



**COLLEGE TECHNICAL MAGAZINE**  
**DEPARTMENT of Science and Humanities**

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COLLEGE TECHNICAL MAGAZINE COMMITTEE (2021-2022)

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FROM THE EDITORIAL DESK.....

Hello, it's time!

This academic year's "TECHNICAL MAGAZINE" publishing satisfied the Akshaya Editorial Board. The culmination of ACETians' accomplishments this academic year, together with their growth, creativity, and application of revolutionary technology, is priceless. However, we believe that this academic year has been filled with success and that divine favors are precious.

I am appreciative of the management, principal, and department heads for helping to ensure that this significant technical publication was released on schedule. I would want to thank all of the students for submitting the articles so quickly. In order for this magazine to truly reflect the standard of the Students Community as a whole, I hope that we will be able to publish a concept identical in the future.

In order to provide you with an outstanding magazine, the Akshaya editorial board has worked very hard. Get ready to show off your zeal.

## **MESSAGE FROM THE HEAD OF THE DEPARTMENT.....**

I'm quite happy to share my opinions about the Technical Magazine's release. As you go through the pages, you will discover the notable successes youngsters have achieved this year. Additionally, our emerging talents have shared their views, perspectives, objectives, verdicts, and aspirations. In order to stay abreast of new developments and trends in technology, academic activity is constantly prepared and evaluated. The publication's contributions from the student authors demonstrate their intellectual prowess.

I praise the students and editorial board for their work on “Technical Magazine” 21–22. Wish you all the best.....

## **Vision and Mission of the department**

### **Vision**

To produce competent Engineers and Scientists by imparting quality Education in Mathematics, Science and Communicative English to develop Research Capability, Employability, Entrepreneurship, Human and Ethical Values so as to meet the challenges in the technology driven society.

### **Mission**

- DM 1 : To provide an academic environment that would help the students to acquire analytical and scientific knowledge through a teaching-learning exercise focusing fundamental concepts.
- DM 2 : To prepare the students for careers in industries and mould them to become an entrepreneur and as a leader.
- DM 3 : To sow the seeds of research in Engineering and Technology by providing facilities oriented towards applied science.

**Table of Contents:**

<b>S.NO</b>	<b>TOPICS</b>	<b>PAGE NO</b>
<b>1.</b>	Automated Irrigation Pump	6
<b>2.</b>	Electromagnetic energy from DC motors	7
<b>3.</b>	Laser Light Security	7
<b>4.</b>	Mini Automatic Walking Robot	8
<b>5.</b>	Remote Control Coil gun for Border Service	8
<b>6.</b>	Mini Water Motor	9
<b>7.</b>	Automated Self actioning Indicator	10
<b>8.</b>	Multipurpose power bank and speaker	11
<b>9.</b>	Energy Conservation in Automobiles	11
<b>10.</b>	Air Generator	12
<b>11.</b>	Smart Attendance System for College Bus	12
<b>12.</b>	Multipurpose Charger	13
<b>13.</b>	Artificial intelligence Robot Drone	14
<b>14.</b>	Hydraulic system	15
<b>15.</b>	Anti Bag Snatching System	15

## **AUTOMATIC IRRIGATION SYSTEM**

### **Abstract**

Appropriate environmental conditions are necessary for optimum plant growth, improved crop yields, and efficient use of water other resources .Automating the data acquisition process of the soil condition allows plant growth with less labour requirement. The existing systems employ PC or SMS-based systems for keeping the user continuously informed of the conditions of the field; but are unaffordable, bulky, difficult to maintain and less accepted by the technologically unskilled workers. The objective of this project is to design a simple, easy to install microcontroller-based circuit to monitor and record the values of soil moisture and fertilizer level that are continuously modified and controlled in order to optimize them to achieve maximum plant growth and yield.

The microcontroller (AT89C51) used is a low power, cost-efficient chip by ATMEL. It communicates with the sensor modules in real-time in order to control the irrigation process efficiently inside a field by actuating a motor (to irrigate the field) according to the necessary condition of the crops. An integrated Liquid crystal display (LCD) is also used for real time display of data acquired from the sensor and the status of the various devices. Also, the use of easily available components reduces the manufacturing and maintenance costs. The design is quite flexible as the software can be changed any time. It can thus be tailor-made to the specific requirements of the user. This makes an efficient system for optimization of yield with minimum use of water. This system is also economical, portable and user friendly

Apparatus: Jumper Wire, Arduino Uno, Relay, Soil Moisture Sensor

by  
Densingh Devairakkam,Azhagumuthu,Baskaran R- I ECE

## **ELECTRIC MAGNETIC ENERGY FROM DC MOTOR**

### **Abstract**

The reverse of this is the conversion of mechanical energy into electrical energy and is done by an electric generator, which has much in common with a motor. Most electric motors operate through the interaction between an electric motor's magnetic field and winding currents to generate force.

