



**Hope Foundations
Finolex Academy of Management and
Technology, Ratnagiri.**



DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

In Coordination with

A.S.E.N.T

presents

COMMUNICA

VOL I

**Celebrating 1st ever magazine of Department of Electronics
and Telecommunication.**



COMMUNICA



सिद्धिर्भवति कर्मजा
www.famt.ac.in

About FAMT



Finolex Academy of Management and Technology (FAMT) was established in 1996 to impart quality technical education at affordable cost and contribute to the industrial growth of our nation. The academy is approved by All India Council for Technical Education (AICTE), New Delhi; recognized by Directorate of Technical Education (DTE), Government of Maharashtra, affiliated to University of Mumbai, and accredited with B++ Grade by National Assessment & Accreditation Council (NAAC).

Situated on the picturesque coast of western Maharashtra, FAMT is one of the reputed engineering institutes in the region and state. The academy is known for its quality technical education and has a distinct identity in the University of Mumbai for its consistently outstanding results. The academy has received appreciation and many awards from various national bodies.

FAMT focuses on nurturing young technical professionals who are immensely dedicated and adept in their field and strongly believe in fair play, perseverance and harmonious development of mind and personality of our students. Accordingly, the academy takes efforts to offer a vibrant academic ambiance. The academy provides various incentives in the form of scholarships and prizes, and co-curricular and extracurricular platforms to foster leadership, team skills, creativity and entrepreneurial values among students.





Principal's Message

“Education and technology in unison empower us to explore, change, grow and shape the future of humanity.”

Dr. Kaushal K. Prasad

Remarkable progress in engineering has accelerated growth and created the most conducive environment of living ever for human beings in last two centuries. The greatest challenge ahead is realigning engineering with sustainable growth that ensures a secure, healthy and productive environment of living for all. Technical education prepares us to face such challenges posed on the way to growth and set the tune for social change.

FAMT, a dream conceived by our founder president Late Shri P.P. Chhabria, has opened the avenue of technical education for students from Konkan. The visionary leadership of our president, Mrs Aruna Katara is inspirational in pursuing our aim to be the centre of excellence in the field of technical education. FAMT was established with a vision to nurture professionals in tune with global trends, equipped with engineering knowledge, skills, and creativity; who will contribute in technological advancement of the nation. To accomplish its vision, the academy has launched six undergraduate and two post graduate programmes. The institute offers quality education with excellent infrastructure at affordable cost. Inculcating the culture of play hard and play fair among our students, FAMT has facilitated dream of many engineering aspirants who are now successful professionals and entrepreneurs contributing across globe. Relentless efforts of our faculty and students have earned recognition to the institute in University of Mumbai and across Konkan.

In our goal to nurture outstanding technocrats, holistic development of students takes precedence at the institute. Therefore, the institute offers a vibrant academic ambience with excellent amenities, robust training with industry collaborations and student-centered activities on campus to promote professional and personal growth of students. I am confident that the learning experience at FAMT will help students in exploring and fostering their potential to face challenges of global industry. I welcome and offer you my best wishes for enriching learning experience at FAMT.

HoD's Message



Dr. Sharada U. Chougule

A warm welcome to Department of Electronics and Telecommunication Engineering. It is because of telecommunication engineering, the entire world is connected and we are able to transmit and receive information at any corner of the world. Electronics and telecommunication engineering is an ever growing and exciting field that provides excellent career opportunities in the domains such as: RF Engineering, Transmission technologies, Access technologies (such as 3G, 4G, WiMax etc.) , IP based networks, Network management etc.

The primary objective of the department is to develop competent professional who will be able to contribute effectively to the advancing electronics & telecommunication technologies through quality education and industry interaction.

Department laboratories are well equipped and having state of art equipment to gain practical knowledge of the theory subjects. The department faculties are well qualified and committed to impart the fundamental concepts and the latest trends in telecommunication engineering. The department strives to provide a conducive environment for the students to develop analytical and practical skills through additional training programs, workshops, expert talks, industrial visits etc. Department is having good placement record in companies like Vodaphone, Syntel, L & T Infotech, CMS Pvt. Ltd. etc.

I am sure that you will experience the joy of learning with the spirit of innovation and creativity and able to build your carrier in a wide spectrum of domains.

Message from the Committee

"Embrace the unknown, for it is where opportunities are born and greatness is achieved."

Dear Readers,

We are thrilled to present the very first edition of our department magazine "COMMUNICA", a labor of love brought to life by the dedicated members of the magazine committee. This magazine is a testament to the passion, creativity, and collective effort that define our college community.

In these pages, you will find a diverse tapestry of voices, perspectives, and talents. It reflects the spirit of our college, where students come together to learn, grow, and leave their mark on the world.

Each article, photograph, and artwork encapsulates the essence of our college journey, from the challenges we've overcome to the triumphs we've celebrated. It's a tribute to our shared experiences, both inside and outside the classroom.

We hope this magazine serves as a source of inspiration, information, and entertainment. It's a platform for our voices to be heard, our stories to be shared, and our dreams to be celebrated.

As we embark on this exciting new venture, we extend our heartfelt gratitude to everyone who contributed and supported us along the way. We take this opportunity to express our heartfelt thanks to Dr. Sharada V. Chougule (HOD EXTC) to entrust the responsibility to us to bring out this issue, Prof. Madhura Zagade faculty Co-ordinator for her constant bolstering. Together, we have created something special that will be a cherished part of our college's legacy.

We invite you to dive into the pages of this magazine and join us in celebrating the vibrant tapestry of our college life. This is just the beginning of a journey filled with countless more stories to tell and memories to make.

Thank you for being a part of our inaugural edition. We can't wait to see where this adventure takes us next.

Happy Reading!!

Warm regards,

Adeeb Shaikh

Editor in Chief

and The entire Editorial committee.

About Department



Electronics and telecommunication has become part of our daily life in the form of mobile, computer, laptop, television, digital watch, ATM card, Internet banking, microwave oven, agriculture, automation and many more digital gadgets and communication systems.

Department of Electronics and Telecommunication was started in year 2008 with a vision of developing engineering professional well competent in Electronics and Telecommunication field. Department offers 04 years Undergraduate course (UG) with an intake of 60 students.

The department caters to fields of electronics and telecommunication engineering such as Electronic Devices and Circuits, Microprocessors and micro-controllers, Analog and Digital communication, Digital Signal and Image Processing, RF and Microwave, Mobile Communication and Wireless Networks.

Department is having well-equipped laboratories with computational facilities and latest equipment's, along with software and hardware tools to cater to the needs of advanced communication technologies.

The department has a good academic culture and conducive working environment for teaching learning and student activities. The faculty is well qualified, dedicated and experienced, with strong commitment to engineering education and excellence in teaching-learning process.

Department aspires the overall growth of students through various co-curricular and extra-curricular activities. Along with regular academics, students of the department are also exposed to evolving trends in technology through guest lectures, seminars, and workshops from industry experts. To get aware of industry requirements, the Department organises Industrial Training for students.

To provide an opportunity to apply theoretical concepts from the classroom to the realities of the field, students are encouraged to do internship in related industries.

Students are motivated to organize and participate in various events such as industrial visits, technical paper presentation, project competition, personality development, and social activities in order to learn technical, organizational and managerial skills.

Department is having consistent improvement in placement scenario in companies like Tata Consultancy Services (TCS), L & T Infotech, Epic Research, Syntel etc.

VISION & MISSION

Vision-

To develop competent professionals who will be able to contribute effectively to the advancing electronics & telecommunication technologies.

Mission-

M1	To provide quality education through practical knowledge and technical skills.
M2	To strengthen industry interaction to meet current and future trends.
M3	To inculcate teamwork spirit, leadership qualities and human values.

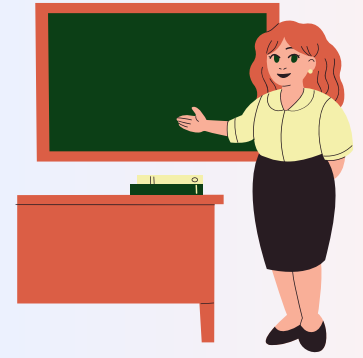
Program Educational Objectives (PEO)

PEO 1	Integration of knowledge	Integrate fundamental knowledge in mathematics & basic engineering sciences to solve real life technical problems.
PEO 2	Implementation and testing	Train students to understand the concepts of simulation, synthesis, implementation and testing to create and analyze different projects in the various fields of Electronics & Telecommunication engineering.
PEO3	Ethics and Human values	Nurture students for effective communication, cultured mannerism, ethical values, and teamwork and entrepreneurship skills.
PEO4	Professional development	Encourage professional development including higher education to produce graduates who will pursue lifelong learning.

