later, disc brakes were used for the front and drum brakes for the rear. However disc brakes have shown better heat dissipation and greater resistance to 'fading' and are therefore generally safer than drum brakes. So four-wheel disc brakes have become increasingly popular, replacing drums on all but the most basic vehicles.

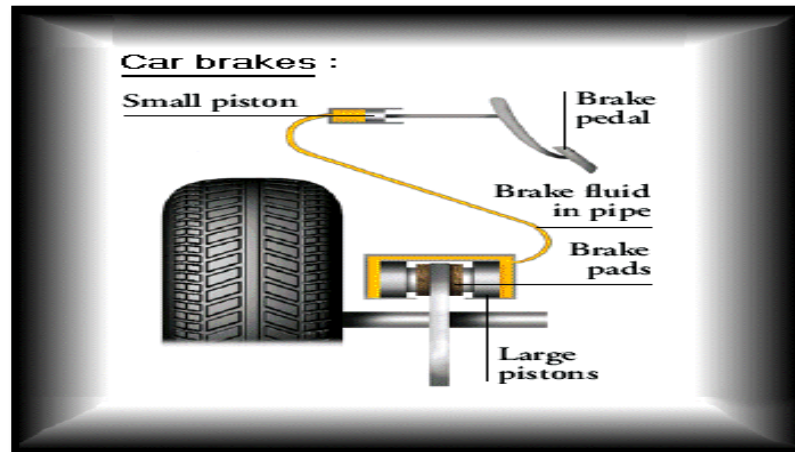
Many two-wheel vehicle designs, however, continue to employ a drum brake for the rear wheel.

In hydraulic braking mechanism, there is a subsequent release of the brake pedal/lever which allows springs to return the caliper pistons back into position and relieves the hydraulic pressure on the pistons, allowing the brake piston in the caliper assembly to slide back into its housing and the brake pads to release the rotor.

The hydraulic braking system is designed as a closed system: unless there is a leak in the system, none of the brake fluid enters or leaves it, nor does the fluid get consumed through use.

System Operation

When brake pedal is pressed, the force is transmitted to the brake shoes through a liquid (link). The pedal force is multiplied and transmitted to all brake shoes by a force transmission system. Figure 6.1 shows the system of hydraulic brake of a four wheeler automobile.



It consists of a master cylinder, four wheel cylinders and pipes carrying a brake fluid from master cylinder to wheel cylinder. The master cylinder is connected to all the four-wheel cylinders by tubing or piping. All cylinders and tubes are fitted with a fluid which acts as a link to transmit pedal force from master cylinder to wheel cylinders.

The fluid filled in the hydraulic brake system is known as brake fluid. It is a mixture of glycerine and alcohol or castor oil and some additives. Master cylinder consists of a piston which is connected to pedal through connecting rod. The wheel cylinder consists of two pistons between which fluid is filled.

Each wheel brake consists of a cylinder brake drum. This drum is mounted on the inner side of wheel. The drum revolves with the wheel. Two brake shoes which are mounted inside the drum remain stationary. Heat and wear resistant brake linings are fitted on the surface of the brake shoes.

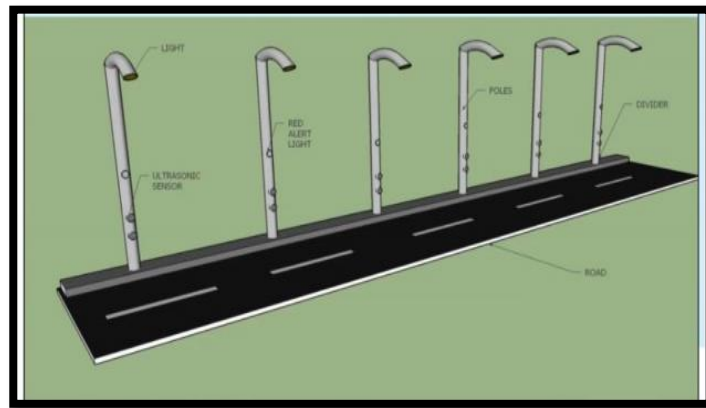
Road Safety

Samir Shanware Aayan Tamboli Shreyash Vhatkar Gaurav Shinde Manthan Sonkambe

The road safety project is introduced to prevent accident at low visibility areas. If in the low visibility areas suddenly the vehicle stops or slowdown, it becomes difficult for the vehicles behind it to see it which leads to crash. In this project, with the help of sensors, LEDs and electric circuits we can give alert to the vehicles which are coming from behind. This alert signals will help from prevention from crash to some extent.