A simple *DC motor* has a stationary set of magnets in the stator and an armature with one or more windings of insulated wire wrapped around a soft iron core that concentrates the *magnetic* field. The sequence of turning a particular coil on or off dictates what direction the effective *electromagnetic* fields are pointed.

By

Sarath R- I MT, Indira M, Kiruthika, Muthupandi K –I ECE

## **LASER SECURITY SYSTEM**

### **Abstract**

Laser based Security System is a type of security and alarm system that uses laser light and a light sensor. A security system protects our homes, offices, banks, lockers etc. from intrusion and unauthorized access. There are different types of security systems available and laser based security system is an important and efficient type.

Components Required: Bread board, Wires, LDR, NPN Transistor, Laser, Resistor, and Battery

by  
V. Maheshraj, Ashwin S.V, S. Mohanraj, Syed Mohammed- I CSE

## **MINI WALKING ROBOT**

## **Abstract**

In this ROBOT clap switch operator is used. By using this transistorized circuit, you can switch ON or OFF the Robot by just making a sound of clap. We used a simple gear system in this robot. We can see the clap switch operator separately. But, in this we add in a robot. Clap signal is sensed by microphone. Signal is amplified and given to a bitable multi vibrator circuit. Power is about up to 12 volts D.C. Battery.

Components used: D.C Motor, Clap Switch Operator, 9V Battery, Gear System

by  
S.Dinesh Kumar,R.Arun Kumar, R.Hari Prasath, M.Kavi Prasad – I CSE

## **REMOTE CONTROL COILGUN FOR BORDER SECURITY SERVICE**

### **Applications:**

This prototype is a machine used for attacking enemies and it's just a module of it. This prototype also has a harmful weapon on the top of it. This can used in army, we can also make a modules bigger and too dangerous machine with some advanced weapons in additional but we are concentrating on its mother board. It can also control by wire or wireless and automated, we can command this machine to attack enemies in our national borders instead of our human soldiers. It can prevent their lives too but we have to take some preventive measures to use this machine in India.

This prototype is used for attacking purpose and it is a demo prototype, we have some other things to attach to it like electric saw and shooting piston etc. we have also use sensor system for reliability and enhance the characteristic of the machine.

### **Description:**

The working of the base module is simple. The main concept of the module is to perform multi-utility service. This has a powerful motor system which defines high movement speed. It has a separated buttons for the launcher and blades which has designed in order for the power consumption and reduce the risk of unwanted loss of infantry troops. The device itself has a motion sensor [PIR] which is used to detect the movement and it is also supported with the heat and smoke sensor which helps to detect the enemies' bio-weapon and also the soldier's health as the temperature changes when we are wounded device detects by the thermal sensor and we can safely transport the soldier to medical camp

The blades in the front can be used to cut off the grass and trees which is an obstacle for our



soldiers, apart from that it also used to destroy enemies vehicles as the blades used are made up of Titanium-Gold alloy which is 4x stronger than the titanium vibranium metal.

As the model is controller set-up we can operated it from any place. We can also enhance it with AI support which can operated by itself but, it's hard to believe the bots there need to be a manual controller.

### **Future updates:**

BSF-bot is quite lower in cost and also its outer layer can be built using Rhodium and the blades can be coated with Titanium, this helps to destroy enemies' vehicles as well.

The fuel used in ripsaw was of petroleum product. It is non-renewable and its tank capacity is 6.6litres. But the BSF-bot can use both petroleum as well as wind energy, solar energy as the variant varies.

Hence, the BSF-bot is far better than the ripsaw in terms of performance and as well as reliability. It can withstand different climatic and also land type of its different variants. It can be also used for transport purpose.

by

V. Gopikaa, S.Amega, Aka Teja, Dhanunjaya, Vishnuder A.D – I ECE

## **MINI WATER MOTOR**

### **ABSTRACT**

All pumps use atmospheric pressure to push the liquid out with force as per the motor power.

Here we done a mini water pump with 1500 rpm DC motor.

### **MATERIALS REQUIRED**

Battery

Pipe

1500 rpm DC motor

Bottle cap

Glue, etc

### **WORKING:**

Place your setup in needed place . After that pour water in the inlet Tank. Then the water enter in to the setup motor. There the motor pushes the water in the rotating direction. There the water come out by the outlet pipe as very fast.

It is used in home decorating fountains ,pour water to the plants in gardens , etc....

**PROCEDURE:**

Join bottle cap to motor and then gear fit in middle of bottle cap and then apply hot glue to all parts where fixing is needed.

by  
Sandoori Tejeswar, Nanabala Meghana, A.Nishalini – I ECE

### **AUTOMATED SELF ACTIONING INDICATOR**

**Applications:**

Automated Self Actioning Indicator, is used to glow the indicator automatically. In this, we have designed the device by using the spring system. This system is to be applied in the Motorcycles (bike).

**Description:**

Automated Self-Actioning Indicator helps to reduce the road accidents, due to wrong indication. People who follow the wrong indication of those vehicles get confused; before they come to conclusion they face the accident. In such accidents some people may get injured or even pushed to death.

