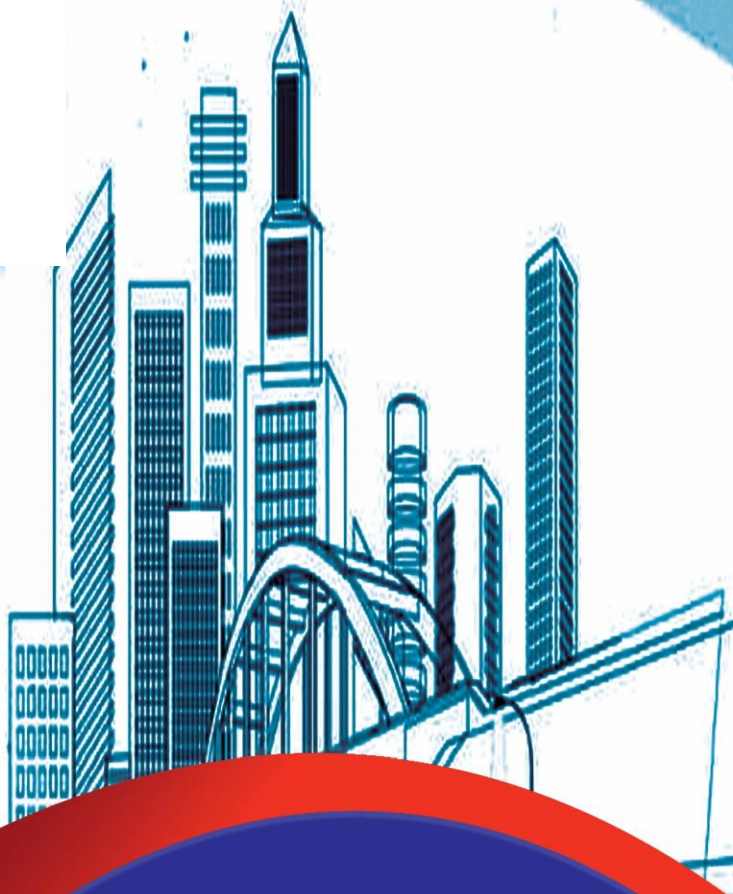
SRUSHTI
2023



Society of
Civil Engineereing

Department of Civil Engineering

C.V. Raman Polytechnic

VISION	• **Civil engineering department is committed to impart knowledge and excellence in civil Engineering to the students and to produce civil engineers of high calibre, technical skills and ethical values to meet current and future challenges.**
MISSION	• **To produce civil engineers with quality technical skills aligned with industry needs to solve real life problems of the society.** • **To create teaching learning environment for students to acquire knowledge as per need and to motivate towards entrepreneurship and to pursue higher studies.** • **To serve construction industries, civil engineering profession and the community at large through dissemination of knowledge and technical services to improve quality of life and enhance employability.** • **To inculcate self-learning attitude and professionalism.**

PO	• **Basic and discipline specific knowledge.** • **Problem analysis** • **Design/development of solutions** • **Engineering tools, experimentation and testing** • **Engineering Practices for society, sustainability and environment** • **Project Management** • **Lifelong Learning**
PEO	• To analyze in civil engineering profession or Higher education by acquiring thorough knowledge and concepts in fundamentals of engineering. • To Apply knowledge and skills to real life problems and there by rendering safe and economical structures against natural calamities and also environmentally sustainable and useful to society. • To understand entrepreneurial endeavors and to develop effective communication skill and passion for learning.
PSO	• Able to meet the needs of public in the design and execution of quality construction work considering health, safety, cultural and environmental factors. • Analyse and design regular and complex structures applying knowledge of building analysis software package. • Able to work effectively as an individual or in a team having acquired leadership skills and manage projects in multidisciplinary environment.

Shri Sanjib Kumar Rout
Chairman, C.V. Raman Polytechnic

We are compelled to offer the greatest infrastructure, instruction, and global learning because of our longstanding dedication to academic success. Our campus provides an engaging atmosphere that fosters discoveries and develops our students into self-sufficient thinkers and action takers.

Mr. Manoj Kumar Parida
Principal, C.V. Raman polytechnic

Founded in 2005, C.V. Raman Polytechnic in Bhubaneswar strives to lead the world in technical education by working with leading organizations and sectors. It aims to create top-tier professionals with both technical know-how and life skills by emphasizing innovation and skill development. The institute equips students with cutting-edge training facilities and industry-aligned curricula to help improve society by making them job-, world-, and future-ready.

