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VISION

Our vision for the college magazine is to create an inclusive, creative and entertaining platform for students to share their ideas, express their thoughts, and showcase their talents. We strive to create a magazine that is both informative and entertaining, with content that is relevant to students' lives. Our goal is to give a voice to the student body and foster a culture of inclusivity, open-mindedness and respect.

MISSION

1. Connecting college students to alumni for mentorship opportunities.

2. Creating a platform for college students to share their stories and experiences.

3. Highlighting underrepresented student perspectives in higher education.

4. Providing resources for college students to engage in meaningful self-reflection and personal growth.

5. Developing a series of educational guides for college students to make the most of their college experience.

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TECHNICAL PART

(ARTICALS AND BLOG'S)

CYBERSECURITY AS THE BACKBONE OF DIGITAL TRANSFORMATION

Mukesh Kumar Dangi
Student, 2nd Year, Dept.of Computer Science and Engineering.

Cyber-attackers, we don't like them, but there's one thing we have to give them – a true innovator spirit. In order to be able to defend ourselves, we must keep pace with new technologies and their further development. **Innovations in cybersecurity** are laying new foundations to defend against unwanted attacks on business networks. Adoption of new working environments during the Covid crisis made the role of cybersecurity even more vital than before. The acceleration of digital transformation, as well as the development of innovative technologies affected the current situation by raising the number of cyberattacks at a record high. Attackers are benefiting from every vulnerability, and we can all agree that 2020 brought many to our table. Let's take a look at the **top 5 emerging technologies** responsible for the cybersecurity industry's production of innovative developments.

1. AI and Machine learning

Promises of artificial intelligence in cybersecurity are many and mainly related to risk identification systems. While automation provides detection of any wrongdoings, it can also safeguard the attack targets. **Deep learning** is being used to track logs, transactions and real-time data to discover threats in the network. The ability of **unsupervised machine learning** is to find all kinds of unknown patterns and detect anomalies. It can "learn" to spot patterns and signal a potential attempt of attack but it can also adapt to disguise the same behavior so, at the same time, it opposes a threat to cybersecurity. Innovative technologies like this are getting better every day while providing valuable insights on steps that can be taken to avoid issues caused by sophisticated attacker methods.

2. Behavioral Analytics

Behavioral analytics became an integral part of advanced cybersecurity solutions, constantly evolving to provide stronger protection. This technology allows all **behavioral data** to be stored and then processed to examine trends, patterns and habits in each user's workflow. A behavioral baseline is created for the whole organization and when, for example, an abnormal increase in data transmission from a certain device happens, it indicates a possible cybersecurity issue. While this cybersecurity innovation was used for networks at first, it now shows an increasing application in user devices. I already mentioned the Royal Bank of Scotland (read more: **Innovations shaping the retail banking industry in 2020**) as an example of a financial institution using this kind of innovative technology in the service of cybersecurity.

3. Blockchain

"I don't know what blockchain is, and at this point, I'm too afraid to ask." – Random internet user

One of the first applications of blockchain technology took place in 2009 when it was presented as a decentralized system with no central server. It allows each participant to have a regularly updated copy of a large register and this makes the whole system completely transparent and protected against falsifications. Transaction history can be investigated at any time by any member of the network which allows full traceability of transactions of all kinds. Alongside its infallibility, this is the main asset of blockchain technology that makes it able to prevent any data breach, cyberattacks and fraudulent activities on the network. Unlike a traditional centralized server, **blockchain is a distributed server with properties of an impassable wall** and it is currently impossible to bring malware into it.

Blockchain can eliminate the authentication process as a potential attack spot because with the use of this technology companies can authenticate devices and users without the need for passwords. Also, each transaction is timestamped and digitally signed so it can't be reversed or tampered with. Thanks to blockchain technology, cybersecurity promises a new dimension of conducting business transactions safely.

4. Zero-Trust Model

The Zero-trust model requires all users to be authenticated and authorized before accessing data and resources, even when they are inside the organization's enterprise network. This architecture takes nothing for granted, which is an innovative view in comparison to traditional security models assuming that everything inside an organization's network is safe by default. Internal attacks are placed side by side with external attacks and both require equal treatment. As the name itself suggests, **trust is a non-existent concept** in these systems and every environment is regarded as already breached. Applying a zero-trust model includes identifying critical data, mapping the flow of this data, logical and physical segmentation, and constant endpoint monitoring with automated threat detection and response capabilities.

5. Hardware authentication

Hardware authentication is an innovative technology that generates unique and temporary **cryptographic code** for users to type in alongside the password in order to gain access to stored data. This kind of approach relies on dedicated physical evidence for user authentication, in combination with a password. While this kind of physical security tokens can be lost or stolen from legitimate users, there are some alternatives such as software-based authentication or SMS verification, often referred to as **two-factor authentication (2FA)**. This is something that is already widely adopted, while embedded authenticators as a technology for verification of user's identity are on the rise.

WEB 3.0

Tapas kumar gorai

Student, 2nd Year, Dept.of Electronics and communication engineering.

ABSTRACT:-

WEB 3.0 There is a thinking of the future, which is surrounded by a lot of controversies. today we will discuss about some questions. why do we need web 3.0? will web 3.0 help or harm us in future? can we move to web 3.0 now? Many such questions keep swirling in our mind. Web 3.0 is a reality we can't deny it, But the world's bigwigs don't believe that WEB 3.0 is the future! If Web 3.0 promises that this system will give complete privacy to the user, then why all the big and big companies have trouble with it. If we follow Web 3.0, it promises us a lot. Is it really that strong a system that it can't have scams? Let's know more closely about Web 3.0 through my research.

Welcome to the world of Web 3.0

I. INTRODUCTION:-

Web1.O is only for consuming data from internet like newspaper we can't edit or post anything which we want, We are currently living in the era of Web 2.0 it make possible for user generated content. user generate content and the evolution of social media.

Web 3.0 is a technology which promises that some company that dominates the entire Internet will remove it and distribute the complete control of the Internet to all people. By The Help Of Blockchain Technology Digital Currency Like Bitcoin ,Ethereum ,etc and N.F.T

II. NEED OF Web 3.O:-

Only a few companies completely dominant the entire **Web 2.0** in the world, in which according to the report of **CNBC**, Google dominates 81% on desktop and 94% on mobile and Meta which is recently add '3.6 billion' active users.[1] So who has given the right to such big companies to rule the internet? That company analysis our data and shows its related ads, which directly raises questions about our privacy.

To eliminate this problem, there is a need for Web 3.0, which will distribute all the power of the Internet in the hands of the users. it means no middleman will be in the middle of it. Web 3.0 specifically run on D.O.B ,means decentralized, open source and blockchain.

The transfer of control and decision-making from a centralized entity (individual, organization, or group) to a distributed network is known as decentralized.

WEB 3.0 is an open source program which makes it more reliable. Anyone can modified it according to their own knowledge.

WEB 3.0 is fully based on blockchain technology, Blockchain is the most secure of all the technology so far. Blockchain is a distributed network which does not owned by any individual organisation or group It is almost non traceable So our data will be secure.

WEB 3.O will directly and indirectly affect the common people .and at the same time bigwigs believe that web 3.0 is scam and it will not do much benefit but more harmful. Web 3.0 was introduced by the co-founder of Ethereum Gavin wood and his statement was that "Web3 is really sort of an next vision of the web, where the services that we use are not hosted by a single service provider company, but rather they're sort of purely algorithmic things that are, in some sense, hosted by everyone.

ADVANTAGES OF WEB 3.0

- Anonymous singal sign on - Anonymous single sign on This means signing in only once and accessing any website from that, there will be no need to sign in separately for each website, why should we give our information to all the websites .
- Self governing – in web 3.0 user can make or modify rules of any website like facebook,google,etc. it completely remove censorship.

- Better search – natural keywords are used for search anything it is no need to use SEO by companies
- Personalised browsing experience_– in web 2.0 websites are same for everyone but adds are personalised, but in web 3.0 website are also look or give feel you personalised experience.
- Uninterrupted service_- Web 3.0 will run completely on the blockchain, This means that no data will remain in a personal server and an organization server, all the data on it will be connected to different systems, in case of any kind of problem, the data will be passed from other system immediately . services can't be down.

DIS-ADVANTAGES OF WEB 3.0

- Ownership concern - Jack Dorsey x CEO of Twitter say Can not decentralize any website, it is necessary to have an owner, otherwise there can be a lot of problem.
- Rules regulation issue - When the whole internet is decentralized, the rule regulation will be Jesus and this will make cybercrime very difficult to handle
- Old hardware are useless - Web 3.0 Is Very Feature Loaded It's Required Hi Resources Show Forcely Businesses Will Need To Update When They Ask For Resources And If They Can't Do It Then Their Business May Get Out Of The Market
- Decentralized issue - When all our data is decentralized then there will be a lot of chance that our data can be public but still blockchain and cryptocurrency is very secure. But we can't forget that hacking any technology is possible.

III. CONCLUSION:-

With the arrival of Web 3.0, the idea of using our internet will be different, this will be another step towards the meta verse in which we will be able to do our work with complete freedom, we will not be a monopoly of any company from above people. Because all the data will be decentralized, our payment will be done in a secure way with crypto currency. The company will not be able to manipulate us by using our data. But at the same time we will also need very strong system and rule regulation otherwise hackers will completely destroy this new era and this web 3.0 is still a theory but we cannot ignore it.

We are not completely ready for web 3.0 yet, But this is a very good idea, so that the whole system of running our internet will change and it will be very good but it will have to be implemented properly only then it will be possible.

REFERENCE:-

https://www.cnbc.com/2020/10/06/google-overwhelmingly-dominates-search-market-house-committee-finds.html [1]

Sarco Capsule
An Euthanasia Machine

Vivek Kumar
Student, 2nd Year, Dept.of Electronics and communication engineering.

Introduction

Sarco Capsule which is a 3D Capsule, developed by **exit International** is now legal in Switzerland. Recently Sarco suicide capsule has passed its legal reviews in Switzerland.

Assisted suicide is legal in Switzerland, and around 1,300 people died by euthanasia in the country in 2020.

If you don't know about Sarco Capsule, let me tell you that Sarco Capsule is a 3D Coffin or we can say that Sarco is a 3D device that is used when euthanasia is allowed.

What is Euthanasia?

It is a term that means "**the painless killing of a patient suffering from an incurable and painful disease or in an irreversible coma**".

Generally, **it is permission from the government to those who are suffering from painful disease or irreversible coma** (where Chances of being cured in almost 0) then this permission allow the patient by some painless killing method (like Ingestion of liquid sodium pentobarbital).

Sarco Capsule offers a different approach for a peaceful death.
In 2018, the Supreme Court of India allowed passive Euthanasia and issued guidelines recognizing the "living will" of terminally-ill patients.

How Does Sarco Capsule Works?

It has been said that the Sarco capsule is designed to activate from the inside by the person intending to die. The Sarco capsule is built like a coffin.

it has been said that the device asks some questions to the person inside it, after answering the question, the user may press the button inside the capsule to activate the machine.

The Sarco Capsule works by filling the interior with nitrogen, which reduces the oxygen level that caused person death inside it.

An organization that created it, says that this Sarco capsule the euthanasia machine will be ready to operate by the next year 2023.

However, some people are claimed that this is a gas machine

Uses & Future of Sarco Capsule

Scientists Believe that This is an great invention and can be used by many countries in the future.

Conclusion

Sarco Capsule's aim is to develop an artificial intelligence screening system to establish the person's mental capacity. Naturally there is a lot of scepticism, especially on the part of psychiatrists. But our original conceptual idea is that the person would do an online test and receive a code to access the Sarco.

Reference - Annytutorial.com

PACKAGING INDUSTRY MARKET OVERVIEW: UPCOMING TRENDS

Nimai Patro

Student, 2nd Year, Dept.of Mechanical Engineering.

The packaging industry in India is expected to register a compound annual growth rate of approximately 26.7% during the period 2022-2027.According to the latest report by Indian Institute of packaging the consumption rate of packaging has increased by 200%. Earlier it was 4.3 kg per person per annum, which has increased to 8.6 kg per person per annum. As the large shift of consumer preference from conventional products to Eco friendly products is happening so too the supply chain supporting it, particularly printing and packaging industry also have to be revolutionized. In this revolution such packing would sustain in the industry which would support minimal space, recycling, reuse, environment friendly and should be digital enough. Of course, this demand will lead to innovations of new packaging material as well. One more thing also we have to consider that covid-19 pandemic has increased the market volume of e-commerce, so the demand of online delivery as well. This online delivery thing should also be taken into consideration while selecting packaging material as well as while designing. Here are the few packaging trends that will dominate in next ten to fifteen years.

Sustainable Packaging: A perception shift of consumers and brands

Concept behind sustainable packaging is that use of packaging material that are more Eco friendly and also support sustainability. Generally packaging material should be recyclable, reusable and should be biodegradable. Example includes cardboard, paper, biodegradable plastics and plant products.

Till now for the Food, Beverage and Pharma brands plastic is the major portion of their packaging material but with the increase in inclination of consumer towards sustainable packaging, these brands are too coming with new solutions. For instances, Amcor released AmSky Blister System which is an aluminium and vinyl free thermoform blister and can be used in place of PVC majorly in pharma industries.

Reliance industries Ltd. (RIL), India's largest private sector on 4th august 2021 came up with **Srichakra Ecotex India Pvt. Ltd** to doubling its PET recycling capacity. RIL claims that this step would ensure INDIA to maintains over 90% PET recycling.

There are many start-ups also came-up their creative and innovative idea. Plastic bottles of drinking water is one of major threat against sustainable packaging. For coping this an Australian start-up WALLABYWATER put forward the idea of using aluminium bottles instead of plastic. A Danish start-up My Coffee started biodegradable packaging of coffee. An Indian start up developed Bio-plastic packaging material to make shopping bags. Use of plant-based material and ship in smaller package are some of the other options for sustainable packaging.

According to the latest report of FORTUNE Business Insights Sustainable packaging market is going to grow from USD 268 billion in 2021 to USD 386 billion by 2028, a compound annual growth rate 5.3% in the period of 2021 to 2028.

Smart Packaging: A Digital adoption and Updation

From manufacturing to serving, packaging industry is trying to adopt itself with industry 4.0. For brands it is the way to honing their competitive edge whereas for consumer digitization brings transparency, increase responsiveness, easy access. This digitization process is also an opportunity for start-ups to increase their market share.

Blockchain and other Internet of packaging technologies are the future of packaging. These technologies can be used for providing consumer product details, product life detection, to track product, for data capture and for connecting brand and consumer via internet. For instance, consider the current situation, the details of product ranging from pharma to cosmetic is given via manual paper (often this paper is given inside the box). Definitely it increases the printing price as well as consumption of paper. Now consider a situation in which using bar code or other technologies, the complete details of the product is shared to the consumer in electronic medium.