Program Specific Outcomes (PSO)

PS01	Utilization of Domain specific knowledge	Students will be able to showcase knowledge gained in the domains of communication engineering, signal processing, RF/microwave engineering, semiconductor technology, digital and embedded systems.
PS02	Awareness and adaptability to recent trends	Gain awareness regarding design skills, software packages and telecom standards.

FACULTY MEMBERS



Dr. Sharada U. Chougule (HOD)

Prof. Giri S. Kulkarni (Associate Professor)

Dr. Suhasini S.Goilkar (Associate Professor)

Prof. Amol R.Sutar(Assistant Professor)

Prof. Mansi S. Kolwankar (Assistant Professor)

Prof. Sujay D. Mainkar (Assistant Professor)

Prof. Neha S. Sakhalkar (Assistant Professor)

Prof. Vinayak D. Chavan (Assistant Professor)

Prof. Vijay M. Galshetwar (Assistant Professor)

Prof. Madhura K. Zagade (Assistant Professor)

Prof. Gauri S. Bhosale (Assistant Professor)

Prof. Saurabh S. Athalye (Assistant Professor)



Staff Members

Mr. Sandip R. Pardule

Mr. B. M. Biradar



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ARTICLES

Report on ANALYSIS ON SMARTPHONE SALES ACCORDING TO FLIPKART DATA

By -NARKAR NIKITA ,SAWANT VAIBHAVI ,SHAIKH ADEEB ,SHAIKH ADIL



In today's fast-paced technological world, smartphones have become an essential part of our daily lives. With a wide range of options available in the market it can be overwhelming for consumers to choose the best smartphone that fits their needs and budget. The current era heavily relies on smartphones, making them an essential part of daily life for communication, entertainment, and productivity. The market is flooded with numerous smartphone options, making it challenging for consumers to choose the right one that suits their budget and needs. A comprehensive analysis of smartphones based on price and user reviews is crucial to provide valuable insights for potential buyers. The study will utilize Flipkart data to explore the relationship between smartphone prices and user reviews. The objective is to uncover patterns and trends in the data, enabling consumers to make informed decisions when choosing a smartphone that balances affordability and quality. By analyzing the data, smartphone enthusiasts will be empowered to make well-informed choices that align perfectly with their preferences and requirements.

Through extensive exploratory data analysis, this study endeavors to identify patterns, trends, and correlations among diverse variables such as price, customer ratings, brand loyalty, and customer reviews. The project goes a step further by applying advanced techniques like customer segmentation to understand distinct consumer groups within this market, ranging from budget-conscious buyers to tech enthusiasts and brand loyalists. Sentiment analysis of customer reviews adds a qualitative dimension, helping to gauge customer satisfaction and identify features that drive it.

Market dynamics are at the core of this project. It delves into what's hot and what's not in the world of smartphones, analyzing best-selling models, popular brands, and prevailing price ranges. This comprehensive market analysis enables us to gauge the performance of different smartphone brands and models based on sales, customer feedback, and market share.

Furthermore, the project investigates the intricate relationship between smartphone prices and consumer demand, pinpointing price segments that hold the highest appeal for customers and consequently generate the most significant sales. In conclusion, this project provides a comprehensive understanding of the smartphone market on Flipkart, making it an invaluable resource for smartphone, manufacturers, retailers, and consumers alike. Its findings offer actionable insights, facilitating strategic decisions in a rapidly evolving industry, and laying the groundwork for future research and development.

The project has successfully analyzed smartphone data from Flipkart to understand the relationship between smartphone prices and customer reviews. Through comprehensive statistical analysis and data visualization, we have gained valuable insights into consumer preferences and the impact of pricing on user satisfaction.

The findings have highlighted significant correlations between price points and customer feedback, providing crucial information for both consumers and manufacturers. Armed with these insights, consumers can make more informed decisions when purchasing smartphones, considering their budget constraints and desired features. Manufacturers, on the other hand, can leverage this knowledge to optimize their pricing strategies, product offerings, and overall marketing efforts to better cater to customer needs and expectations.

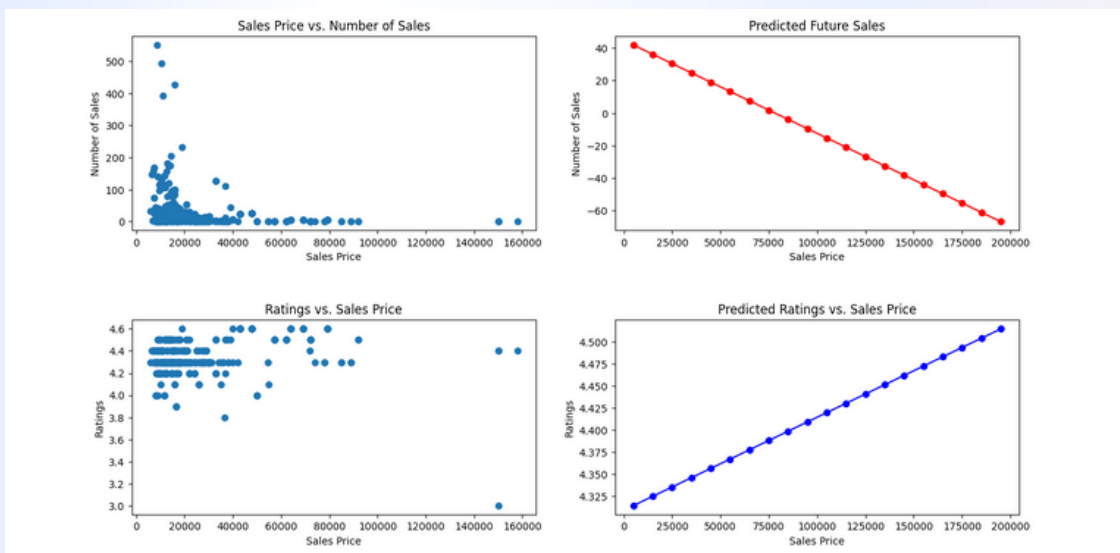


Fig no X Prediction of Future market sales

Report On

REMOTE CONTROLLED CAR USING ARDUINO

By-CHAVAN ANIKET ANIL, DAFLE RAJ DHIRAJ, HODEKAR MOHAMMED SAAD ABDUL SATTAR, JADHAV SOHAM MANOJ.

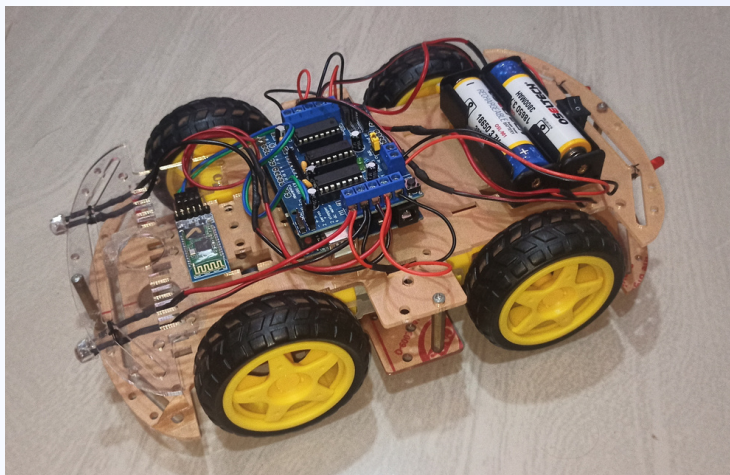
INTRODUCTION

In the recent days, the process of being developing is drastically improved, particularly increased in the communication fields such as Bluetooth, other remote-controlled cars and robots. In every country technology is currently developing with many users, especially in India every people are using different operating systems which are available in several smart phones. In olden days the communication between devices should be transmitted in wired and risky way without seeking any help of any person. But in present world the communication between devices is improved in wireless manner without risk and fast are kept feasible manner with taking help of persons. Android operating system is used to communicate between Smartphone hardware and several mobile applications. This designed model is controlled with the help of Bluetooth using Smartphone. This robot is shaped like a car structure which contains of four wheels. This proposed designed is mainly used in different areas and fields in many industries Such as travelling goods from one place to another place and also moving many tiny particles in a fast manner. Arduino Uno is act as main controller of the device which controls Dc motors to move several directions. This model can control with two main devices. One device is computer and another device is our Smartphone. In many countries using of wheeled controlled robot cars are improved with increasing several industrial profits. To improve the performance of wheeled robots there are many developments available in all areas of life to develop in the world. All researchers are investigated the designed model extensively with the help remote.