Mr. Ambika Prasad Mohanty
Hod of Civil Engineering
CVRP

The department of civil Engineering came into being in 2005 with a commitment to train young minds to be leader in their chosen profession and serve the society to enhance the quality of life. The department has an array of highly dedicated team of faculty members with varied experience in academy, industries and expertise in their own domain having an excellent track record and academy career to make a formidable team to steer the department march forward. The department has well equipped laboratory which plays a vital role for acquiring practical knowledge. We, firmly believe in delivering quality education aligned with requirement of industries creating a vista for employability. With present trend of development and requirement of civil engineering professional, i am confident that our department will achieve greater heights in future.

Contents

Engineering Education in India Retrospect & Prospects

Prof. A.P. Mohanty, Asst. Prof. (Civil)

Engineering education in our country needs to be focused to real life activities based on learning. This would mean a much greater interaction between our academic institutions, industry and society. All these three segments must participate in activities related to engineering education in such a way that students should realize the problems that we are facing today and develop ambition for its solution. Our education system must ignite spark of innovativeness in the students to work out original ideas and empower them to implement such ideas with confidence and courage. This can happen through their deep involvement in the happenings round the corner. During their engineering study, they learn and grasp engineering knowledge and simultaneously they must develop an affinity towards the society. There is a serious problem in terms of quality and competence. Most of our students study in ill equipped institutions both in terms of faculty as well as laboratory and workshop facilities.

At present we have 4.00lakh seats approximately in engineering & Technology all over India This enlargement of the base of engineering studies is event of last few years. This sudden proliferation is confronted with two basic questions. What will be the quality of these fresh engineers because the increase of engineering college is not compatible with the demand of good teaching faculties and infrastructure that is inherent in engineering Studies. Secondly whether we can absorb so many engineers for employment.

Traditional Mindset that engineering students are employed in the public sector/private sectors is no more applicable now. Since last ten years, major companies are being disintegrated and other Nuclear Companies are emerging with less manpower. So present crisis is to opt for self-employment which needs innovative mind and ambience. Most important is that the education system need for a paradigm shift and it has to aim at innovative training for improvement of entrepreneurial skills among students. AICTE has taken up programme at national level to restructure technical education in totality -- syllabus, eligibility and to attract good faculties.

It is estimated that in next 5 years there will be shortage of approximately 70,000 lecturers. Further to make good faculties and train the existing once, UGC has initiated programme through refresher and orientation course, FDP for teaching faculties of engineering institution.

Present day scenario reveals that there is an industrial recession through out the world. To make engineering study more industry oriented, the academicians and professionals are

working together. However in comparison to market when interdisciplinary areas are emerging, just mere increase of seats without any good faculty and infrastructure is not at all healthy.

One of the major areas of concern is that growth of well-qualified faculties is not proportionate to the growth of institutions as students do not prefer to take up teaching as a profession. We face anomalous situation of not being able to find good quality engineers in certain specified areas. While there is large no of engineering students in the queue waiting to find employment. This problem is further aggravated by migration of our talented students some abroad and other to professions & disciplines different from their own discipline of study.

Now it is need of the day where we must change our orientation in understanding the complex world we live in. Education system should prepare the beneficiaries for the complexity of modern society. Many of the social issues we are facing today bear strong technological elements out of which environment is one. Therefore there must be a change in educational system.

Industry & educational institutions must thus get themselves involved in the process of enriching and reorienting Engineering. Education in line with national needs in general & their specific needs in particular. Our task is to devise and implement effective solutions to accelerate pace of development. There is an urgent need to groom our young engineering students to be oriented to our emerging problems applying engineering knowledge & needless to mention, with this gamut of talented and committed engineers we can accomplish task of implementing right solutions in right manner. Let the Government also turn to outstanding engineers and technocrats for advice and assistance in promoting both engineering & technology for progress, prosperity, greatness & glory to our Mother land.

Building in formation modeling (BIM)

Miss Sumitra Parida Asst.Prof

Building in formation modeling (BIM) is one of the most promising recent developments in the architecture, engineering, and construction (AEC) industry. With BIM technology, an accurate virtual model of a building is digitally constructed. This model, known as a building information model, can be used for planning, design, construction, and operation of the facility. It helps architects, engineers, and constructors visualize what is to be built in a simulated environment to identify any potential design, construction, or operational issues. BIM represents a new paradigm within AEC, one that encourages the integration of the roles of all stakeholders on a project. In this paper, current trends, benefits, possible risks, and future challenges of BIM for the AEC industry are discussed. The findings of this study provide useful information for AEC industry practitioners considering implementing BIM technology in their projects.

Role of BIM:

Kunz and Gilligan (2007) conducted a questionnaire survey to determine the value from BIM use and factors that contribute to success.The main findings of their study are as follows:

• The use of BIM had significantly increased across all phases of design and construction during the past year.

• BIM users represented all segments of the design and construction industry, and they operated throughout the United States.