Active and intelligent packaging are the new ideas trending in packaging, especially in food-beverage industry and is expected to grow rapidly in future. The motto behind active and intelligent packaging is that auto detection of quality of the food and if required it should be able to consume or emit necessary compounds in order to increase shelf life of product. Intelligent packaging enables to sense freshness, taste, toxicity and other food safety measures. Oxygen, ethylene, moisture-based scavengers, antimicrobial carbon dioxide emitters are some of the active

packaging compounds which are used currently in the market.

Coming to the market size of Smart packaging, according to the report of **Meticulous Research** it is going to grow $ 43.6 billion by 2027.It is being expected that a compound annual growth rate of 5.2 % will be in the period of 2020-2027. Market size of Digital printing is being expected to grow $ 28 billion by 2024.

Some of the very creative packaging innovations are also going to mark their presence in the future. Two of such creative innovations are Edible Packaging and Plantable Packaging. Logic behind Edible packaging is that packaging material too can be eaten. Many researches are going on edible packaging materials. Recent development has been achieved in protein film based edible packaging material. The basic concept of Plantable packaging is that packaging material can be plant. A start-up **Botanical Paperwork's** developed Plantable paper boxes that are made from seeds. These paper boxes are embedded with seed which later can be planted.

This upcoming or up to certain extent can be said ongoing revolution is going to bring many new experiences for consumer, opportunities for start-ups and research. Many things going to be left behind and will be witnessing many new things.

Friction Stir Processing: A Review on Current and Future Perspective from Numerical Point of View.

Nazmul Islam, Ganesh Shankar
Ramgarh Engineering College, Ramgarh, Jharkhand- 825101
Email: Nazmul.islam786@gmail.com

Abstract

Friction Stir Processing is a relatively new solid-state surface engineering technology based on the principles of Friction Stir Welding, invented at The Welding Institute, UK in 1991. Friction Stir Processing technique is widely used for modifying and refining the microstructures without any inherent defect. Moreover, it has emerged as a clean and flexible solid-state surface composites fabrication technique. Friction Stir Processing is a highly complex process comprising several highly coupled physical phenomena. The intricate geometry of some kinds of process samples and 3-Dimensional nature makes it difficult to develop an overall system of governing equations for theoretical analyzing the behaviour of friction stir processed samples. As the experiments are often costly and time consuming, to overcome these problems, numerical analysis has frequently been used for the last two decades. We want to review the latest developments in the numerical analysis of friction stir process, microstructures and the properties of friction stir processed samples. Some important numerical issues such as materials flow modelling, particle tracking, meshing procedure and failure criteria are discussed. Numerical analysis of friction stir processing will allow many different processes to be simulated in order to understand the effects of changes in different system parameters before physical testing, which would be time consuming or prohibitively expensive in practice. The main methods used in numerical analysis of friction stir process are discussed and illustrated with brief case studies. In addition, several important key problems and issues remain to be addressed about the numerical analysis of friction stir processing and opportunities for further research are identified.

Introduction

There is an increasing need to design lightweight structures such as those in aircraft panels and vehicle body shells. Advanced joining technology is an integral part of the manufacturing processes of lightweight structures. Considerable effort has been expended to develop various joining processes and assess their suitability for use in lightweight structures. This process of welding is used in fabrication automobile sector, shipbuilding component, and aircraft structures.

Friction stir welding (FSW) is a solid-state joining technique which was invented at The Welding Institute (TWI), UK, in 1991. The FSW has been found to be effective for joining hard-to-weld metals and for joining plates with different thickness or different materials. In the FSW process a non-consumable rotating tool with a specially designed pin and shoulder is inserted into the abutting edges of workpieces to be joined and traversed along the line of the joint. As the tool travels, heat is created by the contact friction between the shoulder and the workpiece, and by the plastic deformation of the materials in the stir zone. The high strain and heat energies experienced by the base metal during stirring causes dynamic recrystallization, which is the formation of new grains in the weld zone Although shows a butt joint for illustration, other types of joints.

Many authors [see the references] developed the CFD model to analyze the material flow and temperature distribution in friction stir welding of similar or dissimilar aluminum alloys.

The effect of FSP on TIG welding for dissimilar Al alloy AA6061 and AA7075 with filler wire ER4043 and ER5356 was carried out and analyze the mechanical properties, residual stress distribution and heat transfer by Mehdi and Mishra.

The mechanical properties, grain size etc are dependent on tool geometry, processing parameters and chemical composition of alloying elements. A new grain structure could be formed in friction stir welding by controlling the process parameter and heat input.

Experimental studies on FSP were performed on 12mm thick 304L stainless steel using a tool speed of 250 rpm and a feed rate of 100 mm/min. The tool had a pin length of 8 mm and a convex shoulder with a diameter of 25 mm,

An investigation on microstructure tensile properties of AZ91 after water-submerged FSP and non-cooled FSP. Their results show that after FSP on AZ91, the rough casting structure converted into coaxial graining, by Heidarpour et al.

Fashami et al. presented FE modeling of multi-pass FSP as a function of process parameters.

a. Process Parameters:

Literature showed that a number of Parameters are utilized by different scientists to understand the impact of parameters on FSP. Many researchers investigated and formulated the impact of friction stir processing which has produced composites layers on Aluminum, Steel, Nickel, Copper, and Titanium alloy. Some of the main process parameters which affect the microstructure and different properties of surface composite are device rotational speed, processing speed, axial force, device pin profile, a wide variety of passes, and groove design.

The experiments and observations of different scientists are tabulated below-

Scientist (Year)	Experiment	Observation
Kwon et al. (2003)	**Hardness and tensile strength** of the friction stir processed 1050 aluminum alloy.	At 560 rpm, the hardness tensile strength increased as a result of grain refinement by up to 37% and 46% respectively compared to the initial material.
Itharaju et al. (2004)	To relate the resulting **grain sizes** to the generated forces in friction stir processed 5052 aluminum sheet.	The resulting average grain size of the FS processed AA5052 sheet were between 1.5 and 3.5 μm depending on the process parameters, compared to 37.5 μm for the unprocessed sheet, which mean that great refinement has been achieved.
T. Kanimozhi et al. (2011)	The friction Stir processing of AA6082 alloy with various proportion of Silicon –Graphite composite was carried out in this experiment and their hardness value is measured.	The maximum hardness of 140 BHN was obtained with the processing speed of 60 mm/min at 500 rpm. The reinforcement percentage was 8% Si and 0.5% Gr hybrid composite Defect-free.
S. Jerome et al. (2012)	The effect of rotational speed on surface composite developed by single pass FSP with groove design was studied.	The average hardness along the top surface was found to increase by 22.72%.
Gupta et al. (2013)	The surface composite based on AL5083 matrix reinforced with nano-sized silicon carbide particles have been fabricated by Friction stir processing (FSP).	The hardness was maximum at center (155 HV) of processed zone at 60 mm/min and 500 rpm.
D. Dharmpal et al. (2013)	The effect of reinforced particles by using friction stir processing with 6 mm thick plate was studied.	The wear resistance of FSPed sample was inferior to that observed for 5083Al in spite of its higher hardness at 1200 rpm and 40 mm/min.
D. Deepak et al. (2013)	The aluminium and silicon surface composites by using the friction stir processing were fabricated.	It represented that the doping of 5083Al with hard SiC particles through FSP leads to significant increase in hardness of the surface composite produced on FSPed sample layer.
R. Srinivasuet al. (2014)	The friction stir processing of cast A356 Aluminium alloy was done.	The surface properties of the aluminium with B4C particles was improved.

S.R.Babuet al. (2014)	The role of tool shoulder diameter in producing a defect free processed zone observed.	The tool shoulder diameter of 18 mm produced the defects such as tunnels, voids and pin holes in the processed region for different parameter variations in 6 mm thick plate. With increase in the tool shoulder diameter beyond 18mm but less than 24 mm, a defect free processed zone was observed for variation in the process parameters in 6mm thick plate. As the thickness of work piece is reduced, the defects in the friction stir processed zone of 1.5 mm thick plate is completely eliminated. A fine grain of average grain size less than 10μm was observed in the nugget region.
H.S. Arora et al. (2014)	Using the Friction Stir Processing, the authors studied the controlling the length scale and distribution of ductile phase in metallic glass composites. For such purpose, the average size of dendrites was reduced by $1/5^{th}$ for the highest tool rotational speed of 900 rpm.	FSP results in increase the hardness and modulus for both the amorphous matrix and crystalline phase. In this study the explained the interaction of shear bonds in amorphous matrix with the strain-hardened dendrite phase. They made a new strategy for microstructure design in metallic glass composite.
N.Yuvarajet al. (2015)	The friction stir processing (FSP) was used to fabricate AA5083 aluminum alloy with reinforced layers of boroncarbide (B4C). The Micro and nano sized B4C reinforced particles were used.	The result shows that tensile strength of the specimen exhibited better mechanical properties than the base metal. The wear properties were improved by addition of B4C nano particles in comparison with B4C micro particle.
V Gangwar, Vivek, SS Ahamad, S Ali (2016)	universal horizontal Milling Machine is used to weld the parts together during the process of FSP. The rotational speed is varied from 1200 rpm to 1500 rpm while the welding speed is kept constant at 25 mm/min. The dimensions of the parts are (100mmx50mmx6mm) which are welded to form a butt joint.	The experimental results proved that the highest tensile strength of the welded joint Nidhi Sharma (2017) is capable of joining two dissimilar materials such as aluminium and copper. Due to much dissimlairties between aluminium and copper , defects were there. The strategies on mechanical properties, microstructure and formation of defects during dissimilar.

Karamjeet kaur et al pointed out that the Tensile strength, Yield strength and micro hardness are the properties, which had been affected by device shoulder diameter, device pin profile and tungsten carbide debris. Tensile electricity, yield electricity and hardness have most reliable value with cylindrical left hand threaded device at 18 mmn however percent elongation and effect strength is greater with square pin device as compare to cylindrical left handed threaded pin device and cylindrical taper pin device and most reliable value is acquired at 20 mm. Tensile strength, yield strength and micro• hardness are increased through doping of tungsten carbide reinforced particles. But percent elongation the impact energy decreases. Tensile Strength and Micro hardness

of the material is more in case of the device having 18 mm shoulder diameter because of the homogeneous distribution of the reinforced particles withinside the processed zone.

b. Material Flow (Particle Tracking)
c. Temperature Distribution
d. Process Modelling Techniques
e. Prediction of Defect Types
f. Effects of Tool Geometry

4. Microstructure of Friction Stir Processed Samples

a. Grain Size
b. Nugget Zone
c. Thermo-mechanically Affected Zone
d. Heat Affected Zone

5. Properties of Friction Stir Processed Samples

a. Residual Stresses
b. Hardness
c. Ultimate Tensile Strength
d. Others

Methods used in numerical analysis of friction stir process:

Sr	Authors	Base Material	Approach used	Scope of Study	Varying Parameters
Base Material: AZ91					
1	(Agha Amini Fashami et al. 2021)	AZ91-FSP	• Experimentation • Simulation - ABAQUS	• Defect free samples • Peak temperature	TRS, TTS
2	(Fashami et al. 2020)	AZ91-FSP	• Experimentation • Simulation- ABAQUS explicit software (Johnson–Cook material model) • ALE formulation	• Microhardness, tensile and creep. • Microstructure Analysis • Peak Temperature • Thermal distribution • Residual stress.	Multi-pass with 50% overlapping
3	(Bagheri et al. 2020)	AZ91- FSP	• Experimentation • Numerical Modelling- ABAQUS Explicit (Drilling operation) • Johnson-Cook material constitutive model	• Microstructure Analysis • Mechanical Test • Hardness • Chip morphology & Cutting force.	TRS, TTS
4	(Vaira Vignesh and Padmanaban 2018)	AZ91- FSP	• Numerical modelling- COMSOL Multiphysics • Validation with published experimental results.	• Transient temperature distribution • Peak Temperature.	TRS, TTS & SD at five levels of CCD
5	(Asadi, Mahdavinejad,	AZ91 FSP	• Simulation- DEFORM 3D	• SZ width	Constant TRS, TTS and TTA.

	and Tutunchilar 2011)		Lagrangian Implicit • Experimental	• Temperature and effective stress distributions, and material Flow	
Base Material: AZ31					
6	(Ammouri et al. 2013)	AZ31B FSP	• Experimental • Simulation- DEFORM 3D	• Temperature distribution • Strain Rate, Grain Size	TRS and Cooling rate of air
7	(Albakri et al. 2013)	AZ31 FSP	• Experimental Investigation • Numerical Study- Star CFD Multiphysics FVM based CCM+V.5	• Temperature distribution • Material flow and strain rate	TRS, TTS
8	(Paradiso et al. 2013)	AZ31- Selective Superplastic forming- FSP	• Experimentation • Simulation- MSC Marc version 2005	• Dome height • Final thickness of plate	Compared processed and unprocessed AZ31
9	(Nassar and Khraisheh 2012)	AZ31B- FSP	• Simulation- Comsol Multiphysics (Considering local melting in the stir region)	• Temperature distribution • Material Flow • Heat evolution	TRS and TTS
10	(Albakri et al. 2012)	AZ31B- FSP	• Simulation- 3D CFD-STAR CCM+ • Internally cooled FSP tool	• Rapid tool cooling on temperature & stress distribution. • Average grain size (Zener-Hollman) • Hardness (Hall-Petch)	With and without internal cooling
11	(Yu et al. 2012)	AZ31B FSP	• Experimentation and modelling- ANSYS/FLUENT • Lagrangian and Eulerian method for mesh	• Material Flow • Heat Transfer	Threaded pin and smooth pin
12	(Albakri, Aljoaba, and Khraisheh 2011)	AZ31-FSP	• CFD- Star CCM+ (Computational Continuum Mechanics) • Cooling from backing plate	• Temperature history • Flow stresses • Grain size and hardness distribution	Cooling geometries, (Straight & S channel cooling) flow rates and coolant types
Other Material than Magnesium Alloy					
13	(Khodabakhshi, Derazkola, and Gerlich 2020)	AA5052- FSP	• 3D- CFD • Monte Carlo-2D	• Thermal history and material plastic flow profiles (CFD) & • Grain Refinement (Monte-Carlo)	TRS, TTS
14	(B. Meyghani, Awang, and Wu 2020)	AA6061-T6-FSP	• Numerical Simulation-	• Temperature distribution	TRS & TTS