WORKING

Working Principle:The operating of the robot-controlled car is very easy and freely available everywhere in the world. To activate Motors and motor drivers here two 9 voltage power(18volts) is supplied. Bluetooth Rc car app is installed in Smart phone which helps to controls the robot car, motors and motor drivers which moves robot car in several places Bluetooth Rc car app has different common keys to move the robot different directions with the help of Smartphone. Bluetooth Rc car app is used to send the signals and to receive signals in between Smartphone and Arduino hardware. Here Arduino acts as main controller of the device which receives signal or commands and sends these commands to motors and motor drivers to perform a particular task.

Robot controlled car made up of 2 motors and 1 motor driver which move the car in 4 directions, So here Arduino controls whole system. These all components are attached to robot chassis. To code the Arduino Ide (Arduino) software is used. Arduino is associated to computer or laptop using data cable to upload the code and once coding is uploaded then I remove the cable. These commands or instructions will transfer the data or information to the Arduino to communicate with the remote (Smartphone).



CONCLUSION

First time I designed this model successfully without any struggles in this paper. I kept the connections to the designed model according to the instructions which is given by me successfully. Finally, this designed model can move the several directions and also it can move the robot car from one place to another place. I have tested this designed model many times and many places it performing tasks according to our requirements without any problems. I have designed this model to control user in long distances with the help of Bluetooth.

Report On

IOT BASED NOTICE BOARD SYSTEM USING STM32

By-IRAM PATHAN,TAZKIYA BAWANI,RUTUJA PHATAK,MAHEK MUKRI

INTRODUCTION:

Wireless notice board is very selective term for this project, as it has a very wide scope rather than just being a simple notice board. First we should understand the purpose of this project, in this system we can display a message or notice to some display device like LCD, and this message can be easily set or changed from anywhere in the world, just by using the SMS facility of your mobile handset. Whatever notice we want to display, just send the SMS of that text, with some prefix and suffix.

This is very useful in Hotels, Malls, college, offices and can be used anywhere, even at home. Like you can set the message like "Do not disturb" at your hotel's room gate, can set message at your home's door step when you are away, and of course it is used as notice board in schools, colleges, cinema halls etc. And yes, it's just not a simple Message board, the usefulness of this project is that you can set or change the message or notice from anywhere, just sending SMS from your phone.

The use of cell phones has rapidly increased. over the last decade and a half upgradation. in networking technologies has encouraged the development and growth of very dense networks Notice boards are one of the widely used to convey messages at large in this world Mobile phones and the related technologies are becoming. more and more prevalent. Small operative slept In making use of technology for regular purpose would have an adverse effect on the environment issues which we are presently concerned about. The main aim of this project is to be design a Wi-Fi driven automatic display Board, which can replace the currently used paper based notice board and conventional notice board. It la proposed to design to receive manage in display toolkit which can be sent from an authorized user using mobile phones the device is capable to make input as speech or voice. It recognize that voice any by using the voice to text convert application it connects. the voice into the text messages the additional feature in this project is to sent message personally. currently the manual work thrown away from human life. So. by using android app we don't need to type the notice by hand instead of that we only speak and that app on speech into text, and the text is displayed on notice Board

WORKING:

The notice board is controlled using a webpage via an android phone.

Once the wifi is connected to a hotspot network a webpage ip address appears on the serial monitor of the Arduino ide. The user should enter the IP address into a search engine on the mobile phone. The webpage appears with the a message box where the notice that is to be displayed can be entered.

The data needs to be uploaded to a network of connected servers which run applications Such a network is commonly referred to as the cloud. An object will connect to the cloud through a Internet connection to upload or receive data. The cloud that can be used stored web-contained data.

Wi-Fi is a technology for wireless local area networking with devices based on the in running self-contained applications. This module comes with a built in USB connector and a rich assortment of pin-outs. It is also immediately breadboard friendly.

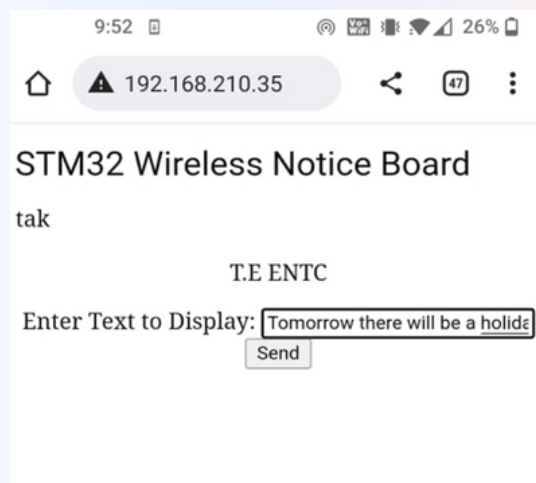
The user should enter the IP address into a search engine on the mobile phone. The wi-fi module serially send the data to the stm32 controller. The data is then sent to the I2C lcd display.I2C combines the best features of SPI and UARTs. With I2C, you can connect multiple slaves to a single master (like SPI) and you can have multiple masters controlling single, or multiple slaves. This is really useful when you want to have more than one microcontroller logging data to a single memory card or displaying text to a single LCD.

Conclusion:

The proposed system accepts the message, stores it, validates and displays it on the LCD screen. Cost of printing and photocopying is also reduced because the information can be delivered to a large number of people in a very short time. It provides faster transfer of information and are easy to install and maintain. It provides an efficient way of displaying messages on Notice Board



hardware implementation



webpage

Report On

Design and Implementation of PWM Generator using Spartan-6 FPGA

By-Joshi Avadhoot Kiran, Nimkar Ruturaj Prabhakar, Pawar Aniket Balkrushna, Desai Sanchit Subhash

Abstract:

This project report presents the design and implementation of a Pulse Width Modulation (PWM) generator using Spartan-6 Field-Programmable Gate Array (FPGA). PWM is a widely used technique in various applications such as motor control, power converters, and communication systems. The objective of this project is to develop a PWM generator with high accuracy and flexibility using FPGA technology. The project leverages the capabilities of Spartan-6 FPGA to generate precise PWM signals, making it suitable for a wide range of applications.

Introduction:

Pulse Width Modulation (PWM) is a method used to generate analog signals from digital sources. It involves varying the width of the pulse in a periodic digital signal while keeping the frequency constant. This project focuses on implementing a PWM generator using Spartan-6 FPGA, providing an efficient and flexible solution for generating PWM signals.

FPGA Technology Overview:

This section provides an overview of Spartan-6 FPGA, highlighting its key features and advantages in digital signal processing applications. It discusses the reconfigurability and parallel processing capabilities that make FPGAs suitable for PWM generation.

PWM Generation Principle:

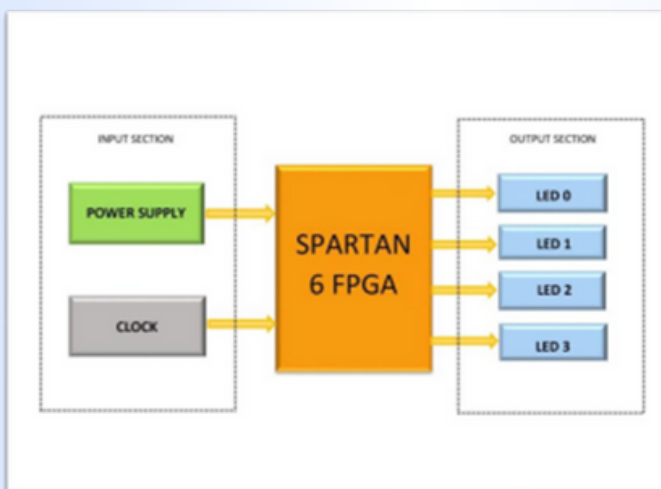
It is a type of Pulse Time Modulation (PTM) technique where the timing of the carrier pulse is varied according to the modulating signal. In PWM, we simply turn on and off our power supply at equal intervals and thus reduces the average power of the signal. A pulse width modulating signal is generated using a comparator. The modulating signal forms one part of the input to the comparator, while the non-sinusoidal wave or saw-tooth wave forms the other part of the input. The comparator compares two signals and generates a PWM signal as its output waveform. If the saw-tooth signal is more than the modulating signal, then the output signal is in a "High" state. The value of the magnitude determines the comparator output which defines the width of the pulse generated at the output.