• The major application areas of BIM were construction document development, conceptual design support, and preproject planning services.

• The use of BIM lowered overall risk distributed with a similar contract structure.

• At the time of the survey, most companies used BIM for 3D and 4D clash detections and for planning and visualization services.

• The use of BIMled to increased productivity, better engagement of project staff, and reduced contingencies.

• A shortage was noted of competent building information modelers in the construction industry, and demand was expected to grow exponentially with time.

BUILDING INFORMATION MODELINBIM

APPLICATIONS OF BIM MODELLING

A building information model can be used for the following purposes:

• Visualization: 3D renderings can be easily generated in-house with little additional effort.

• Fabrication/shop drawings: It is easy to generate shop drawings for various building systems .For example, the sheet metal duct workshop drawings can be quickly produced once the model is complete.

• Codereviews:Fire departments and other officials may use these models for their review of building projects.

• Cost estimating: BIM software has built-incost estimating features. Material quantities are automatically extracted and updated when any changes are made in the model.

• Construction sequencing: A building information model can be effectively used to coordinate material ordering, fabrication, and delivery schedules for all building components.

• Conflict, interference, and collision detection: Because building information models are created to scale in 3D space, all major systems can be instantly and automatically checked for interferences. For example, this process can verify that piping does not intersect with steel beams, ducts, or walls.

• For ensicanalysis: A building information model can be easily adapted tographically illustrate potential failures, leaks, evacuation plans, and so forth.

• Facilities management: Facilities management departments can use it for renovations, space planning, and maintenance operations.

BIM FUTURE CHALLENGES:

The productivity and economic benefits of BIM to the AEC industry are widely acknowledged and increasingly well understood. Further, the technology to implement BIM is readily available and rapidly maturing. Yet BIM adoption has been much slower than anticipated (Azhar, Hein etal. 2008). There are two main reasons, technical and managerial. The technical reasons can be broadly classified into three categories (Bernstein and Pittman 2005):

1. The need for well-defined transactional construction process models to eliminate data inter-operability issues,

2. The requirement that digital design data be computable.

3. The need for well-developed practical strategies for the purposeful exchange and integration of meaningful information among the building information model components.

The management issues cluster around the implementation and use of BIM. Right now, there is no clear consensus on how to implement or use BIM. Unlike many other construction practices, there is no single BIM document providing instruction on its application and use (Associated General Contractors of America 2005). Furthermore, little progress has been made in establishing model BIM contract documents(Post2009). Several software firms are cashing in on the“buzz”of BIM and have programs to address certain quantitative aspects of it,but they do not treat the process as a whole. There is a need to standardize the BIM process and to define guidelines for its implementation. Another contentious issue among the AEC industry stakeholders (i.e., owners, designers, and constructors) is who should develop and operate the building information models and how the developmental and operational costs should be distributed.

QUANTUM MECHANICS

Do you ever think how all the planets move in a particular orbit and do not collide with each other, Did you ever think of time travel and its possibility, what is the basis origin for computers, how light travels, answers to such in questions lie in Quantum mechanics? The main goal of studying Physics is to understand how the universe works and behaves, and it also talks about matter and energy. Physics can be classified into 3 major parts,

1. ***Classical physics,***

2. ***Relativity,***

3. ***Quantum Mechanics.***

Classical Physics can be started with talking about Sir Isaac Newton and his laws of motion, law of universal gravitation, which laid foundations to the classical physics, he also invented calculus, a powerful tool used for proving. He also did a splendid work on optics, by which we understand fundamental of light and how it travels through different materials, which helped the invention of microscope and telescope. Our understanding gradually increased with time by knowing about how wave's travels through different mediums, understanding about electrical and magnetic fields combined we call electromagnetism which led to invention of electricity. Classical mechanics talks about properties of solids objects and how they move when force hits them and what happens when they joined together. Fluid Mechanics helps us to understand tiny particles of fluid under the action force and how lift generated from an Airplane wings and aerodynamics of cars.

Before 1900's physicists thought that light travels in a particle form, but one experiment named double slit Experiment which proves Light travels in both particle and Wave form. The duality of light questioned the understanding of all the physicists and kept many questions before them. So how duality of light can be challenging? Quantum Mechanics is all about studying the universe in Fundamental levels, that can be applied to whole universe for example electron revolving around nucleus is same as of planets revolving around sun, so if light has duality nature all electrons and fundamental particles also works in the same manner this created mysteries and raised many questions. According to Quantum mechanics universe runs on four fundamental forces