- Requirement

Sensors, LED lights, Electric circuit, Wire, Switch Design

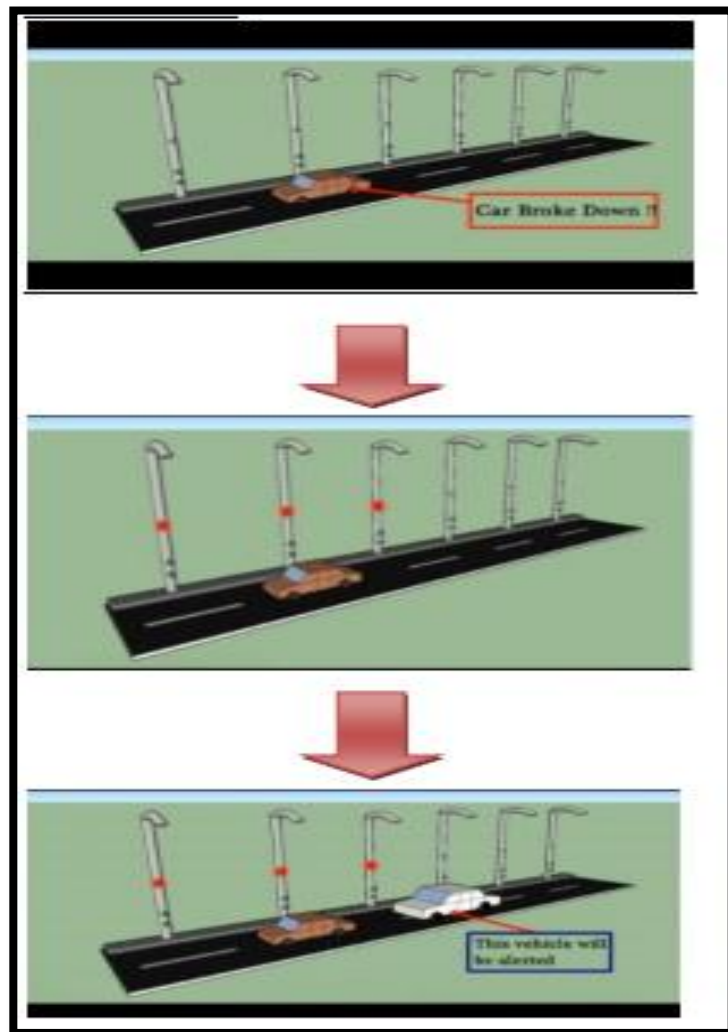


As shown in the picture of module, ultrasonic sensors and red light are inserted in the street light. The sensors help for detection of movement on road. Red light help as the alert signals

- Working of the Project Is As Follows:-

1. When suddenly vehicle broke down at low visibility area, it is difficult for the following vehicles which lead to crash/accident.
2. So when the vehicle broke down the ultrasonic sensors will detect the it.
3. As sensor detects it, with the help circuits the red lights will glow back and forth. This red light helps as a alert signal for the following vehicles.

- Working



POSTERS- ENVIRONMENTAL ISSUES



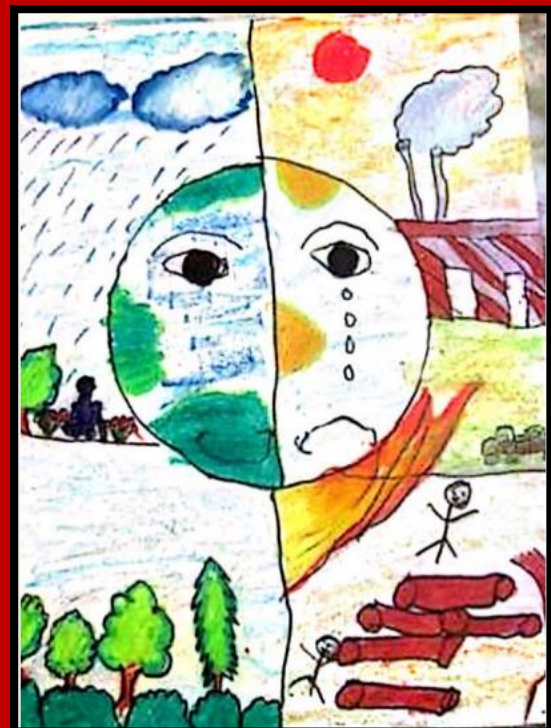
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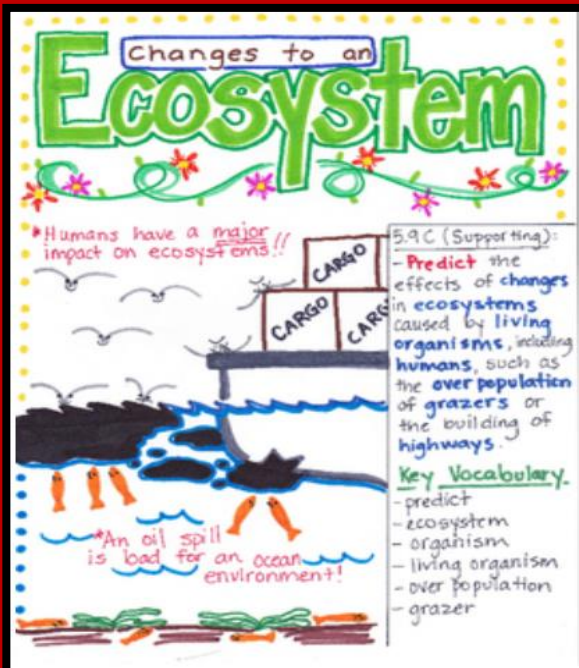
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DROUPADA MULIK