			Software not mentioned • ALE & SPH		
15	(Yang 2020)	AA6061-T6-Additive Friction Stir process	• Numerical Simulation LS-Dyna • SPH (Kernel Approximation)	• Temperature distribution • Material deposition and stress distribution	-
16	(Mehdi and Mishra 2020)	FSP on welded joint AA6061-AA7075	• Experimentation • ANSYS Fluent	• Residual Stress (cosα method) • Heat flux and Temperature variation.	TRS, Different filler (ER4043, ER5356)
17	(Ansari et al. 2019)	AA5083-FSP	• ABAQUS Explicit (Coupled Eulerian-Lagrangian)	• Temperature profile • Process force (F_T & F_A) and plastic strain	TRS and tool pin profile
18	(Miles et al. 2019)	SS 304L - cracks FSP	• Forge (Eulerian)	• Temperature and recrystallized grain size in SZ	-
19	(Adetunla and Akinlabi 2019)	1100Al FSP	• Experimentation • ABAQUS	• In-situ Temperature and Heat Generated.	TRS
20	(Shojaeefard et al. 2018)	A356-B4C-FSP	• Experimentation • Deform 3D	• Microstructural Analysis • Hardness & Wear loss • Distribution of reinforcement particles in SZ	Pin Profiles (Cylindrical, Threaded, Square, Hexagon)
21	(Avila et al. 2018)	API 5L X80-FSP	• Experimentation • CFD- COMSOL multiphysics	• Microstructure evolution during process • Temperature distribution • Material flow	-
22	(Shojaeefard et al. 2017)	A356-FSP with SiC, TiC, ZrO_2, and B_4C	• Experimentation • DEFORM 3D (Constant shear friction model)	• Mechanical and Wear properties (Experimentally) • Material Flow in both pin profiles (Simulation)	Different reinforced particles (Exp.) Cylindrical and Threaded pin
23	(Shamanian et al. 2017)	A413-FSP	• Coupled Thermo-mechanical model	• Microstructural, mechanical and tribological characteristics (Experimental). • Temperature gradients (Modelling)	TRS
24	(Ren et al. 2017)	AA2024-FSP to repair cracks	• Experimentation • ABAQUS	• Microstructure and Mechanical property test of repaired specimens • Temperature field • Plastic material flow	-

25	(Lebaal et al. 2017)	AISI 1045 Steel FSP	• Experimentation • COMSOL Multiphysics	• Temperature Profiles	TTS and Normal loads
26	(Miles et al. 2016)	SS 304L-FSP	• Experimentation • Forge (Eulerian)	• Temperature and Strain rate • Recrystallized grain size	-
27	(Hamilton et al. 2015)	AlMg9Si aluminium alloy-FSP	• COMSOL (Thermal/material flow model)	• Temperature Distribution • Residual Stress	-
28	(Zinati and Razfar 2015)	Polyamide 6-FSP (MWCNT)	• Experimentation • DEFORM 3D (ALE) • Lagrangian incremental formulation	• Microstructure Analysis • Plastic strain distribution • Material flow • Temperature distribution	-
29	(Santos et al. 2015)	AA5083-H111-FSP assisted with electric current. (Alumina)	• Experimentation • CSTM Studio Suit	• Hardness & microstructural analysis • Electrical current density • Flow patterns	With & without electric current of 500A
30	(Jaffarullah et al. 2015)	AA6061-FSP	• CATIA V5	• Stress Analysis of tool	TRS
31	(Kishta, Abed, and Darras 2014)	AA5083-FSP	• Experimentation • ABAQUS/Explicit • Coupled Eulerian-Lagrangian	• Temperature Profiles	TRS
32	(Cartigueyen, Sukesh, and Mahadevan 2014)	Pure Copper FSP	• Experimentation • ANSYS 11.0	• Microstructural Analysis • Thermal profiles • Peak Temperature	1. Const. TTS and Vary TRS 2. Const. TRS and vary TTS
33	(Arora, Singh, and Dhindaw 2012)	AE42-FSP	• MATLAB + Mathematical Model • Implicit form of heat equation	• Temperature distribution • Grain size	TRS, TTS, Axial load and Cooling rates
34	(Tutunchilar et al. 2012)	LM13 + Gr (Al-Si cast alloy)-FSP	• Experimentation • DEFORM-3D (Lagrangian incremental FEM)	• Microstructure Analysis • Defect types • Temperature distribution • Effective plastic strain • Material flow	Friction Factors (0.4, 0.5 & 0.6)
35	(Buffa et al. 2008)	AA7075-T6-FSP	• Experimentation • DEFORM 3D	• Metallurgical Changes • Longitudinal residual stress	Pin and no pin test
36	(Wang and Mishra 2007)	AA7075-Selective Superplastic forming-FSP	• Experimentation • MSC Marc version 2005 • Adaptive Remeshing	• Pressure Schedule • Distribution of thickness • Overall forming time.	-

37	(Dee 2004)	Ni-Al-Br FSP	• CTH	• Flow pattern • Thermal History	Rotation rate and Traverse Rate

Conclusion:

This article reviewed the latest developments in the numerical analysis of friction stir process, microstructures and the properties of friction stir processed samples. Some important numerical issues such as materials flow modelling, particle tracking, meshing procedure and failure criteria are discussed. Numerical analysis of friction stir processing will allow many different processes to be simulated in order to understand the effects of changes in different system parameters before physical testing, which would be time consuming or prohibitively expensive in practice. The main methods used in numerical analysis of friction stir process are discussed and illustrated with brief case studies. In addition, several important key problems and issues remain to be addressed about the numerical analysis of friction stir processing and opportunities for further research are identified.

References:

Carrino, Luigi, Antonino Squillace, Valentino Paradiso, Stefano Ciliberto, and Mario Montuori. 2013. "Superplastic Forming of Friction Stir Processed Magnesium Alloys for Aeronautical Applications: A Modeling Approach." Materials Science Forum 735: 180–91. https://doi.org/10.4028/www.scientific.net/MSF.735.180.

Miles, M. P., T. W. Nelson, F. C. Liu, C. Gunter, and L. Fourment. 2016. "Simulation of Friction Stir Processing in 304L Stainless Steel." MATEC Web of Conferences 80. https://doi.org/10.1051/matecconf/20168012001.

Fashami, Hoda Agha Amini, Nasrollah Bani Mostafa Arab, Mohammad Hoseinpour Gollo, and Bahram Nami. 2020. "Effect of Multi-Pass Friction Stir Processing on Thermal Distribution and Mechanical Properties of AZ91." Mechanics and Industry 21 (4). https://doi.org/10.1051/meca/2020042.

Asadi, P., R. A. Mahdavinejad, and S. Tutunchilar. 2011. "Simulation and Experimental Investigation of FSP of AZ91 Magnesium Alloy." Materials Science and Engineering A 528 (21): 6469–77. https://doi.org/10.1016/j.msea.2011.05.035.

Mehdi, Husain, and R. S. Mishra. 2020. "Effect of Friction Stir Processing on Mechanical Properties and Heat Transfer of TIG Welded Joint of AA6061 and AA7075." Defence Technology. https://doi.org/10.1016/j.dt.2020.04.014.

Lipscomb, Celena A., Aleksandra Fortier, Fanrong Kong, Shamiparna Das, Nilesh Kumar, and Rajiv S. Mishra. 2016. "Evaluation of Plastic Zone Development in WE43 Magnesium Alloy upon Friction Stir Processing Using Finite Element Modeling." Materials Science and Engineering A 673: 178–84. https://doi.org/10.1016/j.msea.2016.07.051.

Johnson, Richard R., and Philip P. Threadgill. 2014. Friction Stir Welding of Magnesium Alloys. Essential Readings in Magnesium Technology. Vol. 9781118858. Woodhead Publishing Limited. https://doi.org/10.1002/9781118859803.ch79.

Shamanian, Morteza, Hossein Mostaan, Mehdi Safari, and Mohammad Sefidkar Dezfooli. 2017. "Friction-Stir Processing of Al-12%Si Alloys: Grain Refinement, Numerical Simulation, Microstructure Evolution, Dry Sliding Wear Performance and Hardness Measurement." Metallurgical Research and Technology 114 (2). https://doi.org/10.1051/metal/2016066.

Nassar, H. W., and M. K. Khraisheh. 2012. "Simulation of Material Flow and Heat Evolution in Friction Stir Processing Incorporating Melting." Journal of Engineering Materials and Technology, Transactions of the ASME 134 (4). https://doi.org/10.1115/1.4006918.

M. Shamil Jaffarullah, Nur'Amirah Busu, Cheng Yee Low, J. B. Saedon, Armansyah, Mohd Saiful Bahari Shaari, Ahmed Jaffar. 2015. "SIMULATION ANALYSIS OF PEAK TEMPERATURE IN WELD ZONES DURING FRICTION STIR PROCESS." *International Journal* 1 (5): 77–81.

Meyghani, B., M. B. Awang, and C. S. Wu. 2020. "Thermal Analysis of Friction Stir Processing (FSP) Using Arbitrary Lagrangian-Eulerian (ALE) and Smoothed Particle Hydrodynamics (SPH) Meshing Techniques." *Materialwissenschaft Und Werkstofftechnik* 51 (5): 550–57. https://doi.org/10.1002/mawe.201900222.

Shojaeefard, Mohammad Hasan, Mostafa Akbari, Parviz Asadi, and Abolfazl Khalkhali. 2017. "The Effect of Reinforcement Type on the Microstructure, Mechanical Properties, and Wear Resistance of A356 Matrix Composites Produced by FSP." *International Journal of Advanced Manufacturing Technology* 91 (1–4): 1391–1407. https://doi.org/10.1007/s00170-016-9853-0.

Avila, J. A., R. A.R. Giorjao, J. Rodriguez, E. B. Fonseca, and A. J. Ramirez. 2018. "Modeling of Thermal Cycles and Microstructural Analysis of Pipeline Steels Processed by Friction Stir Processing." *International Journal of Advanced Manufacturing Technology* 98 (9–12): 2611–18. https://doi.org/10.1007/s00170-018-2408-9.

Yu, Zhenzhen, Wei Zhang, Hahn Choo, and Zhili Feng. 2012. "Transient Heat and Material Flow Modeling of Friction Stir Processing of Magnesium Alloy Using Threaded Tool." *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* 43 (2): 724–37. https://doi.org/10.1007/s11661-011-0862-1.

Stummer, Maximilian, Christopher Weiß, and Norbert Enzinger. 2018. "Thermo-Mechanical Testing of TiO2 Functional Coatings Using Friction Stir Processing." *Materialpruefung/Materials Testing* 60 (9): 818–24. https://doi.org/10.3139/120.111218.

E – SKATE BOARD

Vishal Kumar Goswami

Student, 2nd Year, Dept.of Mechanical Engineering

An electric skate board is a personal transporter based on skate board. It is board and compact vehicle that requires charging at regular intervals of time. It is durable and specially designed for youngsters.

With a long and flexible board and a wider wheel base, it can achieve stability at higher speeds. It is equipped with electronic speed brakers, trucks and pressure sensors that ensure proper and smooth skating. The board is fitted with a motorized wheel fixed with a belt pulley arrangement powered by an electric motor, driven by a high-capacity light weight battery.

Based on user tiling, the skate board moves forward or backward to achieve desired motion with smart sensing capability.

This new technology brings hope for small mobility and pollution free travel across small distances.

BIG DATA: ITS BENEFITS, CHALLENGES, AND FUTURE

Snehangshu Chatterjee

(Assistant professor in CSE)

➢ INTRODUCTION

Before the internet, information was in some ways restricted and more centralized. The only mediums of information were books, newspapers, and word of mouth, etc. But now with the advent of the internet and improvements to computer technology (Moore's Law), information and data skyrocketed, and it has become this open-system, where information can be distributed to people without any kind of limits. As the internet became more accessible and world-wide, social mobile applications and websites gradually grew to become platforms for sharing data. Data, along with many other things, grows in value as an increase in size, where this value is applied in many ways, but mostly for analytics and making decisions. Here's more about Big Data.

➢ WHAT IS BIG DATA?

Big Data can be defined as large amounts of data, both structured and unstructured, usually stored in the cloud or in data centers, which are then utilized by companies, organizations, startups, and even the government for

different purposes.

To utilize data means cleaning it and then analyzing it, forming patterns and connection, trends and correlations, to produce insights. This is what's called Big Data analytics. Big Data is also commonly described by its qualities, also known as the 4Vs.

➢ QUALITIES OF BIG DATA — THE 4 VS:

1. Volume: Insurmountable amounts of data due to improvements to technology and data storage (cloud storages, better processes, etc)

2. Velocity: Data is generated at astonishing rates, related to computer's speed and capability increasing (Moore's Law)

3. Variety: Wide range of data of different formats and types easily collected, in an era of social media and the internet.

4. Veracity: Inconsistencies and uncertainty of data (unstructured data — images, social media, video, etc.)

➢ TYPES OF DATA:

1. STRUCTURED

• Traditional data — tables, spreadsheets, databases with columns and rows, CSV and Excel.

• rarely how data is today — much messier

• job is to extract information and corral it to something tidy and structured

2. UNSTRUCTURED

• The proliferation of data from digital interactions — email, social media, text, customer habits, smart phones, GPS, websites, activity, video, facial recognition.

• Big data — new tools and approaches to utilize new data & cleaning and analysis on unstructured data

➢ TOOLS USED FOR BIG DATA ANALYSIS:

• Hadoop

• Apache Spark

• Apache Hive

• SAS

Most of these tools are just open-source frameworks for handling huge data efficiently and helpful features to do so.

➢ LANGUAGES USED FOR BIG DATA ANALYSIS:

• R

• Python

• Scala

These languages are very popular in the data science world and can be used for handling large amounts of data through specific libraries and packages.

➢ BENEFITS

• **Volume**: Some questions benefit from huge amounts of data, with the sheer volume of data, it negates small messiness or inaccuracies.

• **Velocity**: Real-time information → make swift decisions based on updated and informed predictions

• **Variety**: Ability to ask new questions and form new connections, questions that were previously inaccessible

• **Veracity**: Messy and unstructured data give rise to the possibility of hidden correlations. Perhaps the most promising benefit of more data is to identify hidden correlations.

➢ Future of Big Data

Big Data is commonly associated with other buzzwords like Machine Learning, Data Science, AI, Deep Learning, etc. Since these fields require data, Big data will continue to play a huge role in improving the current models we have now and allow for advancements in research. Take Tesla, for example, each Tesla car that has self-driving is also at the same time training Tesla's AI model and continually improves it with each mistake. This huge siphoning of data allows, along with a team of talented engineers is what makes Tesla the best at the self-driving game.