1) ***Gravity,***

2) ***Electromagnetism,***

3) ***Strong nuclear force, 4) Weak nuclear forces.***

Gravity is responsible for holding things in place, we have much day-to-day application for ***electromagnetism***, and it also explains about light wave function and emission of photons when electrons loss energy, ***Strong nuclear force*** is responsible for holding nucleus and electrons

together by which all atoms are stable and life happened. **Weak nuclear force** is important for birth of new elements, and by which combustion of stars happens. famous thought experiment which opened gates for Quantum Entanglement is Schrodinger cat experiment. In this experiment a bomb which has a 50% probability of blasting and a cat are kept in a box and closed the lid. Until unless we open the lid, we don't know whether cat is alive or dead and cat is in superposition state which means it is

both alive and dead at the same time it is linked to subatomic event that may occur or not. By this experiment scientists predicting that chances of parallel universe and happening of things opposite in parallel universe. Quantum entanglement states that no matter how far you place two particles of

elements (for example electrons of helium) in space they somehow remain interconnected and information is passed within milliseconds, this theory contradicts the theory of special relativity

which says nothing can travel speed more than light. What we know till now in the universe only constitutes about 5% and other 95% consists of Dark Energy and Dark matter. We have no little knowledge about what is in there, the rules of general universe don't seem to work over there. In this big universe there is lot to learn and it will give us new challenges, who knows someday we can time travel or can go to picnic for another planet. At the end it's all about Time

Name-**Santosh Kumar**

Regdno-**F22029001021**

Accidents Bring Tears, Safety Bring Cheers

Safalya Mohanty, *Assistant Professor*

National Road Safety Week 2022 is celebrated from January 11, 2022, and extends to January 17, 2022. This year marks the 33rd Road Safety Week under the theme "Sadak Suraksha Jeevan Raksha". The tragedy of road accidents can be felt only by sufferers. It is true that unless one suffers a personal loss in a road accident, one does not take the subject seriously. Repeatedly, we read on the front pages of newspapers in the morning: "Five people were killed in an accident when a private deluxe bus rammed head-on with a truck; serious accidents- bus hits road side tree; 17 dead, 29 seriously injured; four senior officers killed as their car was crushed by a speeding bus or dumper; 12 persons were killed when a bus skidded off the National Highway; ten of marriage party dead as bus rolled into the valley; a family of four drowns as their car falls into road side canal." Road conditions have improved in India, but unfortunately, improved roads have also led to the occurrence of many accidents. Growth in urbanization and in the number of vehicles in India has led to increased traffic congestion in urban centres and an increase in traffic accidents on road networks that were never designed for the volumes and types of traffic that they are now required to carry. In addition, unplanned urban growth has led to incompatible land uses and high levels of pedestrian-vehicle conflicts. 'Accidents are not natural, but they are caused' is a common cliche in the area of traffic safety. Thus, if accidents are caused by some, surely the ones responsible for them can be identified and appropriate remedial measures can be developed and implemented to the extent possible. Analysis of previous data indicates that about 66% of the accidents occur due to human error and 33% due to

road parameters such as road and vehicle interaction, other road users and environmental factors. National Highways constitute about 2% of the total road length and carry more than 40% of passenger traffic and 85% of goods traffic, which means they have registered more accidents, accounting for 20% of all accidents on national highways.

Accidents can be unintentional and sometimes random, but they are generally found to occur at some hazardous locations called "black spots." The areas covering these black spots are called "black areas" in traffic. Major road defects that can cause accidents are blind corners, lack of super elevation on curves that can cause vehicles to overturn, shoulders (sides of roads) in bad shape, slippery roads, and trees by the roadside. An accident Blackspotis a term used in road safety management to denote a place where road traffic accidents have historically been concentrated. It may have occurred for a variety of reasons, such as a sharp drop or corner in a straight road, so oncoming traffic is concealed, a hidden junction on a fast road, or poor or concealed warning signs at a cross-road. For some decades, treatment of accident blackspots (e.g. by signage, speed restrictions, improving sightlines, straightening bends, or speed cameras) was a mainstay of road safety policy, but current thinking has it that the benefits of these interventions are often overstated. Sixty per cent of the black spots on national highways in India, where more than 28,000 killings took place in road crashes in a period of three years, have been rectified now.

A total of Rs 4,512.36 crore has been spent on rectifying these black spots, which led to 57,329 road crashes in 2016, 2017 and 2018, the National Highways Authority of India (NHAI) said in response to a query made under the Right to Information (RTI) Act.

LIGHT EMITTING CONCRETE

Concrete is the world's most widely used construction material due to its versatility, durability, sustainability, and economy. Concrete is a mixture of aggregates (sand + gravel or crushed stone) held together by a binder of cementitious paste, typically made up of Portland cement and water. It may also contain supplementary cementing materials (SCMs), such as fly ash or slag cement, and chemical admixtures.