ROHIT VERDHAM



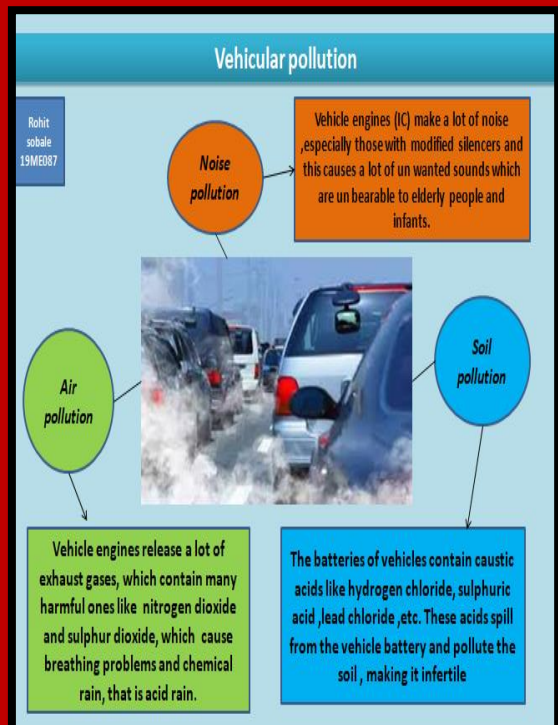
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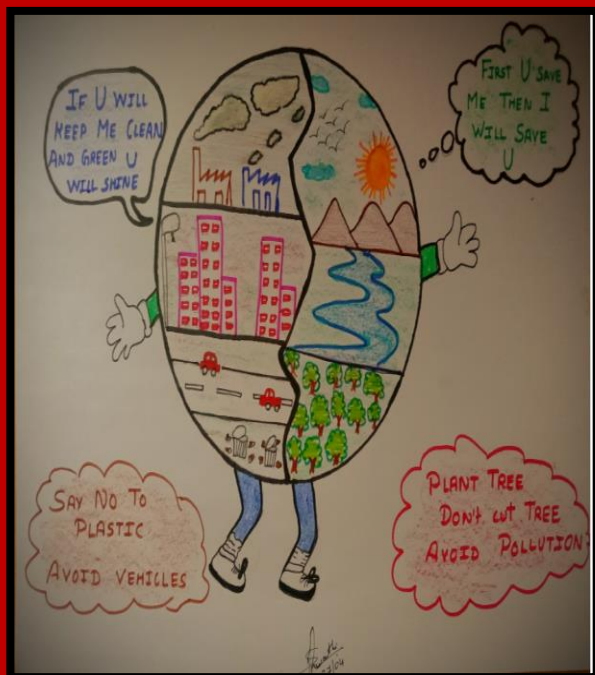
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ATHARAVA PAKODE