As data continues to expand and grow, cloud storage providers like AWS, Microsoft Azure and Google Cloud will rule in storing big data. This allows room for scalability and efficiency for companies. This also means there will be more and more people hired to handle these data, which translate to more job opportunities for "data officers" to manage the database of a company The future of Big data also has it's dark sides, as you know, many tech companies are facing heat from governments and the public due to issues of privacy and data. Laws that govern the rights of the people to their data will make data collection more restricted albeit honest. By the same vein, the proliferation of data online also exposes us to cyber attacks, and data security will be incredibly important.

MokshagundamVisvesvaraya

The first civil engineer of india.

Vicky Kumar

Student, 2nd Year, Dept.of civil Engineering

Introduction:-

MV-as Sir M Visvesvaraya was familiarly known played an important role in many technical projects across undivided India. Great leaders like Mahatma Gandhi and Nehru wanted MV to be associated with certain projects of great importance like the Orissa floods and bridge across the Ganga. In many of these projects, MV use dinnovations ahead of his time. For the water supply project at Sukkur in Sind, for example, he implemented the concept of 'collector wells' rarely used in those days but found in textbooks on ground water hydrology today. Another example is his automatic flood gate for dams (which he patented) which permits the passage of a flood through a reservoir without the water level exceeding the full reservoir level with the ordinary spillway used at that time, the flood discharge raised the water level above the full reservoir level, submerging additional surrounding land. This gate thus was a forerunner to the present day radial gates, which, however, are not automatic. He foresaw the importance of using a reservoir for flood control considered till then only for irrigation and power generation. His recommendations later resulted in the Hirakud dam being built, taming the Mahanadi river and reducing flood havoc in Orissa. Similarly, the twin cities of Hyderabad and Secundarabad are protected from floods due to plans drawn up by MV.

MECHANICAL ENGINEERING DEPARTMENT

Innovation and R&D Cell, Entrepreneurship Development Cell

Rajeev Ranjan

IDEATION CAMP

World Entrepreneurs' Day on August 23

Are you inquisitive about making your thoughts real? Then seize the possibility to wait for this ideation camp at no cost. This camp will help you discover ways to emerge as an extremely good innovator. The global market desires innovators and entrepreneur who can create answers to today's problems. This workshop could be a possibility, a good way to enhance your entrepreneurial skills, construct a robust community of like-minded innovators, and encourage you to emerge as a hit entrepreneur. It's now no longer a smooth undertaking, however, in case you paint difficult together with your team and give yourself a new concept that can enhance the lives of thousands of human beings in our society. You will compete in opposition to many different innovators, so be organized to face difficult.

The program allows the students to have fun and learn about ideation methods and planning skills. Program success will be an outcome of various people's efforts and ingenuity therefore participate well. Over the years get together will make certain to provide start to numerous startups. We will collaborate with similar organizations with our college, IITs, and IIMs.

Theme: Explore, Ideate and Innovate.

DAY1: DISCOVER

Recognize a social problem due to lack of know-how or technology in agriculture, environment, and social. Ideate and give your extremely good thoughts through a poster, project proposal, paper presentation or technical write-up and several guest lectures.

DAY2: CREATE

1. Draw rough sketch of an innovation model, Build a prototype and Pitch your concept to the jury.
2. Coding
3. Technical Quiz

DAY3: VALEDICTION

Certificate of participation, cash prize, and memento for the best three entries.

Hydraulic Flood Protection for Homes

Monu Kumar
Student, 2nd Year, Dept.of Civil Engineering.

Flooding is one of the very common and critical natural events that disrupts human lives globally. Around 2.2% which makes up almost 2.9% of the world's population live in regions that have 10% flood probability in every 50 years. Moreover, increase in global warming is said to further increase flooding events in near future.

Though flooding leads to loss of life, it leads to even more loss of property as property is immovable unlike humans that can go to higher places. There is absolutely no way to save a house in case of flood hits the area.

Well we here attempt to solve this problem by designing a mechanism that can save houses in flooding events. The system uses hydraulics to actually lift a house as per water level to escape flood water in such events.

This is a futuristic concept that has to be done before construction of the house n order to work. We develop a small model with a model house to demonstrate the concept. It involves firstly developing the house on a thick steel frame platform.

The concept involves 3 steel rods buried at least 3 meters below the ground and 3 meters above ground for withstanding flood impacts. The supporting rods are used to keep the house steady in case of strong winds/storm in flood prone region.

The steel platform is attached with 4 hydraulic cylinders mounted on 4 corners of the house. The cylinders are used to create the lift needed to lift the house in an upright manner without any jerking when needed.

We hereby use a high torque motor to operate the hydraulics. The motor is a 2-way motor that is used to drive fluid into and out of 4 cylinders as and when needed. Whenever the water level rises the user can choose to lift the house. We here by use the same flood water to operate hydraulic cylinders instead of costly hydraulic fluid which is prone to leakage.

In order to lift the motor drives water into all 4 cylinders thereby causing the cylinder pistons to rise higher gradually. This leads to lifting of the platform of the house. The 3 support rods mounted around the platform are used to keep the house stable and upright in the process.

Thus, driving water up the cylinders creates a lift which can be used to raise houses by 6 – 10 feet in order to protect them from flood water. When the flood water recedes, the owner may choose to lower the house, in which case the motor will start pulling water from cylinders, thus lowering the house gradually without any jerks.

The hydraulics along with the support rods are designed to life house without causing any critical jerks or angular change which may damage house structure or interiors. This system provides an alternative to a low-cost flood proof housing system in flood prone areas.

Components

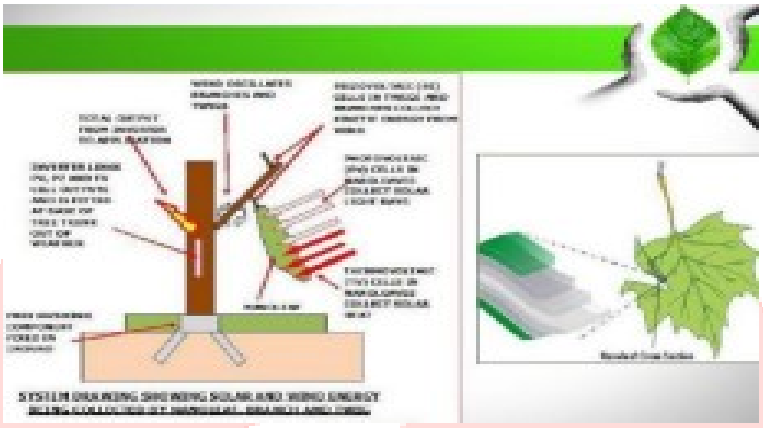
Hydraulic Cylinders, Pistons, Supporting Rods, Radial Bearings, Pumping Motor, Pipes and Joints, Base Frame, Supporting Frame, Mounts and Joints, Nuts and Bolts, Screws and Joints

Block Diagrams

PRODUCTION OF ELECTIRCITY FROM THE ARTIFICIAL NANOTREES

Neha kumari

Student, 2nd Year, Dept.of Computer Science and Engineering



Harvesting energy from the environment responsibly is important, natural trees and plants do this efficiently already for millions of years. Our invention is the mimicking of this ingenious concept also referred to as bio mimicry or bio mimetic.

With the emerging nano technology, scientists are working on the new concept called the nano leaves that will help in producing electricity with the help of solar energy. This paper is about renewable energy and in particular the innovative technology of artificial trees and leaves known as BIOMIMICRY.

BIOMIMICRY

In this theory nano leaves transform light, heat and wind energy into eco-friendly electricity. Biomimicry is a developing science attempting to solve human difficulties by fostering nature's clever system.

NANO TECHNOLOGY

- Nanotechnology is a revolutionary term creating new possibilities in the field of science, technology and industry.
- It is a new as well as challenging field of study.
- One such challenge is creating Nano- Leaves using the Solar Botanic Technology.
- Nano-Leaves can be a possible solution to the energy crisis the world is prone to face in the near future.
- Artificial Nano leaves are capable of harvesting the thermal and light energy from the sun's energy and convert it toelectricity.
- The stems of the Nano leaves are designed to collect kinetic energy from the wind, which they also convert to electrical energy.

NANO TREE

It is an artificial tree which makes use of renewable energy from sun, wind and which have a means of collecting solar andwind energy.

It utilizes three different energy generation technologies such as:

· *Nano photo voltaic:* generates in the leaf directly converts solar energy into electricity. · *Nano thermo electricity:* cells convert solar heat to electricity.

· *Nano piezo:* generators convert wind energy into electricity.

NANO TREES OPERATION AND WORKING:

· When outside forces like wind pushes the nano leaf back and forth mechanical stresses appear in the petiole, twigs and branches. When thousands of nano leaves flap back and forth due to wind millions and millions of pico watts are generated, the stronger the wind the more energy is generated.

Global Acceptance on climate change

Monu Kumar Mahto
Student, 2nd Year, Dept.of Civil Engineering.

In December 2015, 195 countries unanimously adopted The Paris Agreement on Climate Change. This Agreement came into force on 4 November 2016 after 148 of the 195 countries ratified it. This agreement is historic in the sense that it brought for the first time the developed and developing nations together on a common agenda to combat the menace of climate change. The IPCC Assessment reports published periodically during 1990 to 2013, have conclusively established the link between rising levels of GHG in the atmosphere and the phenomena of global climate change. The central aim of the Agreement is to limit the global temperature rise below 2°C. In June 2017, a major setback to the Paris Agreement occurred when USA officially declared withdrawing from the treaty, nevertheless, rest of the countries adopted a brave stance of implementing the provisions of the Agreement.

One of the major aims of the Paris Agreement has been to reach the global peaking of greenhouse gas emissions as soon as possible. The Agreement recognizes that peaking will take longer period for developing countries. Country wise per capita emission data for selected countries, reveal that countries like Australia, Saudi Arabia, Canada, Russia, South Korea and Japan are at the top of the list whereas China is somewhere at the middle and India is nearly at the bottom of the list, lower in ranking than Mexico, Thailand and Brazil.

India, like China, Australia, South Africa and Indonesia, is heavily dependent on coalfired Thermal Power Stations for its electricity production. But this route emits maximum CO2 / kWh and a country deficient in cleaner alternative energy resources such as natural gas or hydroelectric has no choice but to depend on its available coal resources for power generation. The hope of lifting the vast number of marginal farmers and landless people in India will call for rapid industrialization for providing alternative employment. This will entail expansion of energy sector and thus rise in GHG emissions. It should be globally accepted that like other developing countries India needs an equitable carbon and development space to provide affordable energy and continue sustainable development for eradication of poverty.

Nevertheless, India is an active member of the world community taking various steps to control GHG emissions. India has made a number of more ambitious commitments at the 2015 Paris Climate Conference through its Nationally Determined Contribution (NDC) targets. These commitments are:

1) To lower the emission intensity of GDP by 33 % to 35 % by 2030 below 2005 level
2) To increase the share of non - fossil based power generation capacity to 40 % of installed electric power capacity by 2030, and
3) To create additional carbon sinks through increasing additional forests and tree cover over excavation sites, over - burden dumps and vacant lands in the lease hold

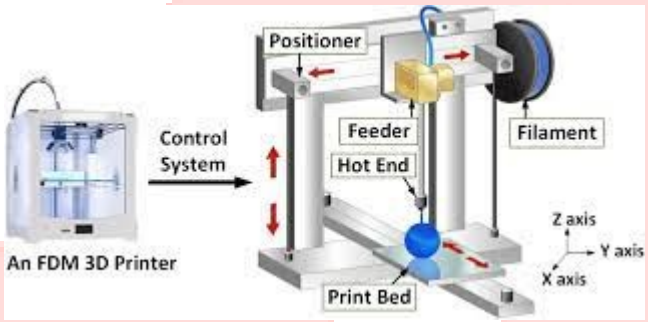
India needs to effort to increase efficiency in energy generation and utilization, autonomous technological changes and a rapid growth in renewable energy sector to keep its commitments. It is remarkable that of the 187.8 GW additional power generation capacity envisaged in 2017-22 period as much as 115.3 GW would come from the power. renewable sector of which 100 GW would be solar power.

3D PRINTER

Anand Snehanshu
Student, 1st Year, Dept.of Electrical Engineering

3D PRINTER IS THAT PRINTER WHICH PRINTS THREE DIMENSIONAL PHYSICAL OBJECT WHICH ARE CREATED OR DESIGNED DIGITALLY ON OUR COMPUTER SCREEN.A NORMAL PRINTER PRINTS ANY THING BY USING COLOR INK AND 2D PRINTING BUT IN THIS PRINTER WE CAN USE A LIQUID OR POWDERED PLASTIC,METAL OR CASTING IRON.WE CAN PRINT A 3D OBJECT BY FUSING THE LAYERS TOGETHER. SINCE IT WAS INTRODUCED ,IT MADE MASS PRODUCTIVITY OF CRITICAL OR WELL MEASURED MATERIALS (HEARING AIDS.AIRLINE MAUFACTURES) EASY.