Light-emitting cement is a green construction material designed to illuminate highways, roads, and bicycle lanes without using electricity. Light-emitting cement absorbs solar energy during the day and radiates light at night. This innovative cement was developed by Dr. Jose Carlos Rubio from the Michoacan University of Saint Nicholas of Hidalgo in Mexico. The research focused on modifying the microstructure of cement to absorb solar energy and emit light in darkness.

How that concrete made:

The light emitting concrete composition comprises light-emitting pigments. The light emitting pigments include a titanium powder, a sulphide powder and resins, cement, sand, gravel and water. The method of synthesizing a light emitting concrete structure comprises preparing slurry. The slurry is prepared by mixing sand, gravel, cement and water. Further, a light emitting pigment mixture is prepared. The light emitting pigment mixture is prepared by mixing a titanium powder, resins and a sulphide powder. The light-emitting pigment mixture is added to the slurry. The slurry is molded by adding the slurry in molds. The molds are further kept at a temperature of 15-20° C. for at least 12-14 hours. The slurry is cured at a temperature of less than 30° C. for 24 hours.

Is it Green Material?

Yes, it is environmentally friendly because the gel is made out of sand, dust, clay and water. The material has an estimated life span of 100 years because of the inorganic nature of the cement components. This new material is sun-resistant and more durable compared with other phosphorescent materials like plastics or paints, which decay with UV rays in the long run.The waste produced during the process is very less and helps in reducing energy consumptions shaping for a better future. The innovations of technologies to the next level don't stop in the construction industry. Scientists and Researchers are developing more reliable and eco-friendly construction products to make the lives of future generations easier.

Advantages of light emitting concrete:

• The material is sustainable since it is formed by condensation of silicates usually found in clay, sand, or dust.

• The process is ecofriendly as the only gas released during manufacturing is water vapour.

• The cement is said to have a life span of 100 years and is being fabricated to emit green or blue light.

• The cement has the power to remain lit for about 12 hours after dark.

• The level of brightness can be adjusted during production.

• The cement is inorganic, and its material components are recyclable.

• It could reduce the overhead costs of decorating homes.

Disadvantage of Light emitting concrete:

• Cement is an opaque body that does not allow light to pass into its interior

• Although it is manufactured like ordinary cement, the change in the microscopic structure needed to make it glow modifies the structural properties of the material.

• It may not have the same applications as the ordinary cement and is intended to be used on surfaces as a coating material.

Conclusion:

The light-emitting concrete has garnered the attention of several countries, which shows the commercial demand for the material. Currently, the research is being carried out to move into a commercialization stage. The inclusion of light-emitting cement with plaster and other construction products is also under research and development.

Name- **Santosh Kumar**

Regdno-**F22029001021**

Branch- **Civil**

SOLITUDE, SOUL……SYMPHONY

In the moonless night,

Stars glooming with painful effort,

When darkness pervades

And creeps into the soul.

Dreams are blurred…Hopes fade,

Ego is paralyzed

Life……. a mere nothingness

Sitting on the sea beach,

I envied the emotionless sand,

… .. ……the dead immobile shells,

Though the ocean had an ominous glaze,

Still faraway…..

In the limit of my strained vision,

Is that the shadowy, stretching line

Of the sea and the sky meeting.

Only then my dear,

I couldcomprehend.

……. The rebouncing melancholy

… The unexpressible hollowness

In the depth of my heart

Oh my LOVE

In my desperate thoughts

It was thine smoldering charms.

A.P MOHANTY

Assistant Professor (HOD),

GLOBALISATION OF TERROR

The images of collapsing trade towards are etched crystal clear in our memories. Explosions in Madrid and London were heard the world over-repeatedly in the comforts of living rooms. Closer home, serial blasts in Mumbai Malegaon or recent atrocities in Hyderabad were all carried, presented and vividly dissected in scrutiny for our consumption.

Connectivity, we defend, is an asset-a necessity in the modern era. The world is shrinking and the global hub gifted numerous opportunities and advantages to end cash. But in this rush to capitalize on the fruits of globalization, both as a cause and vehicle of perpetration of violence is increasingly being realized.

Globalization has revolutionized each and every aspect of our society, touching us at myriad levels in numerous ways. From the times, we decided to jumps on and integrate with global forces by adopting the new economic policy, the pace of Jump on only taken a unidirectional approach. It brought along an era of instant entertainment through satellite, television, ignorant of the sensitivity of the population. Through the barriers of culture and religion were being broken down to build a world of understanding, the process accentuated alienation of certain segments of the society, by sheer irreverence and insensitivity to local traditions, values and cultural uniqueness. The promotion of individuality got replaced by an invasion on ethics and homogenization of the perceived good.