ROHIT SOBALE



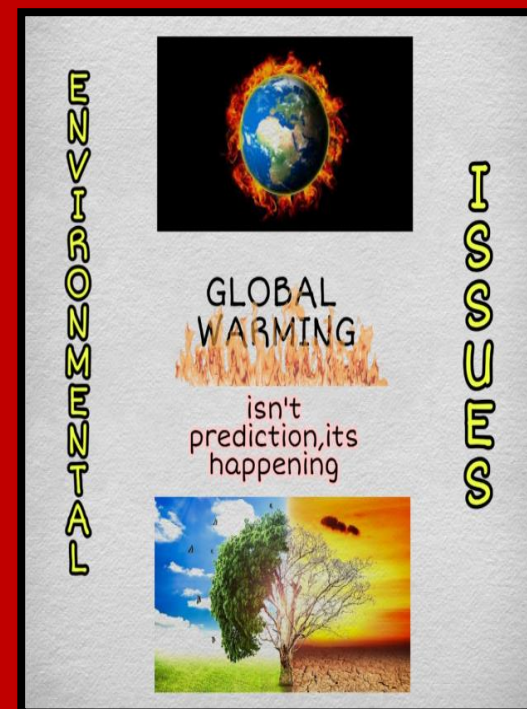
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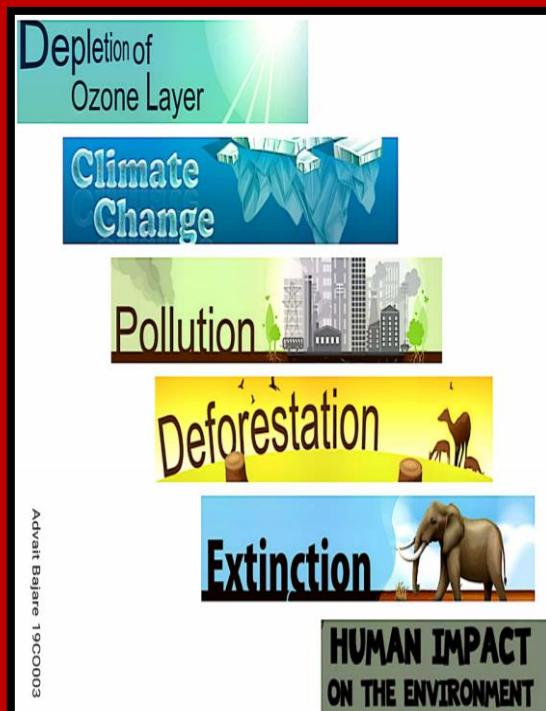
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SANGRAM MANE



AAKSHAY BHUJBAL



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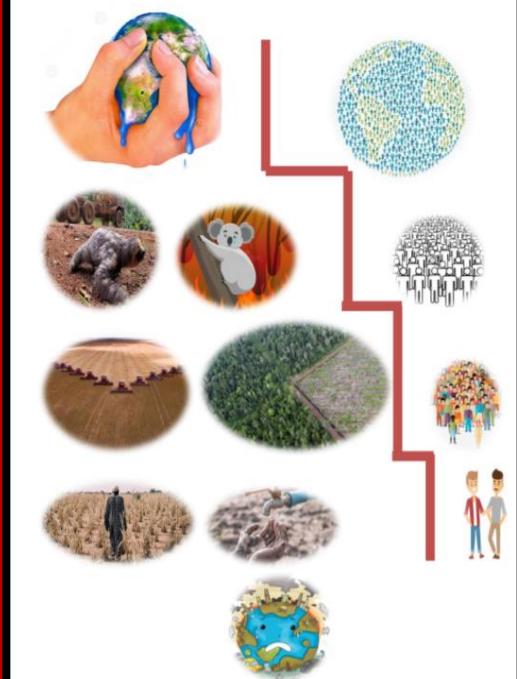


SAMIKSHA DHOTE

The collage consists of six photographs illustrating the impact of the 2010 Haiti earthquake:

- Top Left:** A close-up of a building's facade that has been severely damaged, with large sections of masonry missing and exposed internal structure.
- Top Right:** A paved road has collapsed into a deep, jagged crack. A green and white van is stuck on the remaining part of the road, and two people are standing nearby.
- Middle Left:** A large, vertical crack has run down the side of a concrete wall, with debris and rubble visible at the base of the fissure.
- Middle Right:** An aerial or high-angle view of a densely packed informal settlement where many small, makeshift structures have been destroyed or severely damaged.
- Bottom Left:** A street scene in a town with colorful buildings. A white box with the word "BEFORE" is overlaid on the image.
- Bottom Right:** The same street scene as the bottom-left image, but now the buildings are in ruins and the street is filled with rubble. A white box with the word "AFTER" is overlaid on the image.

Human population and growth: Impacts on environment



Let the pictures do the talking...



GAURAV GADKARI



ATHARVA BHOSALE



PRANAV KAKANI



KARAN DEVKATE



Inspired by Nature... Company Logos by Students