- **STRUCTURE :-**



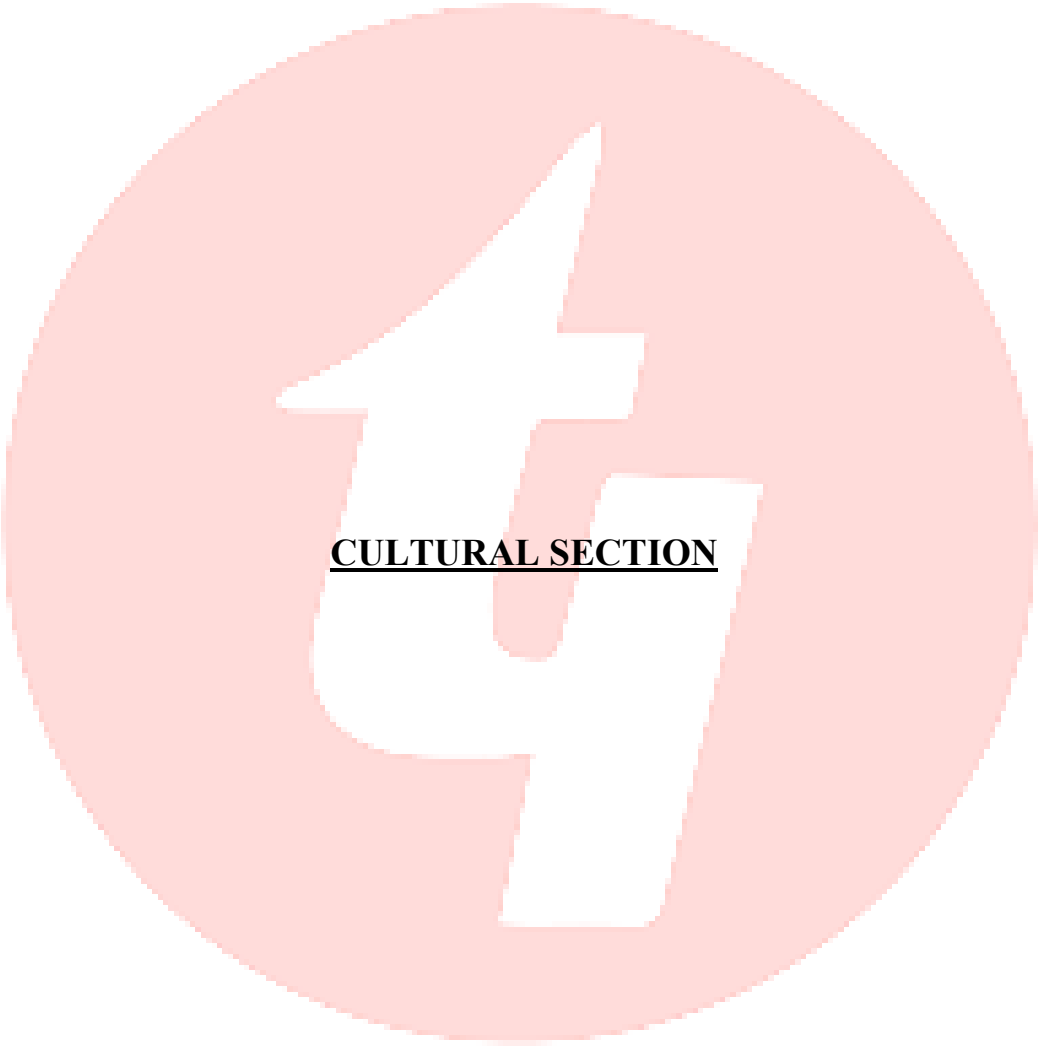
3D PRINTER ,HOW IT WORKS ?

MECHANISM OF 3D PRINTER IS FUSED DEPOSITIONAL MODELING .IN THIS PRINTING ,A REPEATEDLY PRINTING OVER THE SAME AREA AND DSESIGN AT A TIME CREATES A 3D PRINT.BUT BY USING INK IT CAN NOT GIVE THE VOLUME TO THE THREE DIMENSIONAL PRINT SO IT USE POWDERED PLASTIC,MOLTEN POWDERS CEMENTS TO GIVE THE VOLUME TO THE DESIGNED STRUCTURE OR ART.

- **USES OF 3D PRINTER** :-
  1. CONSTRUCTION OF WELL MEASURED AND DESIGNED MEDICAL EQUIPMENTS
  2. PRINTING OF ENGINEERING EQUIPMENTS WHICH ARE USED IN LABS AND OFFICES.
  3. 3D WORDARTS AND PAINTINGS CAN PRINTED.
  4. MANUFACTURING OF MOTER PARTS IN CAR,AIRCRAFT INDUSTRIES.
- **ADVANTAGES OF 3D PRINTER**
  1. IT COMES IN SAME SIZE AS A 2D PRINTER OR NORMAL INK PRINTER.
  2. IT IS EASY AND SAFE TO USE OR PRINT OF DESIGNED SHAPE.
  3. IT USES EASILY AVAILABLE POWDERED PLASTICS AND LIQUIDS AS THEIR INK.
  4. IT COMES UNDER VARIABLE RANGES OF PRICE AND MODELS.
- **DISADVANTAGES :-**
  1. OFTEN IT NOT AVAILABLE IN MARKET AS COMPARE TO REGULAR PRINTER.
  2. IT DOES NOT PRODUCES STRONG AND HARD OUTPUT.
  3. LACK OF COLOR AND TEXTURES IN PRINTING
  4. EXTERNAL MACHINES REQUIRED IN FINALIZATION AFTER PRINTING.

  .

3D PRINTER IS MODEERN TECHNOLOGY IN CURRENT ERA BUT IT WILL BE THE BEST TECHNOLOGY IN FUTURE IN MANUFACTURING AND PRINTING .IT IS POPULAR IN PRINTING MEDIUM, IT WILL BE MORE CHEAPER AND EFFORTLESS PRINTING IN UPCOMING TIME.IT WILL GROW MORE FASTER WHEN WELL REPUTED COMPANIES LIKE HP ,DELL WILL HIRE IRT AS A PRINTING PRODUCT.IT WILL BE MORE HELPFUL FOR ENGINEERING STUDENTS IN THEIR LABS AND STUDIES



CULTURAL SECTION

The Mindset of a Girl

Nitish Kumar Singh

Student, 2nd Year, Dept.of Civil Engineering.

WILL I BE ABLE TO EVER CHANGE MY LIFE ?

One thing always comes to my mind,

Will I be able to ever change my life?

Will a day ever come ?

When I shall have the right ,

To walk down the street ,day and night ,

Will a day ever come ?

When I shall not be a burden ,

On my father's shoulder

And shall be treated ,

As equal as my father's fate.

But I believe

One day shall come ,

When the women shall be empowered

And the world shall depend on them ,

One day shall sure come ,

When no mother shall cry .

And sing a woeful ballad,

For her princess at night .

One day shall sure come ,

When no scream shall be heard

And no mother -sister, Shall shout for help at night .

नारी की कहानी

Deepshikha kumari
Student, 2nd Year, Dept.of Electrical Engineering

माँ पर लिखूं, बहन पर लिखूं
या मासी, नानी, दादी पर
लिखती हूँ मैं आज कविता
इस दुनिया की एक विशिष्ट आबादी पर,

माँ बनकर बच्चों को सींचे
घर की सारी जिम्मेदारियों को बिना थके खींचे
यूँ तो कहते हैं सब,
जन्नत है उसके पैरों के निचे

पर क्या इतना सम्मान वो पाती है
गलती चाहे जिसकी भी हो,
नजरें वही चुराती है।

बात बस इतनी सी है,
की वो एक नारी है
बस यही कुसूर है, गलती उसी की सारी है
पर ये न समझा जाये की वो अबला है,
बेचारी है।

लक्ष्मी है कहीं, कहीं सरस्वती,
कहीं दुर्गा, तो कहीं काली है
वो जो डरी सहमी सी सड़कों पर चलती है
असल में वो बहुत हिम्मतवाली है।

किसी ने देवी, तो किसी ने भगवान बना दिया
पर एक इंसान होने का दर्जा किसी ने नहीं दिया।

सदियों से अनगिनत सामाजिक कुरीतियों का शिकार हुई
बांध दी गई बेड़ियाँ उसके पाँवो में
चार दीवारी में घुटने को लाचार हुई
लाख बंदिशों, हज़ार रोक-टोक से हो परे,
वो उड़ने को फिर तैयार हुई
पर हाय रे किस्मत!
कुछ इंसानों की हैवानियत का फिर शिकार हुई।

रानी लक्ष्मीबाई, शकुंतला देवी, किरण बेदी, कल्पना चावला,
ज़मीन से आसमान तक बेटियों के उड़ान को
सबने नमस्कार किया,
बदलते वक़्त के साथ बदलती परिणती को
सबने स्वीकार किया।

एक लम्बी कठिन डगर को तय कर
यहाँ तक आई है नारी
अभी तो बस रास्ता मिला है,मंज़िल तक जाने के लिए
ये सफर सदियों तक रहेगा जारी,

दुनियाँ की हर नारी तक गर पहुंचे मेरी आवाज़
बस यही संदेश मैं सबको दूंगी आज
दुनियाँ को बदलना है तो
खुदको दुनिया की सोच से करो आज़ाद
सदियों के इस सफर को रखना होगा याद।

मंज़िल पाने के लिए परस्पर चलना होगा
जब तक है अंधेरा बाती बन जलना होगा...

दीप शिखा

MENTAL HEALTH

What is Mental health ?

Mental health includes our emotional, psychological and social well-being. It affects how we think,feel and act.

Symptoms of mental ilness

- Feeling down for a while
- Withdrawing from family and friends
- Often feeling angry, hostile or violent
- Thinking about death or sucide

Why Is Mental Health Important ?

More than 450 million people suffer from mental disorders. According to WHO, by the year 2020, depression will constitute the second largest disease burden worldwide. Global burden of mental health will be well beyond the treatment capacities of developed and developing countries.

Why Should We Spread Mental Health Awareness

By making a concerted effort to spread mental health awareness, we can work openly how we think about, approach, and identify mental health issues in our society.

Having those tough conversations and admitting there's a problem means we can come up with a solution. We can start removing the shame and fear that's often associated with topics surrounding mental health. Doing so can increase the likelihood of someone reaching out when they need help.

Asking for help is a sign of strength. Working together allows us to begin building a foundation that respects and honors the importance of good mental health.

CONCLUSION

Anyone can suffer from mental illness whether it can be us our friends or family members. It is important that we keep talking with people around us, no one knows what the other person is going through.

By-Akash

KARMA PUJA

By Priyanka Kumari, 2nd Year, Civil Engineering Department, Ramgarh Engineering College

Karma is one of the major festivals of Jharkhand. Apart from Jharkhand, this festival is celebrated with pomp by the tribal community in Odisha, Bengal, Chhattisgarh and Assam. Karma festival is celebrated on the day of Shukla Paksha Ekadashi of Bhado month. The main purpose of celebrating this festival is to wish the brothers happiness, prosperity and long life by sisters. It has been a tradition of the people of Jharkhand that after the paddy is planted, they worship nature and wish for a good harvest. Jharkhand has a tradition of worshiping nature for centuries. Karam Dali is worshiped on the occasion of Karma festival.

It is believed that this festival is celebrated by sisters for brothers. Apart from this, it is also a symbol of nature. Sisters pray for the happiness, prosperity and long life of their brothers on this day. A few days before the Karma festival, girls lift sand from a river or a pond. Clean and fine sand from the river or pond is picked up and filled in the dali. In this, seven types of grains are sown, barley, wheat, corn, paddy, urad, gram, kulthi etc. And keeps it in a clean place. From the second day onwards, after worshiping with incense, dhuvan, turmeric is watered with water. All around, the girls sing and dance, holding each other's hands in a circular motion.

On the day of Puja, sisters get ready by wearing new clothes, wearing different feet. After this, in the evening, the elders of the village wear new clothes, play the Mandar, dance and sing and go to cut the Karam Dali. After reaching there,

Karam climbs the tree with full devotion and cuts three branches and comes down from the tree with him, in which care has to be taken that the Karam branch does not fall on the ground. After this Karam is duly buried in the courtyard of the house. The sisters take a decorated plate and sit around the branch to worship. Karam prays to the king that O King of Karam! Wishing my brother happiness and prosperity. After this, everyone celebrates the festival by dancing throughout the night and is immersed in a nearby river in the morning. A special song is also sung on this occasion.

MONU KUMAR MAHTO
Student, 2nd Year, Dept.of Civil Engineering

किसी ने ठीक ही कहा है-
बेटी भार नहीं, है आधार
जीवन है उसका अधिकार ।

शिक्षा है उसका हथियार,
बढ़ाओ कदम करो स्वीकार ।
बेटी बचाओ बेटी पढ़ाओ ।।

मत मारो तुम कोख में इसको,
इसे सुंदर जग में आने दो ।
छोड़ो तुम अपनी सोच ये छोटी
एक माँ को खुशी मनाने दो ।।

बेटी के आने पर अब तुम
घी के दीए जलाओ,
आज यह संदेशा
पूरे जग में तुम फैलाओ ।
बेटी बचाओ, बेटी पढ़ाओ ।।

फौलादी ले नेक इरादे
खुद अपनी इतिहास गढ़ेंगे ।

देश पढ़ेगा देश बढ़ेगा,
दौड़ेगी अब तरुण जवानी,
बेटी युग की नए दौर की
आओ लिखें नई कहानी ।

आज ये संदेशा पूरे जग में तुम फैलाओ,
बेटी बचाओ, बेटी पढ़ाओ ।।

सारा जग शिक्षामय करना,
हमने सोच मन में ठानी ।

अब कोई न अनपढ़ होगा,
सबके हाथों में पुस्तक होगी ।

ज्ञान गंगा की पावन धारा,
सबके आँगन तक पहुँचेगी ।

पुस्तक और पेन की शक्ति
जगजाहिर जानी - पहचानी,
आज ये संदेशा पूरे जग में तुम फैलाओ.
बेटी बचाओ, बेटी पढ़ाओ ।

ये आकाश में गोते लगाती,
यही तो है कहलाती मर्दानी ।
यही तो है कल्पना चावला,
यही तो है झाँसी की रानी ।

इनको दे करने, पूरी शिक्षा
अपना कर्तव्य निभाओ,
आज ये संदेशा पूरे जग में तुम फैलाओ ।
बेटी बचाओ, बेटी पढ़ाओ ।।

SOHRAI

Yogesh Hansda,
Student,2nd Year, Dept.of Civil Engineering

Sohrai is a winter festival and one of the most important festival of Adivasis in Jharkhand and West Bengal. The name Sohrai is said to have derived from a paleolithic age word- soro (meaning- to drive with a stick). It is generally celebrated in the beginning of winter harvest, when paddy has ripened, on the new moon day of the month Kartik (generally between October - November). In some regions celebration takes place at the end of the winter harvesting month Poush (mid-January), after they have reaped and threshed their paddy. Adivasis pay tribute to their gods (Bongas) and their ancestors as a thanks giving for their crops, cattle, plough and everything that has helped them to attain harvest. Sohrai is celebrated for three days. The date of the festival is usually decided by the Manjhi, the village headman in consultation with the elders of the village. There is no fixed date marked off, thus celebrations are often staggered across the villages, within the traditional time frame. The purpose is to enable the villagers to celebrate Sohrai in their own villages as well as in their relatives' village, especially married women go to their parents' or brothers' village In the preparation of the festival, the women of the community repair their mud walls, floors and decorate the walls with their stunning traditional art. The decoration has to be completed by the eve of the festival. The Sohrai art painted on the mud walls is a tradition handed down from mother to daughter. These colourful paintings are done totally by using natural pigments mixed in mud - Kali Matti, Charak matti, Dudhi Matti, Lal Matti (Geru) and Pila Matti. Art generally contains paintings of bulls, horses with riders, wild animals, trees, lotuses, peacocks, and horned deities. These paintings are said to be good luck paintings. On the first day, rituals and sacrifice of hens are conducted by the village priest, Naike in an open space as an invocation of their gods. It is only attended by men of the villages. After a feast of hen porridge, the village headman, Manjhi announces start of the festival. The second day is devoted to invoke blessings from Bongas for individual homes. The cattle are sent to the fields in the morning to graze. In their absence, the women of the house decorate the cattle-sheds by painting them. Meanwhile, food is prepared which would later serve as prasad after the puja. On returning, the cattle are warmly welcomed, their horns are anointed with oil and vermilion. Garlands made by Strewing paddy strands are tied across their foreheads. When the puja gets over, the prasad is distributed among household members and neighbours. At night, they light earthen lamps (diyas) in the cattle-sheds. On Third day of Sohrai, people worship their cattle- shed. They bring some paddy strands from their paddy field, which they use in the worship. After worship they tie those plants to animal's horns. In the afternoon, amid the loud sound of Nagara, the cattle are taken to an open field where they are let loose for games and recreational purposes. Three days of the festival is accompanied by variety of rituals, consumption of handia in copious quantities, dancing, singing and merry making. Different songs are sung for different days. Thus on the last day Manjhi brings the celebration to an end by completing all the rituals

Beauty of Jharkhand

BHUWAN KUMAR
Student, 2nd Year, Dept.of Civil Engineering

JHARKHAND

'The Land of Forests' as Jharkhand is famously called, is heaven for nature lovers. The unparalleled beauty of the state with majestic hills, scenic waterfalls, rich greenery and colorful culture makes your visit to the land memorable. Thanks to the dominant tribal population, the land preserves nature at its best. It is the perfect destination to land if you are looking for a rendezvous with nature. Here are the top places in Jharkhand.