Conclusion:

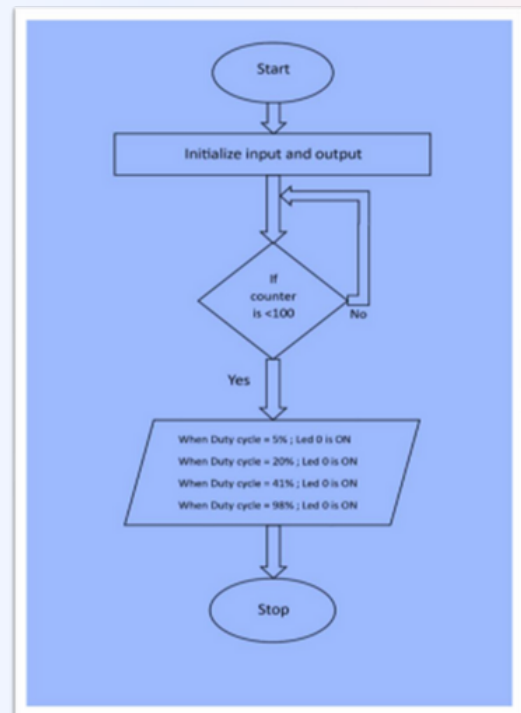
In this project we have designed and implemented a Pulse Width Modulation (PWM) generator using Verilog and a Spartan-6 Field Programmable Gate Array (FPGA). Our PWM generator is capable of generating PWM signals with adjustable duty cycles and frequencies, which can be used in applications such as motor control, power supplies, and LED lighting. The proposed design can be further optimized to reduce power consumption, especially for battery-powered applications.

Design and Implementation:

Block Diagram:

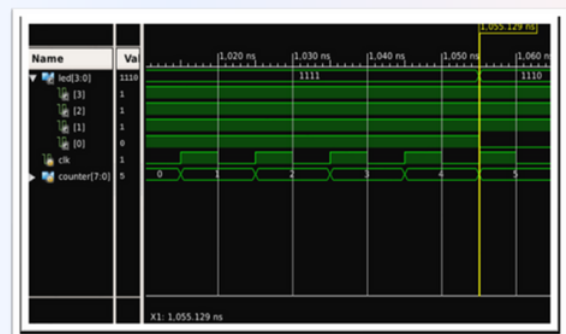


Flowchart:

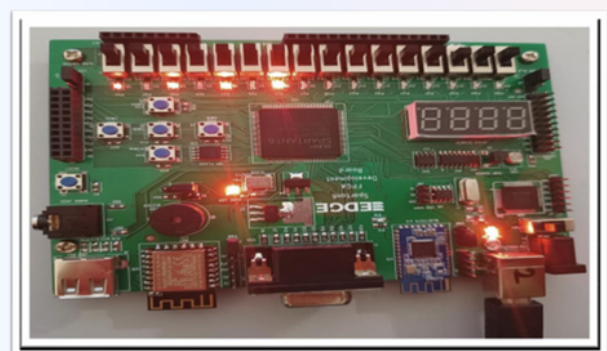


Results and Performance Analysis:

Simulation:



Output:



Report On

WIRELESS NOTICE BOARD USING GSM MODULE AND MSP430 LUNCHBOX

BY ZAFIR PATHAN, SIDDHESH KADAM

Abstract:

Notice boards are commonly used in variety of institutions which we come across in a daily basis. In the present generation the advertisement notice boards are being managed manually. This process is difficult to involve in order to put a notice on the notice board. This waste a lot of things like paper printer ink, manpower and also brings the loss of time. In this project we are going to display notice board using GSM module. GSM network is widely used today whether it is for calling or SMS. Also, some of the places needs urgent notices like in college, railway stations share- market, and this notice should be in real-time, so we need a real-time notice. In this wireless technology is used to display notice on lcd. here user will send the message to gsm module which is connected to the input of MSP430 launch- box .and then that message will get displayed on the lcd module. This notice board displays the information on LCD display whatever you sent from the mobile.

Introduction:

Nowadays conveying messages at large using notice boards are widely used ones ranging from schools to organizations. We know the significance of notice boards in public areas like bus stands, railway stations, airports, and banks, etc. But day to day changing these boards is a very difficult task and a waste of time. At present, all electronic boards are designed with a wired system. The major drawback of designing these boards is; not flexible and cannot be located anywhere due to messy wire. To overcome this problem, a wireless board is designed to display the latest information

MSP430 LAUNCHBOX:

MSP430 Launchbox is a microcontroller platform based on TI's MSP430G2553 IC. The TI MSP family of ultra-low- power microcontrollers consists of several devices that feature different sets of peripherals targeted for various applications. The architecture, combined with five low-power modes, is optimized to achieve extended battery life in portable measurement applications. The device features a powerful 16-bit RISC CPU, 16-bit registers, and constant generators that contribute to maximum code efficiency. The digitally controlled oscillator (DCO) allows the device to wake up from low power modes to active mode in less than 1 μ s. Launchbox utilizes the BSL mode for programming the MCU.

GSM MODULE:

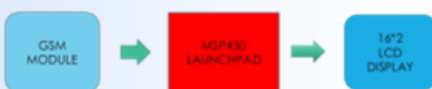
SIM900A GSM Module is the smallest and cheapest module for GPRS/GSM communication. It is common with Arduino and microcontroller in embedded application. The module offers GPRS/GSM technology for communication with the uses of a mobile sim. It uses a 900 and 1800MHz frequency band and allows users to receive/send mobile calls and SMS. The keypad and display interface allows the developers to make the customize application with it. Furthermore, it also has modes, command mode and data mode.

Applications:

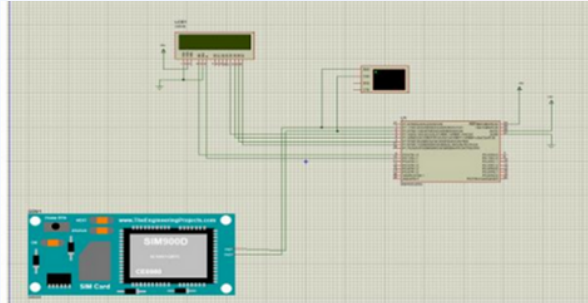
- .At stadium
- .At bus stand railway station
- .At hospital
- .As advertisement board

Design and Implementation:

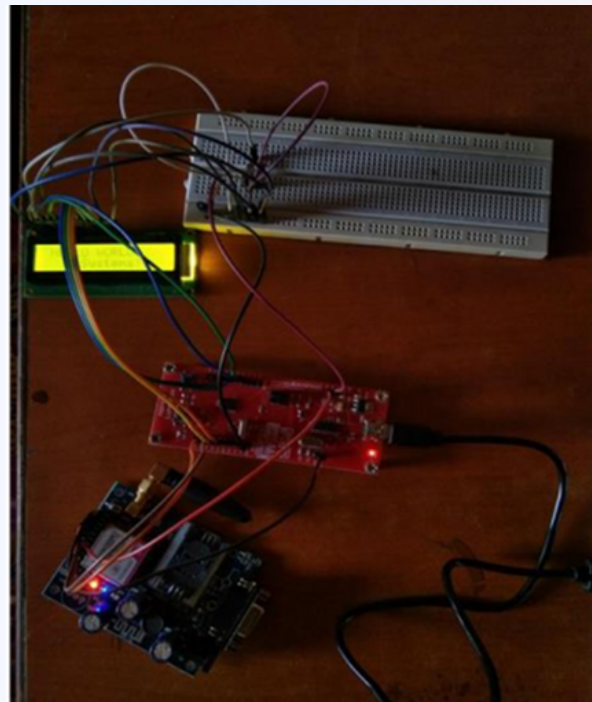
Block Diagram:



Results and Performance Analysis: Simulation/Circuit diagram:



Output:



Conclusion:

We conclude that, we can send data from remote place, wireless communication is better and it is less costly than wired communication. we conclude that this project will reduce no of wire as compared to wired notice board .it is a low power consumption circuit.

Report On

Mustistage Constant Current Charging of battery

By-Prof. Amol R.Sutar

Abstract:

Temperature and charging time are critical parameters during charging period of a battery as temperature rise affects battery life. In a particular charging method, setting high current minimizes charging time but raises temperature. In this study attention is given to multistage constant current charging approach to shorten charging time while maintaining battery temperature below preset range. Battery charging characteristics of various methods are studied, and their performance is compared.

The proposed multistage charging method is compared with constant current constant voltage and traditional multistage charging method. The experimental results obtained show that, the proposed method reduces the charging time by 42.22 % and 9.3 % as compared to the constant current constant voltage and conventional multistage charging method respectively, while limiting the rise in battery's temperature to 5°C above room temperature. Further in the proposed method, battery temperature is reduced by 20% as compared to the conventional multistage method.

Introduction:

Electronics devices like digital cameras, mobile phones, laptops, electronic toys and many other uses Lithium-ion battery as a main power source due to its advantages like high durability, high energy density, low maintenance requirement etc. Due to these advantages, they are also used in electric vehicles in which very high-capacity battery is required. It takes several hours to charge the battery using traditional/onboard chargers. Lack of charging infrastructure and long charging time are major reasons for the low demand of electric vehicles. A lot of research has been underway on battery charging methods to improve the performance of battery.