The apathy of the state in an era of market led growth bred indignation in certain segments of society. In face of sheer neglect and socio-economic deprivation, terror emerged in different forms and under different names. Violence was a consequence and globalization provided a vehicle to collaborate their efforts and be heard.

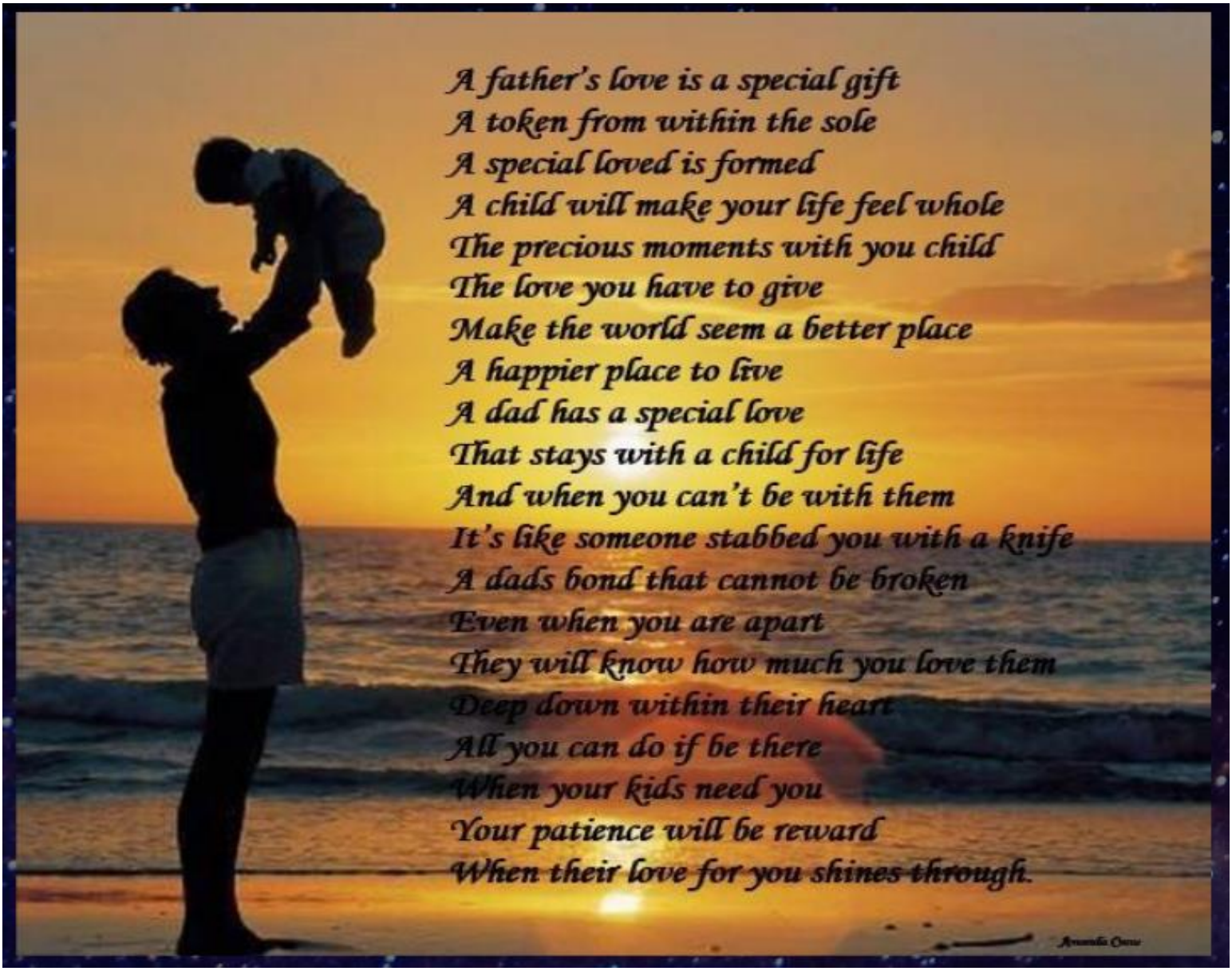
"Think Global, Act Local" is often the phrase linked with sustainable efforts and that should form the premise of our efforts. No knee jerk responses ever eliminate the cause. Globalization is a reality. Though it may accept accusations of supporting the evil designs, it cannot be overlooked in modern era. It should rather provide platform to collaborate the national efforts through regional forums like SAARC, G-8, UN, MERCOSUR. Innovative mechanisms, like the 'Joint Terror Mechanism' advocated by our PM, on the side lines of NAM, need support and effective implementation.