1. Ranchi

Ranchi, the capital of Jharkhand, is rightly called the City of Waterfalls. Blessed with the best of nature, Ranchi captivates your soul with authority. It is so rich in mineral resources that it is also called as the 'Manchester of the East'. Here are the top attractions in Ranchi

A. Hundru Falls
B. Dassam Falls
C. Jonha Falls
D. Panch Gagh Falls
E. Birsa Zoological Park
F. Kanke Dam
G. Jagannth Temple
H. Sun Temple
I. Pahari Mandir
J. Rock Garden

2. Jamshedpur

Jamshedpur owns the pride of being home to Tata Steel, the first private iron and steel company in the country. With many industries, both small and large scale, flourishing here, it is indeed a surprise to see that the city has rich greenery and is environment friendly. Here are the leading attractions in Jamshedpur.

A. Dalma Hills
B. Jubilee Park
C. Jayanti Sarovar
D. Tata Steel Zoological Park
E. Dalma Wildlife Sanctuary
F. Hudco Lake
G. Bhatia Park
H. Sir Dorabj Tata Park

3. Deoghar

Deoghar, the City of Temples, is a famous pilgrim spot for followers of Hinduism. This ancient town has many temples and some are located in scenic environment. Have a feel of the land regardless of the faith you believe in and you are sure to enjoy every moment of it. Here are some of the top attractions in the city.

A. Baba Baidyanath Temple
B. Basukinath
C. Trikuta Hills
D. Satsanga Ashram
E. Mayurakshi River
F. Harila Jori
G. Shivganga
H. Rikhia Yogashram

4. Dhanbad

Dhanbad, the 'Coal Capital of India', ranks 79th amongst the fastest growing cities in the world. While the city's earlier history remains a mystery, its present development is no secret to the world as it lies at the center of the heart of the country's richest coal fields. Here are the places to visit in Dhanbad.

A. Topchanchi Lake
B. Maithon Dam
C. Panchet Dam
D. Birsa Munda Park
E. Bhatinda Fall
F. Charak Pathar
H. Parasnath Temple
I. Jharia Coal Mines

5. Bokaro

Bokaro is famous for its steel and coal industries. The natural resources available here has turned the city into a leading industrial hub. It is however not all industries as it has its share of lush greenery too. Here are some top tourist spots in Bokaro.

A. Bokaro Steel City
B. Garga Dam
C. Jawaharlal Nehru Biological Park
D. City Park
E. Bokaro Ispat Pustakalaya
F. Jagannath Temple
G. Gayatri Mandir
H. Kali Mandir
I. Siwandih
J. Noori Masjid
K. Aaiyappa Mandir

6. Giridih

Giridih, called the 'Land of Hills' is also known as 'The Land of Jain Pilgrims'. The highest peak of Jharkhand lies here. Being carved out from Hazaribagh, Giridih shares its history. The land abounds in mineral resources. It boasts of extensive forests too. Here are some leading attractions in Giridih.

A. Parasnath Hill
B. Usri Falls
C. Madhuban
D. Khandoli Park
E. Jharkhandi Dham
F. Devari Temple
G. Harihar Dham
H. Jain Museum
I. Sammed Shikharji

7. Netarhat

If you long to be amidst the richness of nature, Netarhat, Queen of Chotanagpur, is the right place for you. The tranquility in the air and scenic landscapes just blow your mind. The jungle covered hill station is the coolest place in the whole of Jharkhand. Here are the top tourist destinations in Netarhat.

A. Netarhat Hills
B. Koel View Point
C. Sadni Falls
D. Magnolia Sunset Point
E. Upper Ghaghri Falls
F. Lower Ghaghri Falls

वो नन्ही सी जान।।

TAPAS KUMAR GORAI
Student, 2nd Year, Dept.of Electronics and communication Engineering

साहब मैं नही मानता गलत इसे
जिम्मेदारी और नौकरी तले
इतना दब गया है
वो इंसान
कि अब उसे.....
हर त्योहार महज एक
छुट्टी का दिन लगने लगा है
ना पहले वाली खुशी रही
ना बची है वो मुस्कान
क्यू इतने
बड़े हो गए ,रोज सोचता है
वो नन्ही सी जान।।

मुमकिन है क्या ?

Nalini

Student, 1st Year, Dept.of computer science Engineering

हां प्यार हो जाता है ,

करार और इज़हार हो जाता है ,

बस इल्तेजान तुम्हारे साथ होने की रह जाती है,

तुम्हारे दूर होते हुए भी...., करीब का एहसास हो जाता है,

तुम्हारा होना औरों के लिए मामूली मगर....

मेरे लिए कुछ खास हो जाता है |

ऐसे मैं,... तुम्हारे कुछ यू कह जाना...

कि अब मैं जरूरी नहीं ,

अब किसी और का मुकम्मल हो जाना .....

बताओ... मुमकिन है क्या ?

जब तू खो गया था ,तुम्हारे ना मिलने का एहसास

मात्र से यह दिल खो गया था ....

ऐसे में किसी और का हो जाना,

बताओ.... मुमकिन है क्या?

Lord Ganesh

Anand Kumar
Student, 1st Year, Dept.of Electrical Engineering

Horse Sketch

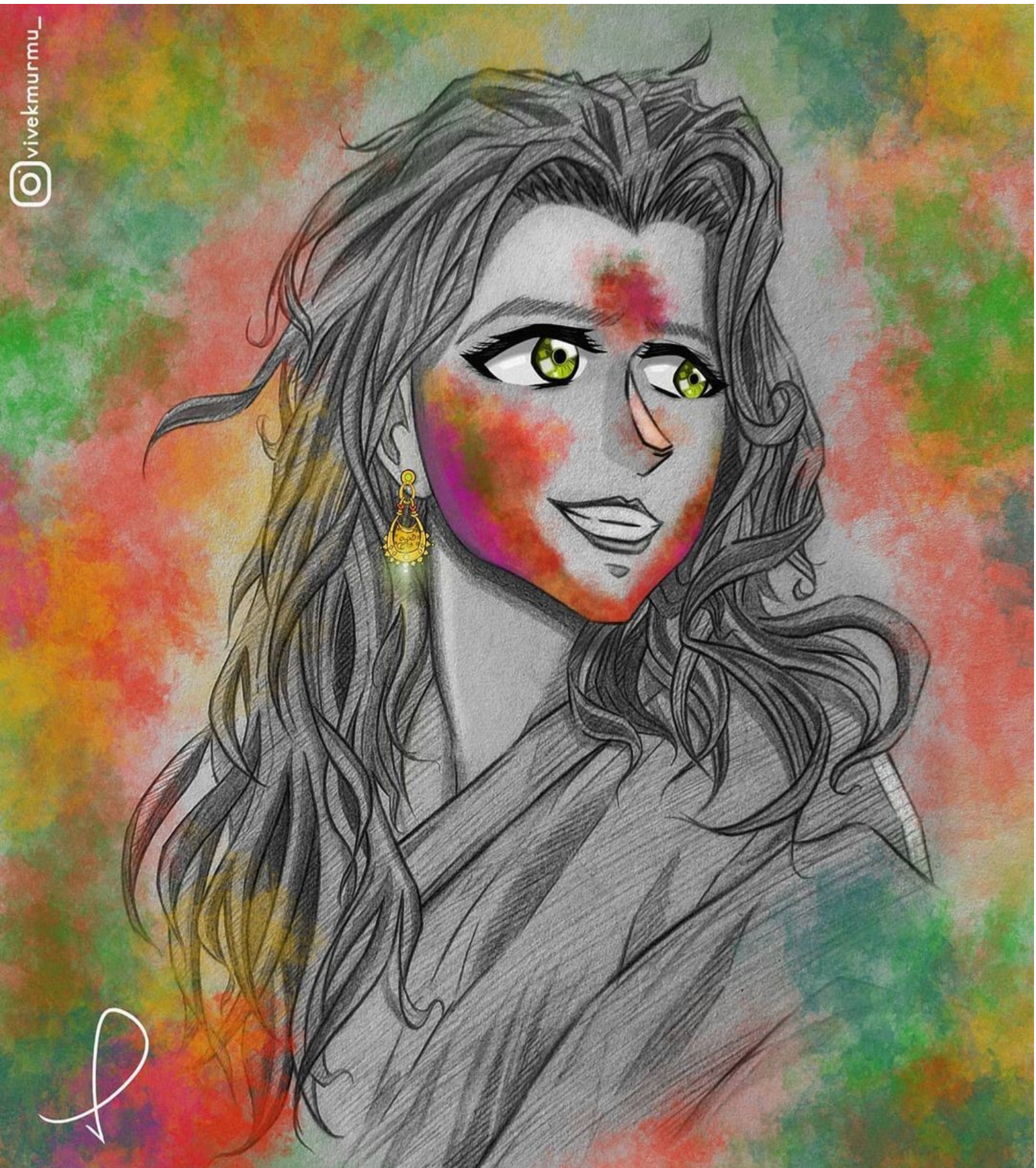
Vijay kumar
Student, 2nd Year, Dept.of Electrical Engineering