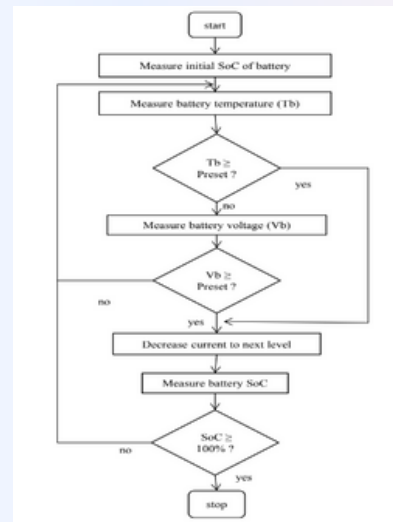
Battery charging time, energy efficiency, State of Charge (SoC) and temperature are all significant parameters of the battery. Charging time of battery is a critical factor that must be minimized to overcome the problem of driving range anxiety in case of electric vehicles. Energy efficiency of the battery is the measure of amount of power delivered by the battery in a charge cycle. SoC is the measure total amount of charge present in the battery to the total charge capacity. Charging time, energy efficiency, SoC as well as temperature of the battery depends on charging current. Pumping large current into battery has demerits like- increased battery temperature; reduced SoC; reduced energy efficiency; and reduced battery life . On the contrary, low charging current maintains battery temperature under threshold value and improves charging efficiency and SoC but it prolongs charging time. Therefore, the charging current should be selected properly, so that the battery will be charged fast and safely .

PROPOSED WORK:

The traditional MSCC method measures battery temperature initially but doesn't consider it during charging, leading to a significant temperature increase. The proposed MSCC approach aims to reduce charging time while keeping the battery temperature within safe limits. It is similar to the traditional method but incorporates continuous monitoring of both battery voltage and temperature, preventing them from exceeding preset limits. When either voltage or temperature surpasses these limits, the battery current is reduced. The charging process stops when the State of Charge (SoC) reaches 100%. Coulomb's counting method is used to estimate SoC, as defined by an equation

$$SoC = SoC(initial) + \frac{\int_{t_0}^{t_0+\tau} I_b \cdot \Delta\tau}{Ah}$$

Where, SoC(initial) is initial value of battery SoC, I_b is battery current during charging and Ah is total charge capacity of the battery in ampere-hour.



Control algorithm of proposed battery charging

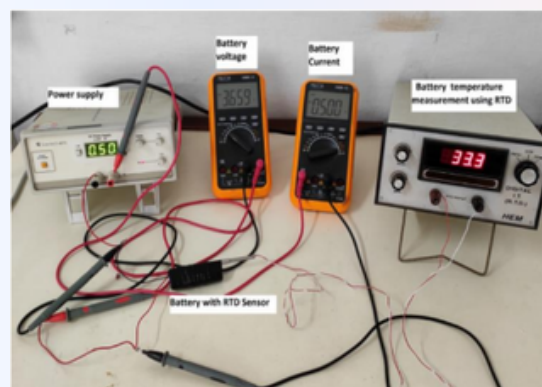
EXPERIMENTATION:

In this work a cylindrical ICR-18650 rechargeable Lithium-ion battery is used. Specifications of the battery used for experimentation are given in the Table

Battery parameter	Value
Nominal voltage	3.7V
Maximum charging voltage	4.2V
Maximum charging current	1C
Nominal battery capacity	2600mAh
Discharge capacity	3C/ 7.8A
Size (cylindrical)	65x18mm

Next Figure depicts the experimental setup used to study battery characteristics. The real time experiments were conducted at room temperature (@30°C). The charging current is limited below maximum permissible charging current of magnitude 1C (i.e. 2.6 A) for each charging method. CCCV tests were performed at different charging rates as 0.4C and 0.6C and 1C.

The traditional and proposed MSCC tests were performed by progressively decreasing current from 1C to 0.2C. After each charge cycle the battery is relaxed for two hours and then discharged at constant current until battery reaches to lower cut-off voltage.



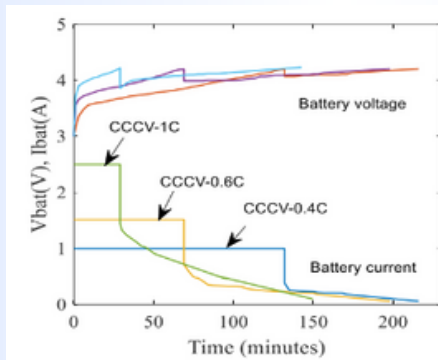
Before running new test, first the battery is charged slowly until the SoC reaches 5%. Following steps were used in each experiment:

1. Discharge the battery at constant current (0.25C) until lower cut-off reached.
2. Record total discharge time.
3. Let the battery relax for two hours.
4. Charge the battery at low current until SoC = 5%.
5. Apply next charging method.
6. Record the battery voltage, current, temperature and SoC after every minute.
7. Let the battery relax for two hours after test is over.
8. Go to step 1

The impact of CCCU, traditional and proposed MSCC charging methods on SoC, temperature and energy efficiency of battery is observed and compared. Results of different charging methods and their comparison are presented in result and discussion section.

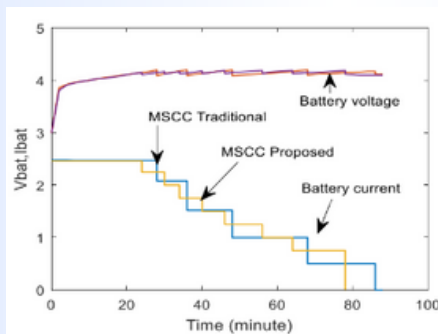
Results:

Following figures illustrate the experimental charging characteristics of CCCU (Constant Current Constant Voltage) and MSCC (Modified Sequential Charging with Current Control) modes for a battery. In the CCCU mode, the battery was charged at different rates (0.4C, 0.6C, and 1C) during the constant current phase. At a 0.4C charging rate, it took 135 minutes to reach 4.2V, at 0.6C, it took 70 minutes, and at 1C, it took 35 minutes to reach the same voltage. However, after the constant current phase, the battery experienced a more prolonged charging period during the constant voltage phase. During this phase, the battery current initially decreased rapidly and then decreased more slowly.



Battery voltage and current in CCCU method

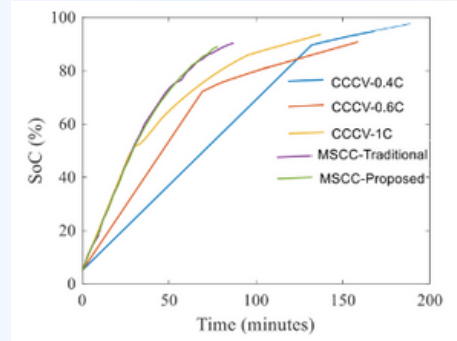
In proposed MSCC method, the battery is charged in 8 constant current steps and the results are compared with 5 step traditional MSCC method. The battery voltage and temperature both are monitored in the proposed method. It is found that, in proposed method charging time is reduced while maintaining battery temperature under preset limit and performs equally well as traditional MSCC method.



Battery voltage and current in MSCC method

In next figure, the State of Charge (SoC) characteristics for different charging modes are presented. In the CCCU charging mode, at charging rates of 0.4C, 0.6C, and 1C during the constant current phase, the battery's SoC increased to 90%, 73%, and 54% within 135, 70, and 35 minutes, respectively. The constant voltage phase, which extends charging time, is not considered for comparison with the MSCC method.

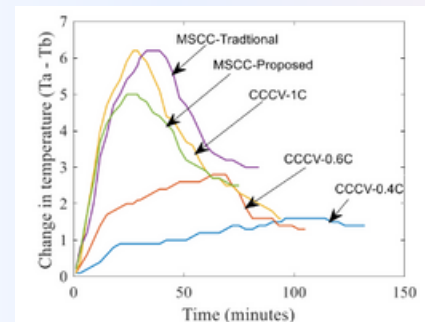
In the traditional MSCC charging mode with an initial maximum charging rate of 1C, the battery reached a 90% SoC in 86 minutes. In contrast, in the proposed MSCC charging mode, the battery achieved a 90% SoC in 78 minutes.



SoC of battery for different charging methods

Next figure illustrates the difference in battery temperature compared to room temperature for CCCU and MSCC charging modes. In the CCCU charging mode, at charging rates of 0.4C, 0.6C, and 1C, the battery temperature increased by 1.6°C, 2.8°C, and 6.2°C, respectively, during the constant current phase.