Globalisation, moderated by consideration for people, should institutionalize peace and harmony. It can work as a unifying force to uproot the evil intentions. Global funds to develop the deprivedregions and stricter monitoring of any human rights violations anywhere in the world could prevent growth of any cluster of neglect. The strength of our culture and heritage faces the test of globalisation, whereby it should emerge as an anchor for global development. Let our efforts find directions to develop a global village- a sustainable model of peace, harmony and tolerance.

MISS SUMITRA PARIDA

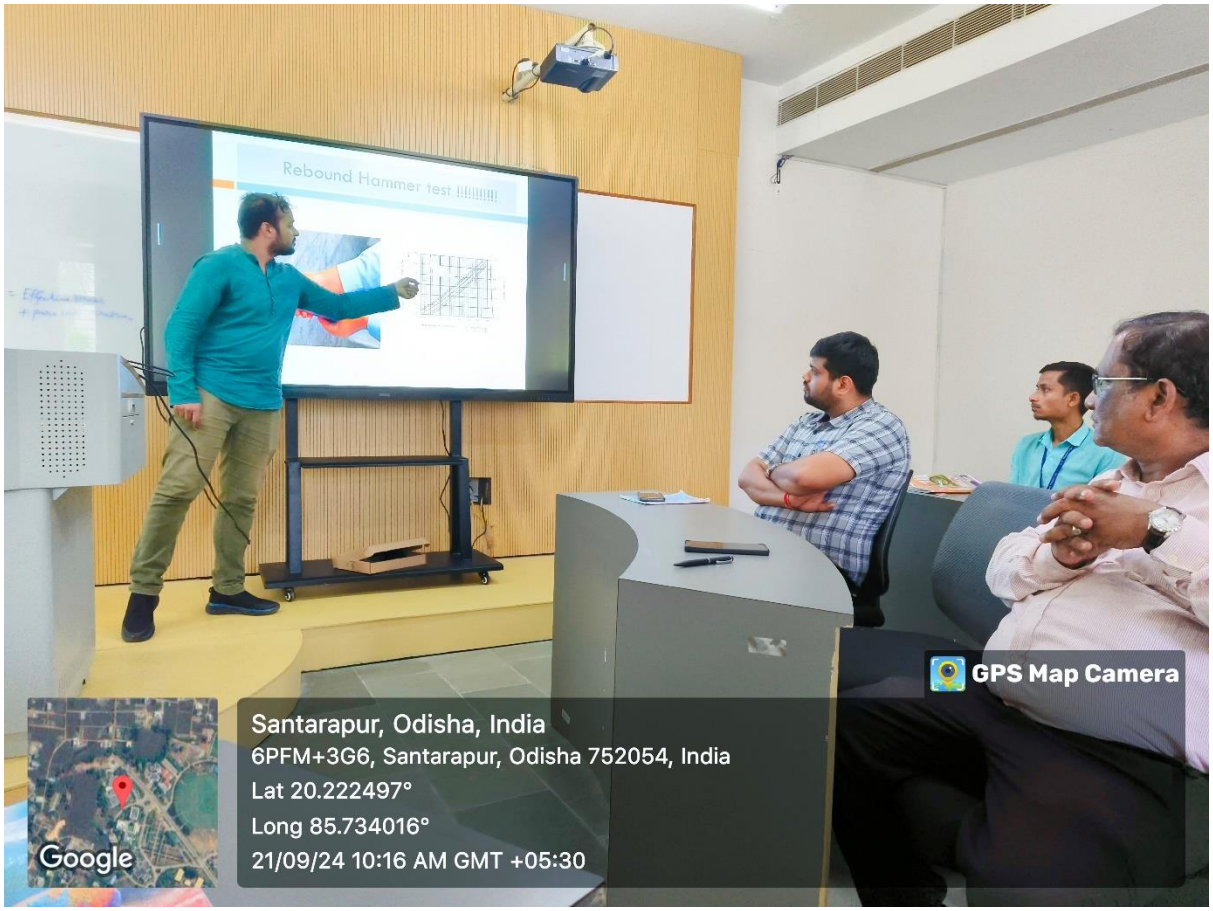
ASST.PROF

FATHER'S LOVE



APURVA ANAND
3RD YEAR,
CIVIL
ENGINEERING

Invited talk on Non-Destructive Testing (NDT) of concrete structures


Rebound Hammer test
GPS Map Camera
Google
Santarapur, Odisha, India
6PFM+3G6, Santarapur, Odisha 752054, India
Lat 20.222497°
Long 85.734016°
21/09/24 10:16 AM GMT +05:30