RADHA KRISHNA

Laxmi kumari
Student, 1st Year, Dept.of Computer science and engineering

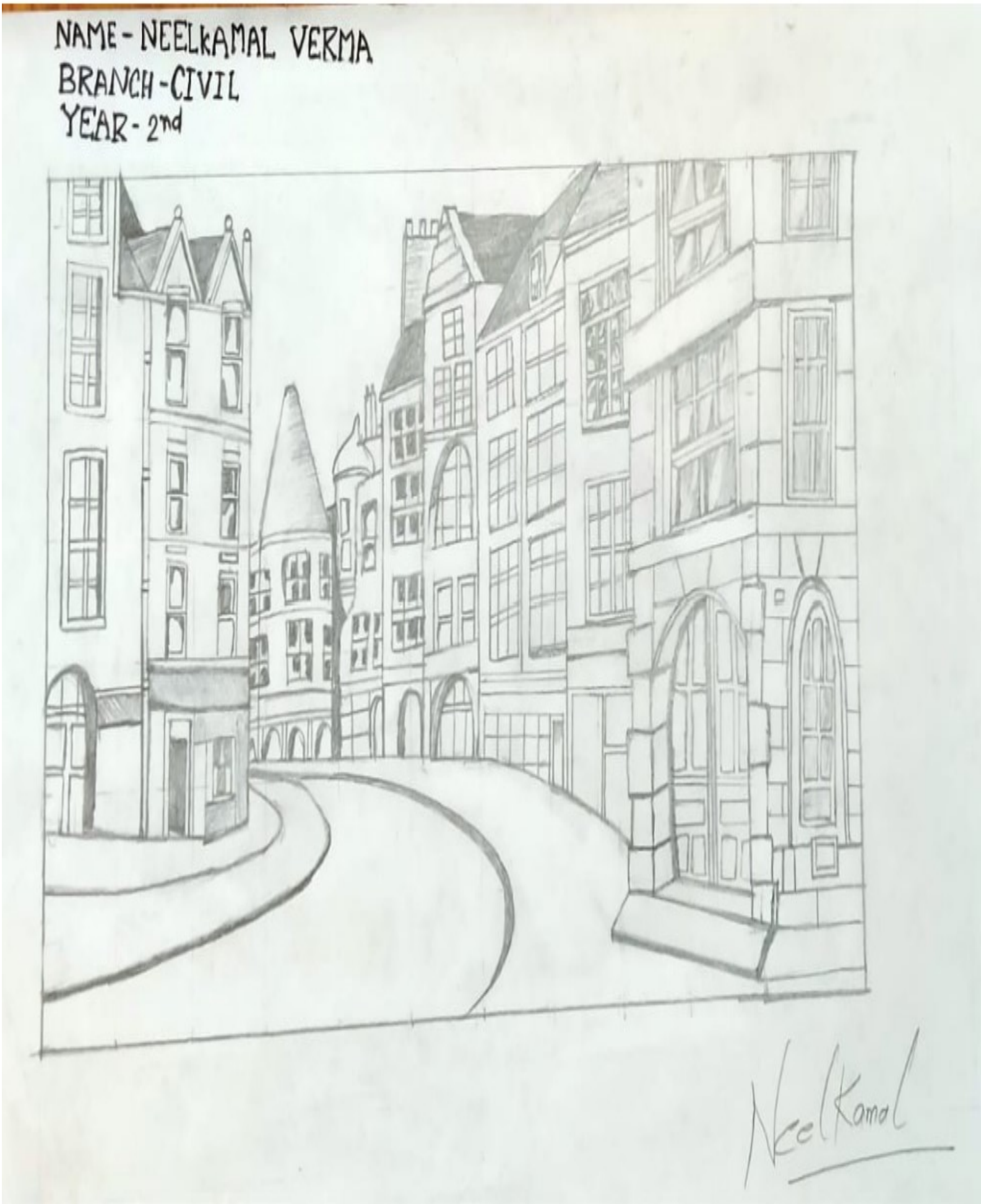
Beauty Of Woman

Vivek Murmu
Student, 1st Year, Dept.of Civil Engineering



Sketch Of City

Neelkamal verma
Student, 2nd Year, Dept.of Civil Engineering

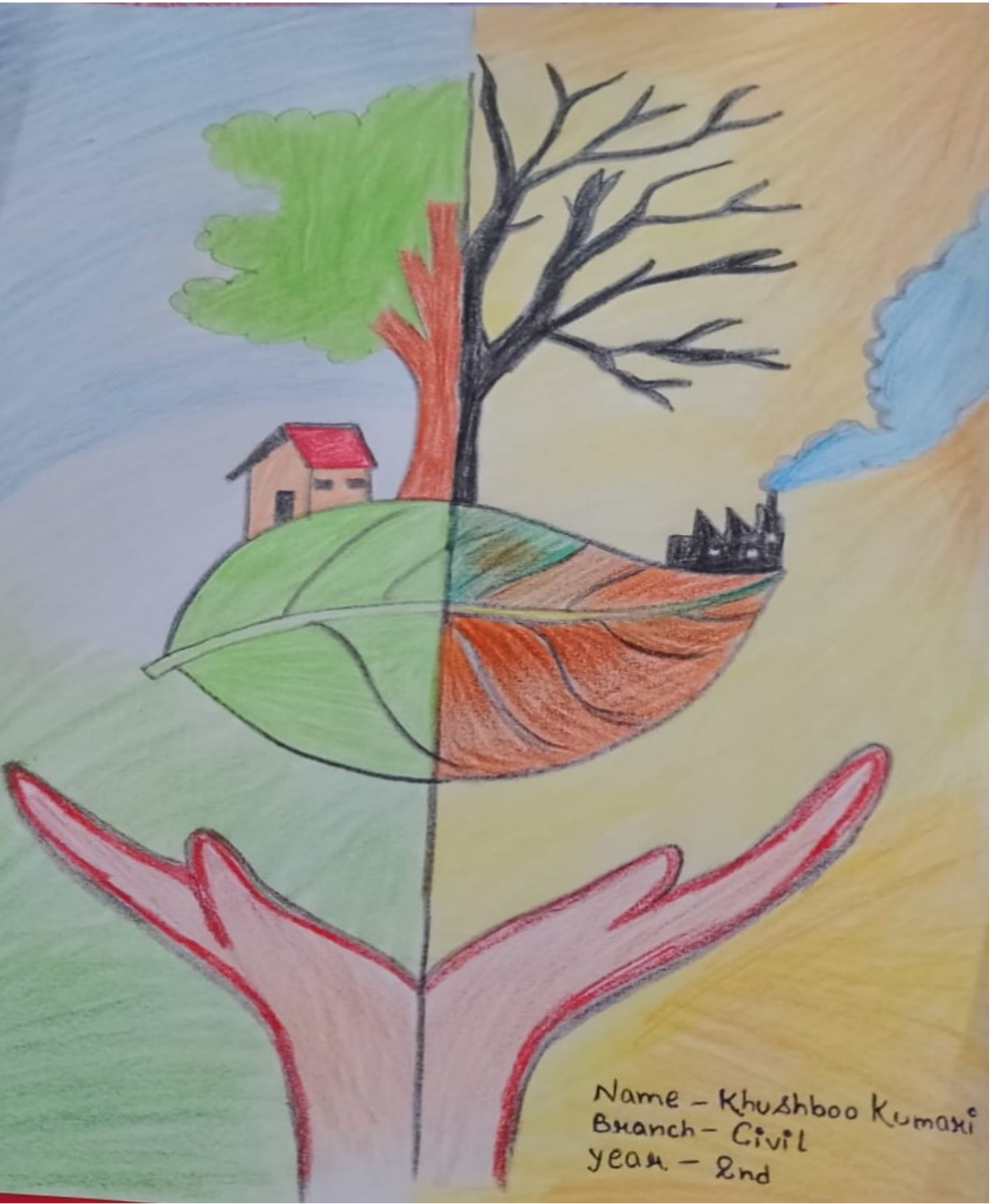


Leaves

Booston Shisham Kujur
Student, 2nd Year, Dept.of Civil Engineering

Scene of Future

Khusboo kumari
Student, 2nd Year, Dept.of Civil Engineering

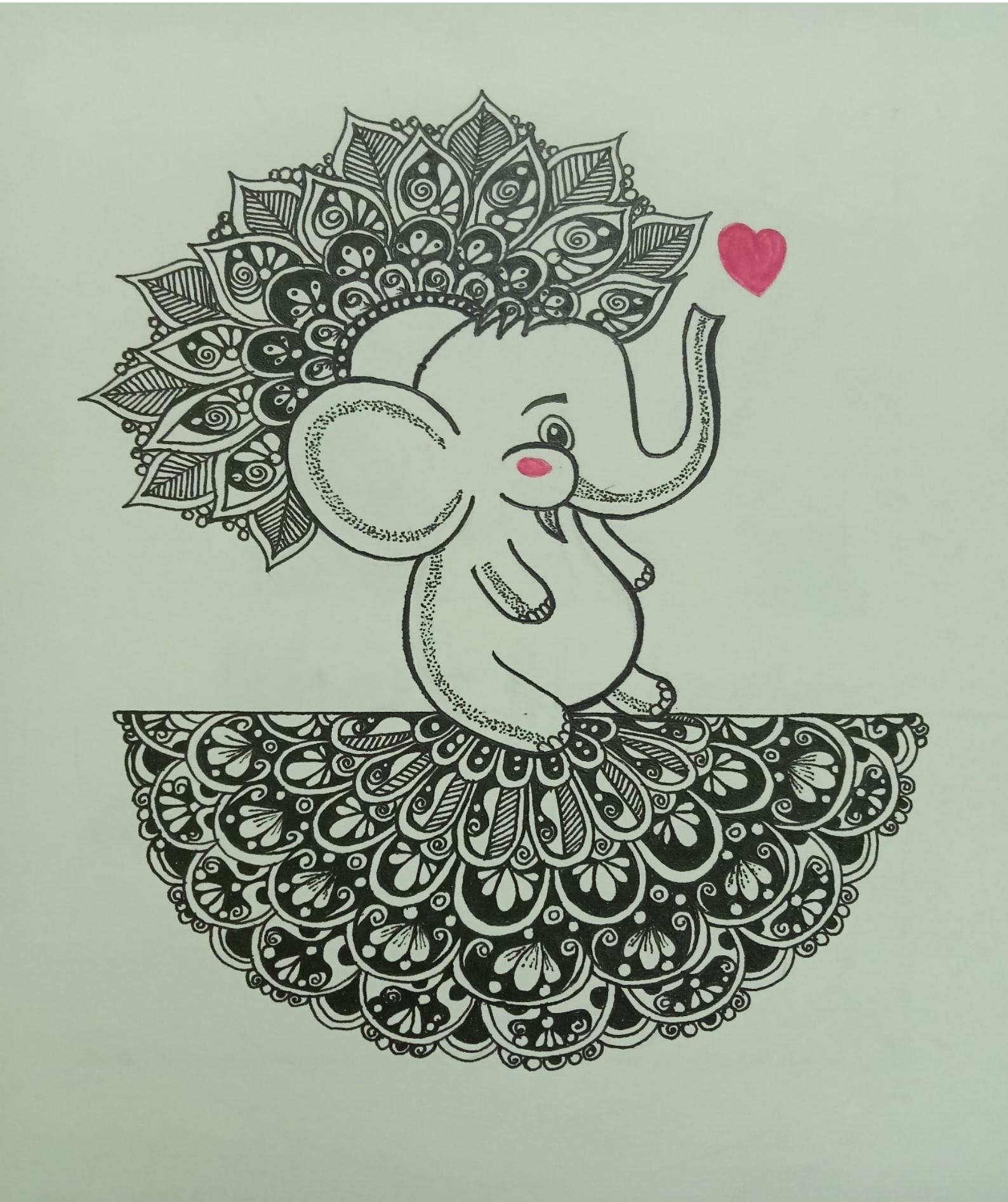


Sketch of women

Subrata mondal
Student, 1st Year, Dept.of Electrical Engineering

Baby Elephant sketch

Sanjana kumari
Student, 1st Year, Dept.of Computer Science Engineering (0034)

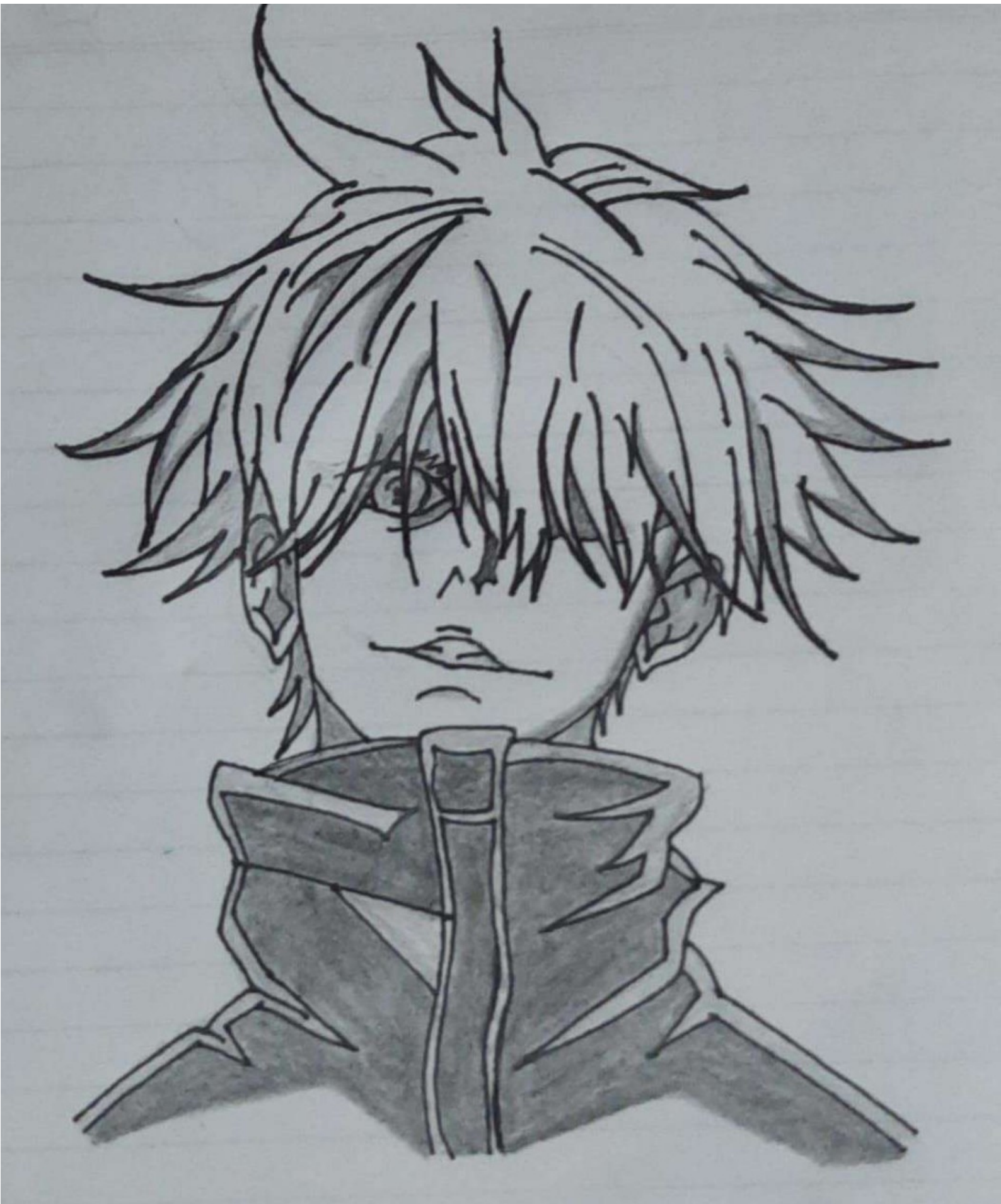


Sketch of Eye

Sanjana kumari
Student, 1st Year, Dept.of Computer Science Engineering (0033)

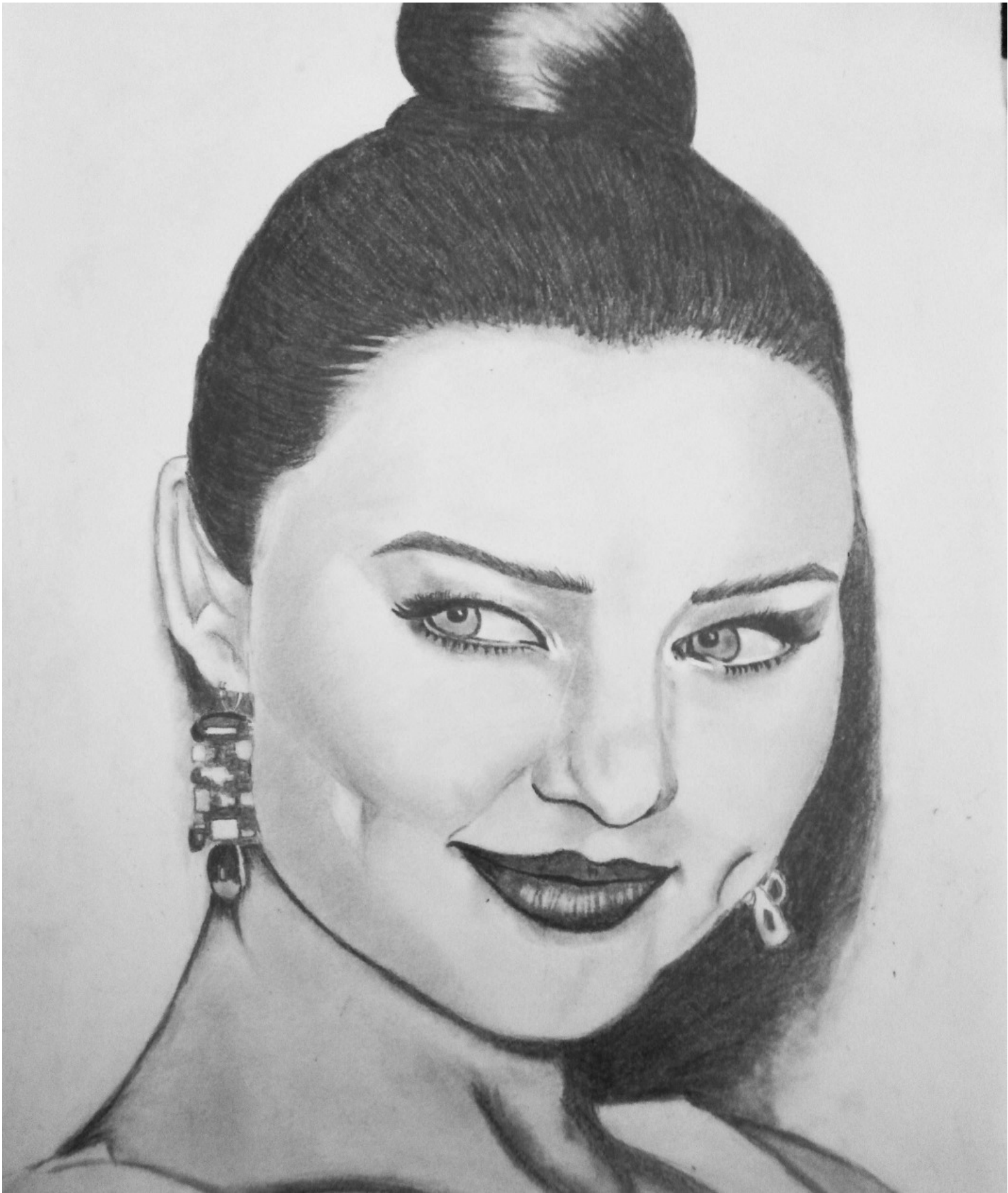
Sketch of Animated character

Abhishek Kumar Prajapati
Student, 1st Year, Dept.of Civil Engineering



Sketch of Girl

Rajesh Rajak
Student, 1st Year, Dept.of Civil Engineering



Indian art

Raj shekhar
Student, 2nd Year, Dept.of Computer Science Engineering

FINAL YEAR PROJECT

AUTOMATIC RAILWAY GATE CONTROL SYSTEM

Under the guidance of **Mr. Kundan Kumar**

Komal Kumari, Gaurav Chandra, Deepak Kumar, Deepak Kumar Yadav
Final Year, UG student, Dept. of Electronics and Communication Engineering, REC, Ramgarh (2018-22)