In the traditional MSCC charging mode with an initial maximum charging rate of 1C, the battery temperature increased by 6.3°C. However, in the proposed MSCC method, the rise in battery temperature was limited to 5°C, showing better temperature control compared to the traditional MSCC mode.



Temperature variation of battery for different charging methods

Charging method	Charging time in minutes	Energy efficiency (%)	SoC (%)	Temperature rise (°C)
CCCV method	0.4C	97	96	1.6
	0.6C	96	90	2.8
	1C	90	90	6.1
Traditional MSCC method	86	94	90	6.2
Proposed MSCC method	78	94	90	5

Experimental results

Conclusion:

The research aimed to improve battery performance by minimizing charging times and controlling temperature. The proposed MSCC method effectively shortens charging times by 42.22% compared to CCCU (1C) charging, maintaining energy efficiency and State of Charge (SoC), while keeping the battery temperature within 5°C of room temperature. Furthermore, it reduces battery temperature by 20% and charging time by 9.3% compared to the traditional MSCC method.

POEMS



ए मी बोलतोय...ओळखलस ना...नाही... नाही अजूनही मग ऐक आधी त्यानंतर सांगतो कोण आहे मी...
ऐकणार आहेस ना...

ए.... ऐकणार आहेस ना तू
तुझ्यातच मी आणि माझ्यातच तू असूनही
कुठे कुठे अजूनही भरकटणार आहेस तू ?

तू जगाचा विचार केलास
बाह्य रूपाचा विचार केलास
पण तुझ्याच हृदयाच्या कोपऱ्यात वसलेल्या
माझ्यावर मात्र प्रहार केलास

मला एकटं पडल्या सारखं वाटतं
माझी बाजू समजून घेत जा
तुझ्या या असंख्य विचारांना
कधी तरी दूरचा पल्ला देत जा

नाही का तुझा विश्वास माझ्यावर
प्रेमाचा वर्षाव माझ्यावर ही होऊ दे
गुदमरतोय माझाही श्वास
तुझा एक मायेचा शब्द ऐकू दे

जग खूपच मोठं आहे
इथे कोणी कोणाच नसणार आहे
तू कितीही अट्टाहास कर त्यांच्यासमोर
शेवटी मीच तुझ्यासोबत कायम असणार आहे

मान्य आहे चूक होते माझ्याकडूनही
मी सैरभैर होऊन जातो
पण तू समजून घ्यावस, चार शब्दही बोलावेस
याचीच वाट पाहतो

खूप काही आज बोलावस वाटलं होतं
दिवसभर हसत राहणाऱ्या तुझ्या चेहऱ्यावरती
रात्री दुःखाचं सावट मात्र दाटलं होतं

मी तुझ्यातच असणार आहे, तुझ्या सोबत राहणार आहे
नको शोधत बसू तुझ्या भावनांना किनारा
आडवळणांच्या या रस्त्यावरती चालताना
मलाच बनव तू तुझा सहारा

आता तरी ओळखलस का ?...मी...मी तुझा आत्मविश्वास

By- Afandkar Riya Ajay
SE ExTC

सुधाकर

तू आया था उस साझ की तरह, जो व्योम मे हजारों रंग बिखर गया, अबर फिर भी श्वेत रहा।।

आया तो था तू,

बिन बुलाए बरसात की तरह,

प्रभजन ले गई तुझे. किसी तेज तूफान की तरह।

ए चंदा कभी आ ठहर जा

देख यहां कितनी रजीदा हु मै, लगता है जैसे कुछ पल मैं जी लू तेरी कौमुदी मे,

क्यों चला जाता है तू. किनारे पे उठती लहरों की तरह।।

देख जरा इन पौदो को भी,

धरती है ये तेरी, तरस रहे है ये भी देखने चादी चादर बिखेरी।।

कभी उस चकोर की भी प्यास भुझा जा जो सिर्फ तेरी राह देखते रहे.

तेरी पहली किरण को पी के जी उठे.

ठहर जा अब

के चकोर के साथ मैं भी तुझे ताकते रहु हर लम्हा ।।

तेरे बस तेज से समंदर उठा बहर

रात रानों के महक की उठाई लहर,

लोग कहे चंद्रमा सूर्यकिरण ही तो फैलाता है, पर कवि कहे चंद्रमा शीत तेज दिखलाता है।

सोमनाथ के मस्तक पर साजे सोम,

बिना चंद्र बिंदु के अधूरा लागे ॐ ओंकार के श्राप के कारण हुआ पूर्णिमा और अमावस का आरंभ।।

काले नभ ध्रुवसंग अर्धचंद्रमा मुस्कुराए,

मरुभूमि में मानो जीवन बीज बो आए।।

अबकी बार आना तो सज-सवर के आ.

के तेरी प्रभा देख उनपे मेरी आंखे ठहर न सके, बस तुझे देखते ये आखे बूढ़ी हो जाए, बस इतनी सी ख्वाइश पूरी कर दे मेरी।।

"मेरा लगाव तेरे साथ अमर रहे".

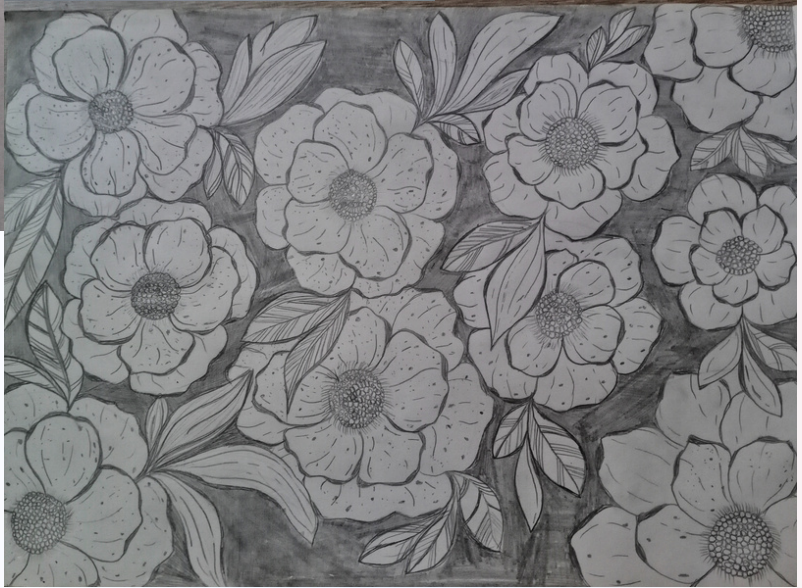
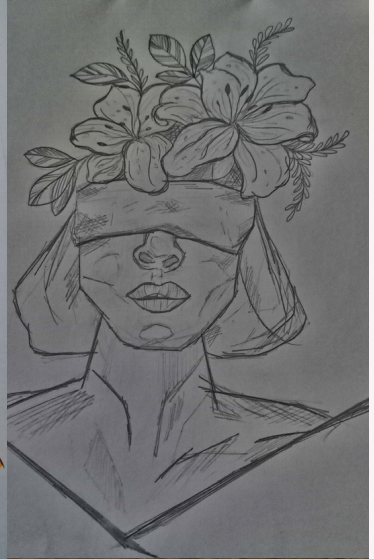
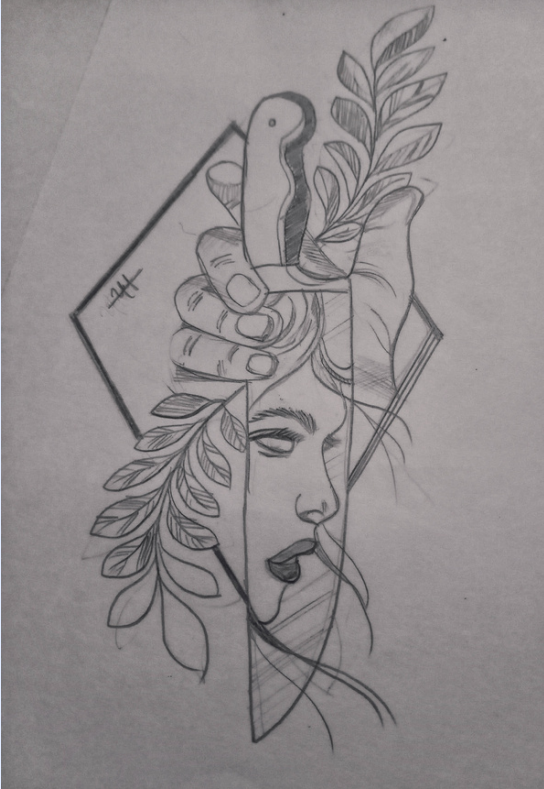
गायत्री सुवारे

SE ExTC

A misty mountain landscape with birds flying in the sky. The scene is hazy and atmospheric, with soft light filtering through the clouds. The mountains are silhouetted against the lighter sky, and several birds are seen in flight, scattered across the upper right portion of the frame. The overall mood is serene and natural.