Workshop on cyber security

067466 36555 / 63710 39928 infopolytechnic@cvrgi.edu.in www.cvrp.edu.in

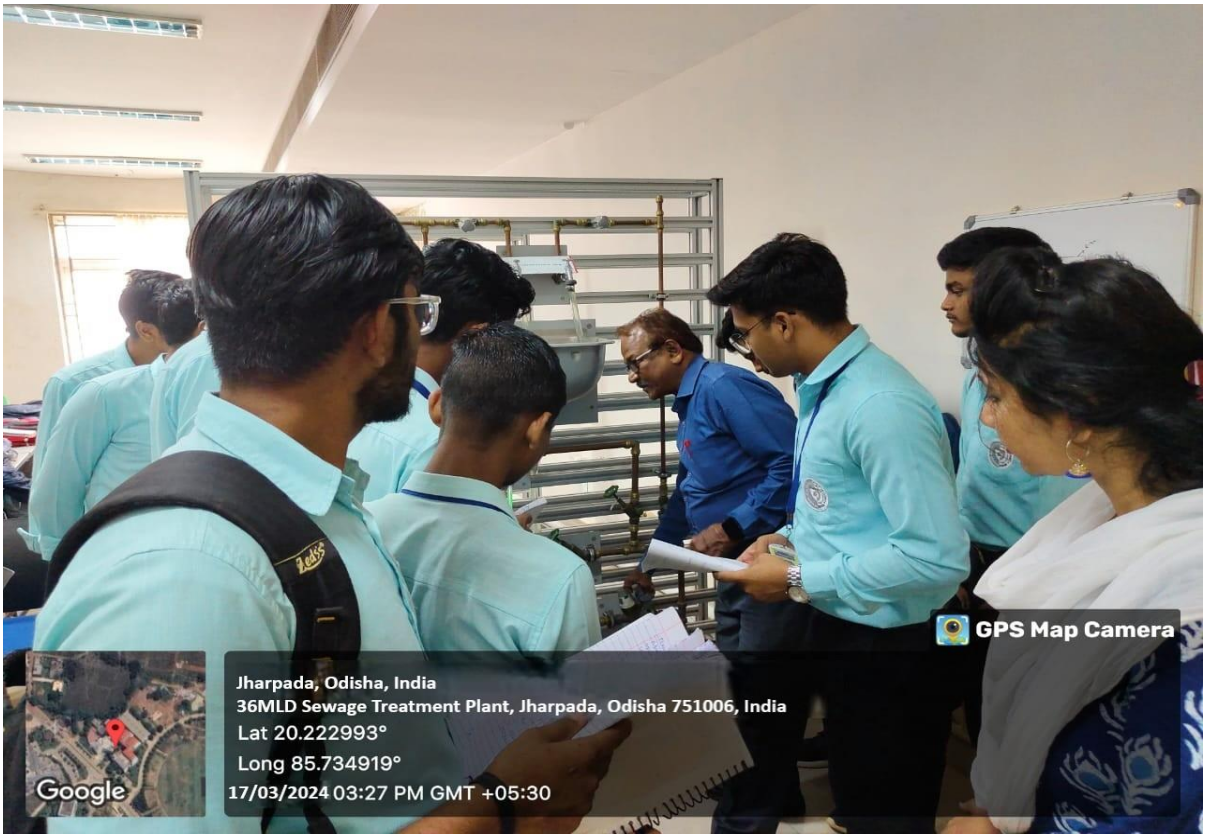
CoE on Mobile Hydraulics


C.V.Raman Bosch Rexr
Centre of cel
GPS Map Camera
Mahura, Odisha, India
Bosch Rexroth Center of Excellence, C.V RAMAN COLLEGE OF ENGINEERING, Boys Hostel Rd, Mahura, Odisha 752054, India
Lat 20.220641°
Long 85.736926°
23/03/24 12:07 PM GMT +05:30
Google


GPS Map Camera
Mahura, Odisha, India
6PCP+4PC, Mahura, Odisha 752054, India
Lat 20.219785°
Long 85.737143°
23/03/24 11:52 AM GMT +05:30
Google

Industrial Visits/Tours for Students:

Location: 36 MLD Sewage Treatment Plant, Bhubaneswar



Industrial Visits/Tours for Students:

Location: Railway Coach Factory, Mancheswar


END-I
WGACCW
GPS Map Camera
Bhubaneswar, Odisha, India
8RCR+CHV, Mancheswar Station Rd, Rangamatia, Mancheswar, Bhubaneswar, Odisha 751017, India
Lat 20.321329°
Long 85.841384°
19/04/23 12:13 PM GMT +05:30
Google

Conclusion

The civil engineering industry continues to evolve with new technologies, materials, and practices driving innovation and efficiency. As we move forward, the importance of sustainable development, safety, and resilience in infrastructure design becomes even more critical. By embracing the challenges and opportunities presented by modern advancements, civil engineers play a key role in shaping the future of our cities and communities. With a commitment to innovation and excellence, the profession remains integral to creating a safer, more sustainable world for generations to come."