ABSTRACT: - Traffic is one of the major problems now a day. In the same way the crossing of railway gates is also a tedious job for normal people. They have to wait for a long time even before and after arrival and departure of the trains. The railway system is the most commonly used transportation mode in the world. It is also one of those modes of transport that faces a lot of challenges due to human errors such as level cross accidents, collisions, etc. In rapidly flourishing country like India, accidents in the unmanned level crossings are increasing day by day. At present, in level crossings the railway gate is operated normally by a gate keeper after receiving the information about the train's arrival. The objective of this project is to provide an automatic railway gate at a level crossing replacing the gates operated by the gatekeeper. It deals with two things. Firstly, it deals with the reduction of time for which the gate is being kept closed. And secondly, to provide safety to the road users by reducing the accidents.
Instead of waiting such a long time at the railway gates and to avoid accidents in level crossings a project is proposed that controls the gate automatically without involvement of the railways level crossing gatekeeper.

1. INTRODUCTION

Now a day, India is the country which having world's largest railway network. Over hundreds of railways running on track every day. As railway has straightway running as well as it has somewhat risky and dangerous as per as general public and traffic concern. As we know that it is surely impossible to stop the running train at instant is some critical situation or emergency arises. Therefore, at the places of traffic density, suburban areas and crossings there is severe need to install a railway gate in view of protection purpose. Obviously at each and every gate there must be an attendant to operate and maintain it. But, India, our country is a progressive country. It has already enough economic problems which are ever been unsolved. So, to avoid all these things some sort of automatic and independent system comes in picture. Now a day's automatic system occupies each and every sector of applications as it is reliable, accurate and no need to pay high attention.
So, keeping all these things and aspects and need of such system our project batch tries to make such type of system with the help of various electrical, electronic and mechanical components. The thorough and detail in formation as per as construction and working is concerned, it is discussed fatherly.

2. NEED OF THE SYSTEM

In this project we are concerned of providing an automatic railway gate control at unmanned level crossings replacing the gates operated by gate keepers and also the automatically operated gates. It good then older system with two things.

- The reduction of time for which the gate is being kept closed. And
- To provide safety to the road users by reducing the accidents that usually occur due to carelessness of road users and at times errors made by the gatekeeper.

3. PRINCIPLE OF OPERATION

The principle of operation behind the working of this project lies in the functioning of IR Sensor.

- In Reflective Type IR Sensor, the IR transmitter and receiver are placed side by side.
- When there is no obstacle in front of the sensor, the IR ray transmitted by IR Transmitter will travel undetected as there are no rays falling on the IR Received.

- If there is an obstacle in front of the IR Transmitter and Receiver pair, the IR rays gets reflected off from the surface of the obstacle and are incident on the IR Receiver.

4. BLOCK DIAGRAM

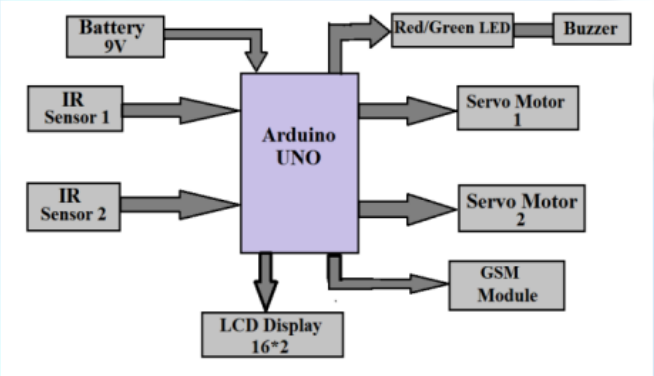


Fig 4.1: - Simple Block Diagram

5. COMPONENTS USED

S.NO.	COMPONENT	QUANTITY
1.	Arduino UNO	1
2.	IR Sensor	3
3.	Servo Motor	2
4.	Red LED	1
5.	Green LED	1
6.	Buzzer	1
7.	Resistor 1K	2
8.	Toy Train	1
9.	GSM Module	1
10.	16*2 LCD Display	1
11.	Jumper Wires	As per required

6. WORKING

The working consists of three IR Sensor placed at a few distance apart from each other. Two LED (Red and Green) and Buzzer are also installed for alarming the arrival of the train. The IR 1st sensor is the GSM Module and the rest two IR Sensor are for the opening and closing of the gates. Practically, the 2nd and 3rd IR Sensors are placed at left and right side of the railway gate. The distance between the two IR Sensors is dependent on the length of the train. In general, we have to consider the longest train in that route. Firstly, we power the GSM Module. A message will pop up on the 16*2 LCD indicating “Railway gate system”. After a 20 sec display again a message pop up indicating "Gates Open".
If the IR sensor 1st detect the passing of the train, GSM module send an alert message to the connected device indicating the arrival of the train and red LED will glow on, also buzzer will be ring to indicate that train is coming to alert the road users. If the sensor 2nd detects the arrival of train then with the help of arduino UNO, servo motor 1 rotate at 90 degrees, and after some delay servo motor 2 starts rotate at 90 degrees in order to close the gate. The gate remains closed as the train passes the crossing. At the same time the LCD display will the arrival of the train and we get to know that

the train is coming. The red LED and the buzzer continuous to work till the train reaches the 3rd IR sensor and gate remains closed as the train passes the crossing. When the train crosses the gate and reaches 3rd IR sensor, it detects the train and the gate will be open, also green LED will glow, also 16*2 LCD display gates open "Train Departured" and the buzzer stop to blow indicating that the gates are open and the train has departed.

7. HARDWARE IMPLEMENTATION

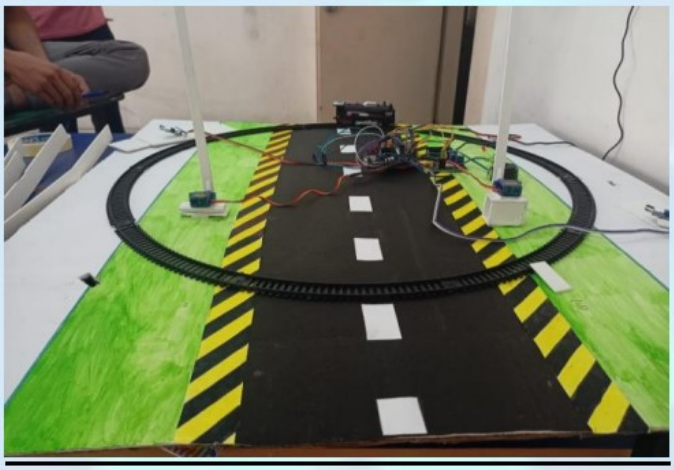


Fig 7.1: - Hardware Setup

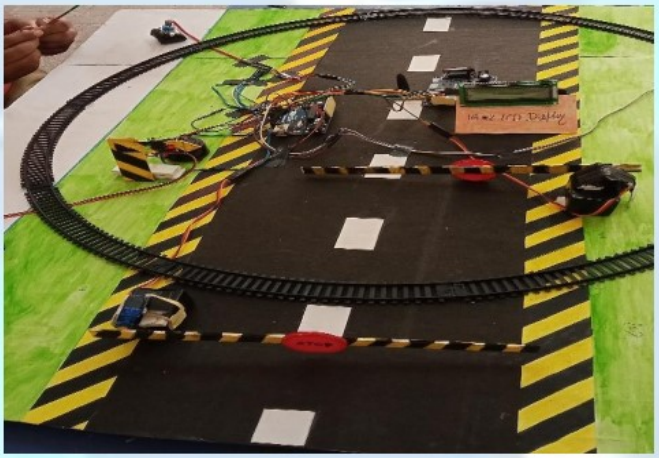


Fig 7.2: - Hardware as working condition

8. CONCLUSION

The proposed work has many major advantages; it will reduce the accidents occurring at the railway level crossing. As the system is completely automated, it avoids manual errors and thus provides ultimate safety to road users. It will reduce the collision of train and will also manage the route of a particular train to avoid any delay in reaching its destination. By this mechanism, presence of a gatekeeper is not necessary and automatic operation of the gate through the motor action is achieved.

9. FUTURE SCOPE

By using this project, we can save man power. Here, there is no need of man. This circuit itself checks the presence of vehicle and automatically closes the gates by rising an alarm. Once we switch on the circuit, it automatically performs all these actions without man handling. It is the most advantages of the project, for this reason in future this project may be used in railways and also in apartments, military etc. LED displays at railways crossing gates can also be achieved. By using transmitter and receiver we can control the railway gate system.

10. REFRENCES

Following are some internet sites, books taken as reference for this project:

[1] http://www.scribd.com/doc/6852743/AUTOMATIC-RAILWAY-GATE-CONTROL
[2] http://sdl-forum.org/SAM_contest/Li_Probert_Williams/Railway_doc.pdf
[3] http://indianengineer.wordpress.com/2009/08/03/automatic-railway-gate-control-track-switching/
[4] http://www.nskelectronics.com/files/pirsensor-v11.pdf
[5] http://www.keil.com/dd/docs/datashts/atmel/at89s52_ds.pdf
[6] Muhammad Ali Mazidi and robin D Mickinlay, "The 8051 microcontroller and embedded system using assembly and c" Pearson Education.

POWER SAVER AND AUTO RECHARGEABLE ELECTRIC BIKE

STARK RAIDER

DEPARTMENT OF ELECTRIC ENGINEERING

RAMGARH ENGINEERING COLLEGE

Guide- Mr. Arurabha Dutta

By- Jai Kumar, Ajay Kumar, Vikram Soren, Amit Kumar, Kali Pado Paramanik

As, we all know that day to day increase In pollution creates a harmful effect to our environment, government takes many steps such as "*Swachh Bharat Mission"* and many more to reduce the pollution. But the rate of increase in pollutants is still not in control. If I ask the question to you that how you can control the pollution as a electrical engineer? Then as an Electrical Engineer you mind firstly strikes about electricity and its utilization. You starts changing the fossil fuel driven machinery into the electric one to reduced the pollution. Similarly, in this project {electrical department 2022} I Jai Kumar with my team made an electric bike named as a Stark Raider which is completely inbuilt with the new technologies, which is not present in the market. The Stark Raider "a power saver and auto rechargeable electric bike".

Here, the time comes to change the wheel of the automobiles towards the electric, means to reduce the use of the fossil fuels automobiles and starts increasing the use of the electric automobiles. Electric bikes are eco friendly and are completely green in nature. And this advantage makes the electric bike more profitable for the environment.

Now, the question is that how this project bike technology is profitable for us?

As we see the electric bikes that comes in the market is simply inbuilt with the battery and the motor technology to run. Also the flexibility and range is not improved so much to overcome the use of fuel bikes. And people are still using the petrol bikes instead of electric one. Now, suppose if the such kind of electric bikes comes , which recharge your battery while driving and also saves the power of your battery up to 50% than, it reduces the use of the fuels bikes in the market and results in reduction of the pollution. It means that the Renovations come in the electric automobile world and the world itself. And this technology is now available named as a Stark Raider which is the renovation of the electric bikes world.

The Stark Raider consists with the double battery arrangement system of 60AH li-ion battery, where the one is used as a main battery and the second one is used as an auxiliary battery. When the main battery is driving the motor, then at the same time the auxiliary battery starts charging itself and vice-versa. The charging mechanism is built by using the dynamo, Dynamo starts producing electricity, when the bikes motor starts running .A separate arrangement is made to rotate the dynamo when the bike is driven. Also the controlling unit is built to control the H.T voltage produced by the dynamo, and rectifier unit is used to convert the high frequency alternating into direct current to recharge the auxiliary battery. Practically the battery cells arrangement is designed in such type that it does not blast the bike as a bomb and also the battery temperature detector is used to sense the over and under temperature of the battery. The connection of both the battery is done in such a way that when the time comes where the both battery is discharged, then you can merge the both battery to make a single battery of high amperage, and drive your bike just to cover more distance. This connection is similar as the choke of the petrol bikes to cover more distance, so this connection is known as the choke connection.

The graphics design of the bike is completely new and looks like an off-road bike, the handling, seat, design, soccer, and looks makes the bike more comfortable and gives you pleasure while driving. The mechanical breaking system is installed in both the wheel of the bike to reduce the power consumption. Electric power breaking consumes power to operate, but the use of mechanical breaking system is perfect and reliable. It also reduces the stress of the motor. A free wheel

mechanism is also installed in the motor, which will helps you to reduce the power consumption of the battery up to 50%. Using this free wheel technology you can easily drive the bike freely without running the motor, once you get some speed. When the bike throttle is turned ON then the motor starts driving the wheel and after gaining some speed when you pull the throttle OFF then the motor shaft stops rotating, but the wheel of the bike freely rotates and does not stops.

All these new technology makes the Stark Raider practically more advanced and different from the market electric bikes. Our guide and H.O.D of Electrical Engineering department Mr. Arunabha Dutta and Professor Dev Kumar, Professor Shalini Mishra helps me so much to makes this project successful. I hope this technology comes in the practical role in our daily life within 2-3 years and change the wheel of the fuels automobile towards the Electric.

After all, the one great personality APJ Abdul Kalam says that *"Be the first, if you are not been able to be perfect*". and the Stark Raider is the first power saver auto rechargeable electric bike all around.

Thank you.

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