Drawings

Drawings



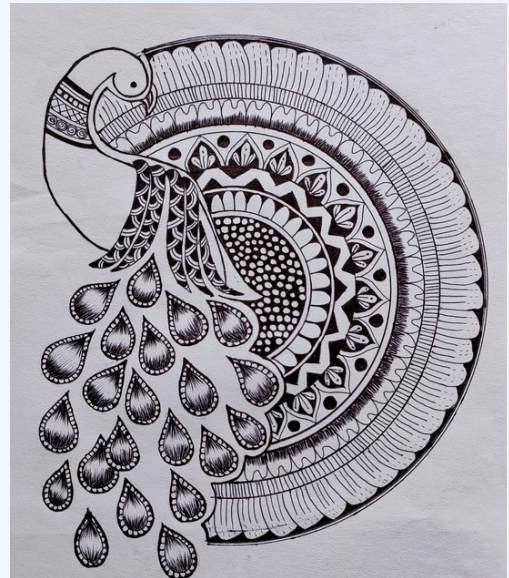
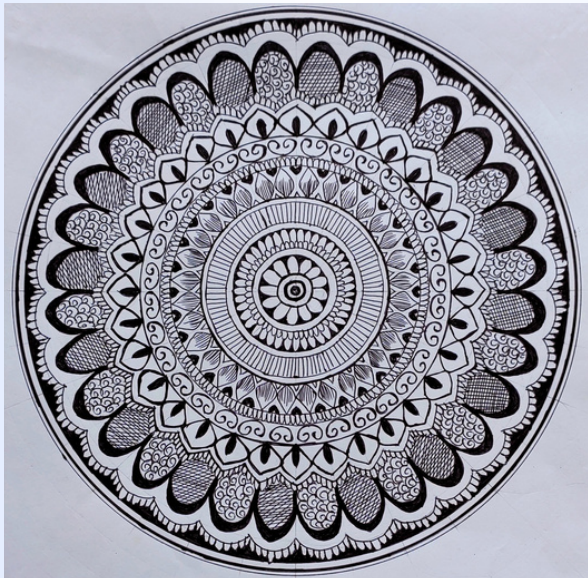
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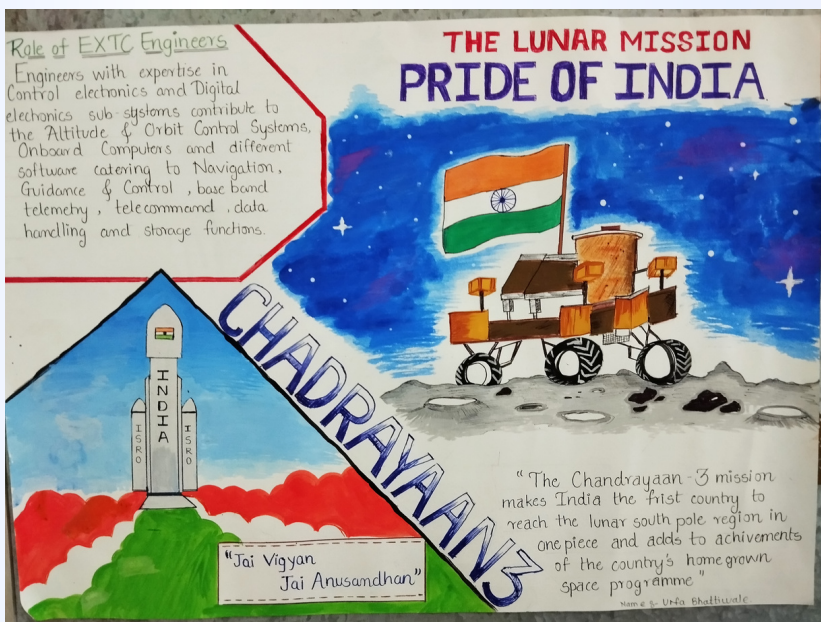
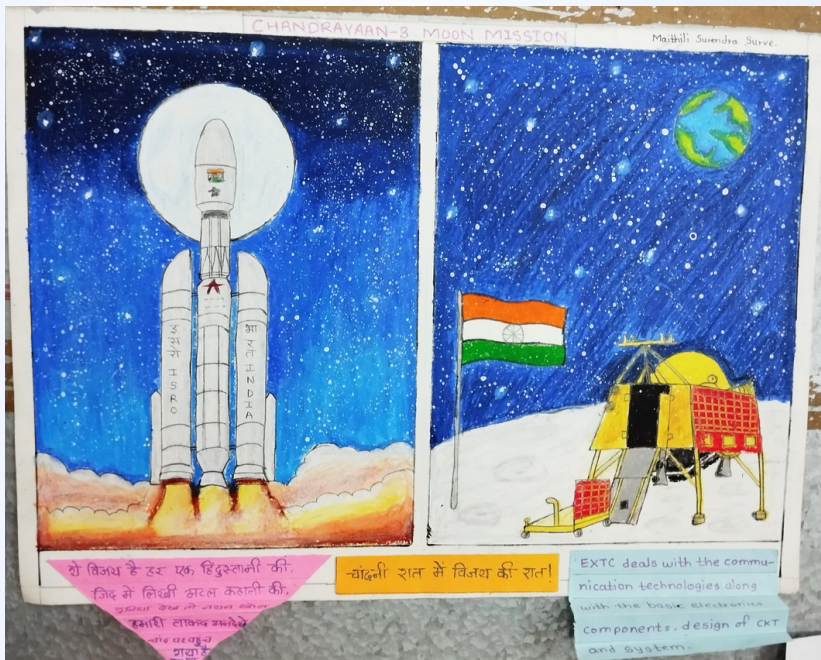
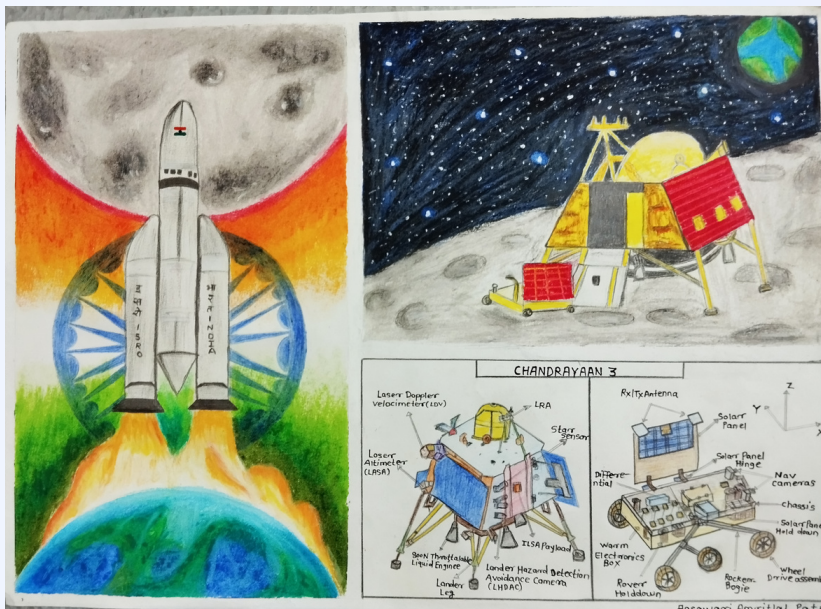


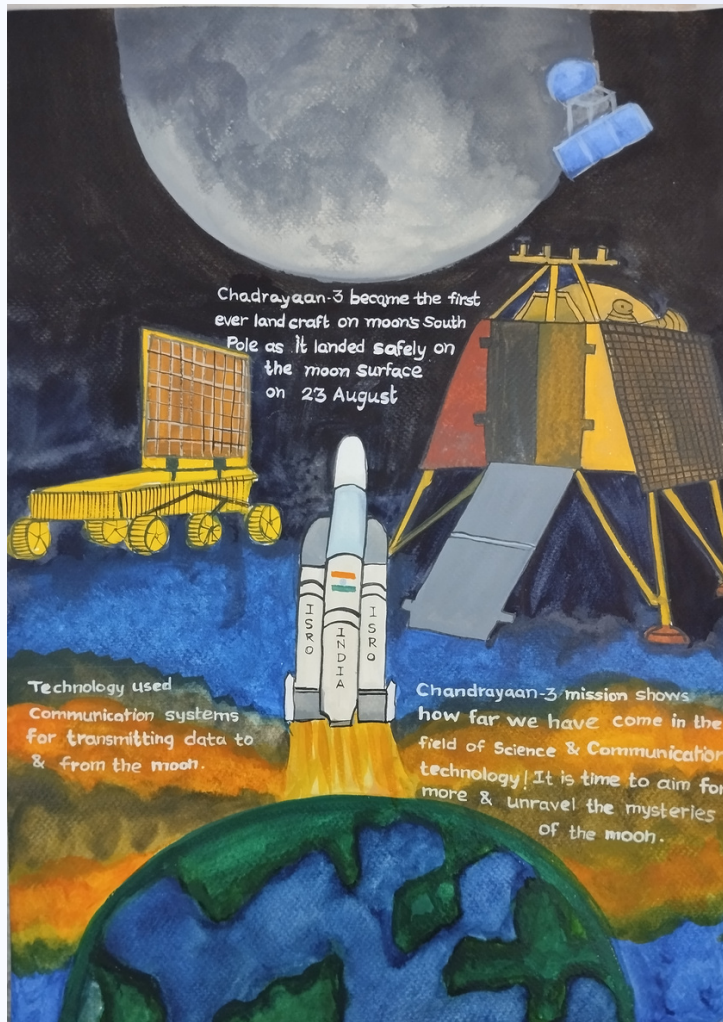
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**By-Gaikwad Gargee Sadanand
TE ExtC**

**Poster Making
Competition
Organized by
A.S.E.N.T on
Occasion of
Engineers day**





FACTS AND FIGURS

- ▶ Launch site Satish dhawan Space centre Sriharikota.
- ▶ Launch Vehicle GSLV-MkIII
- ▶ Mission life 1 lunar daylight period roughly 14 Earth days
- ▶ Landing Side Moon South polar Region.

CHANDRAYAAN

3

NAVIGATION
Getting from one place to another while in space this often involves Long periods of coasting and short bursts from small rockets to change course

GUIDANCE
Aiming a Spacecraft by controlling the direction of its rocket thrust of launch or any other time the Rocket changes speed or direction

CONTROL

Labels: Vikram lunar lander, Rover payloads, Solar panel, Nav cameras, RXTX Antennas, Star sensor, ISRO, INDIA

NAME - MANALI SANDIP PANCHAL.

CHANDRAYAAN-3

SKY IS NOT THE LIMIT

The New York Times
Wednesday, August 23, 2023
In Latest Moon Race, India Lands First in Southern Polar Region

Labels: Injection Orbit, Lunar Transfer Trajectory, Lunar Orbital Insertion, ISRO, INDIA, Vikram lunar lander, Rover payloads, Solar panel, Nav cameras, RXTX Antennas, Star sensor, Star sensor, Wi-Fi, Antenna tower

Hitesha Shailendra Joshi TE EXTC

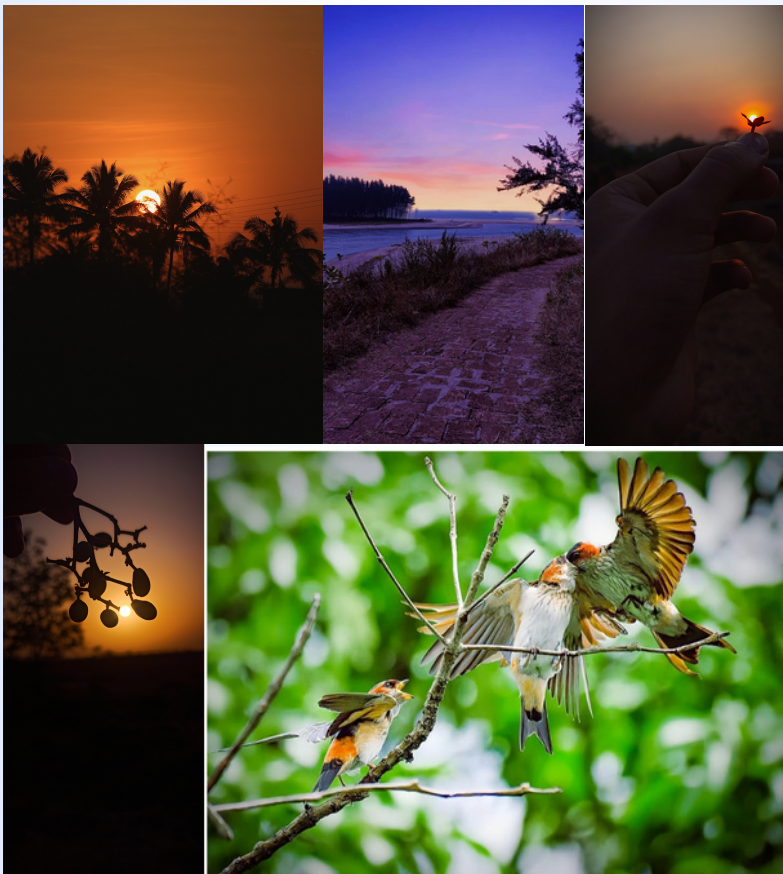
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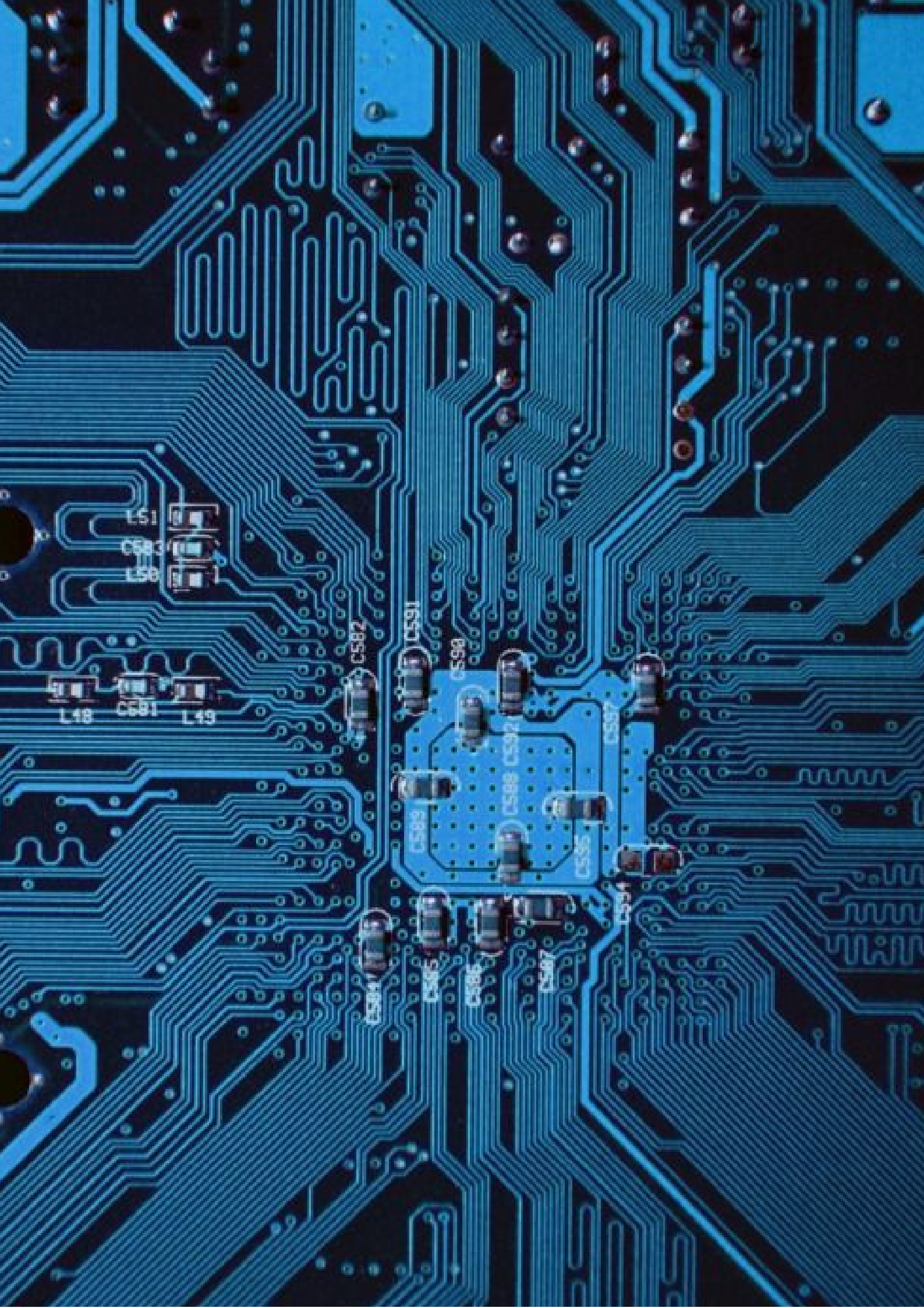
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