In our device, we have added a spring system in both sides of the vehicle, the left and right respectively. The one end of the spring is connected to rubber tube that is placed in the upper side of suspension rod in the handle bar and the other end is connected to the stress switch. When the spring is pulled, the tension (stress) is applied to stress-switch then the circuit gets closed and the respective indicator light will get glow and the buzzer starts to give sound as it turns.

**Future updates:**

In our project we have used rubber valve tubes for elasticity. In future we have planned to use clamps or other heavy elastic materials instead of rubber valve tube.

by  
Pragathi M, Billa Sowmini – I ECE

### **MULTIPURPOSE USING POWER BANK AND SPEAKER**

## **ABSTRACT**

The objective of this project is to design a Power Bank and Speaker for Mobile Phone using ultimate power, which can be used effectively during disaster events. It has in built li-ion 18650 type Battery with rechargeable power of 7800 mAH each. The charge is transferred to battery for storage of charge. A micro controller indicating the percent of charge present in the battery for further use. The battery can be connected to a charging circuit with a USB port as output to the respective mobile Phones.

by

Madivili Vinayaka, Gudpati Vinod, Sangadala Bhanu Prakash – ECE & Sri Kathir C.K – I Civil

## **ENERGY CONSERVATION IN AUTOMOBILES**

### **ABSTRACT**

The purpose of this project is to store electricity by using a DC generator in vehicle for further purposes.

**Components:** Generator, Microprocessor, Battery, Charger, Sensors.

**Working :** DC generator axial rod connected to two rear wheels ,when the vehicle attains the speed of certain limit ,generator produces a current which is stored in a battery with help the of a charger.

**Principle :** Mechanical energy is converted into electrical energy due to Electromagnetic induction.The Electricity is stored in a battery with the help of charger.

by

Raja Gopal V,Rathnasankar,Shakthi K, Sandhiya sri D - CSE

## **AIR GENERATOR**

### **PRINCIPLE:**

An Air Generator which converts air energy into electrical energy. Induced EMF is produced according to Faraday's Law of electromagnetic induction.

### **RULE:**

The Direction of an induced EMF can be predetermined by using Fleming's Right hand rule.

### **Components:**

DC motors, Gear motor, Syringes, Gas tubes, LED bulbs, windmills.

### **Working:**

First DC motors are connected in series and wind mill is connected to first motors by air it rotates the windmill and produce EMF. Then Gear motor is connected to other motors. Then the motors is connected to air pump, The Air pump is producing air to fill the air tank. Finally the motor currents are connected to bulb to blow the bulb.

by

Natarajamani I - MT,Hassan Sajjad,Hari Prasath - I Mech

## **SMART ATTENDANCE SYSTEM FOR COLLEGE BUS**

### **SMART ATTENDANCE SYSTEM USING RFID**

**Radio-frequency identification (RFID)** uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. The tags may be embedded in the tracked object. RFID is one method for Automatic Identification and Data Capture (AIDC).

#### **Advantages of RFID:**

- No line of sight requirement.
- The tag can stand a harsh environment.
- Long read range.
- Portable database
- Multiple tag read/write.
- Tracking people, items, and equipment in real time.

#### **MAJOR COMPONENTS REQUIRED:**

- RFID Reader (High frequency).
- RFID Tags.

- Arduino Uno R3.

by  
Vijay Rahul R – I MECH ,Aravind Kumar,Rohith P,Madesh B- I MT

## **MULTIPURPOSE CHARGER**

### **PRINCIPLE:**

It is mainly based on the principle of Kirchhoff's voltage law.

### **COMPONENTS:**

Main components used are USB port, USB micro B,USB type A , data cable and OTG

### **RULE:**

Multipurpose charger is finding considerable use as both primary and backup power sources.

Input power = output power

### **WORKING:**

USB On-The-Go, often abbreviated to USB OTG or just OTG, is a specification first used in late 2001 that allows USB devices, such as tablets or smart phones, to act as a host, allowing other USB devices, such as USB flash drives, digital cameras, mice or keyboards, to be attached to them.

### **ADVANTAGE:**

Our objective is to design a cheap, versatile and efficient charger which will interest and appeal to the "cost-minded" people.

by  
M.Arun, T.Deepan raj, R - CSE. Baskaran – I ECE

## **ARTIFICIAL INTELLIGENT ROBOT**

### **Applications:**

This humanoid robot can be used to welcome new students as well as the guests who are coming to the college. It is used to help and guide the outsiders; inside the college. It automatically detects the presence of humans and obstacles which are present in front of it. By using voice recognition system it can answer certain questions asked by the people, which are already programmed in the microcontroller according to the situation.

### **Description:**

The humanoid robot, named AKSHAYAN, is implemented with so many features. It can automatically detect the presence of human, if anyone aside. Also it can detect the obstacles present in front of it...For these we have used PIR as well as ultrasonic sensors. As a beginning, it is also having the voice recognition system. It can also move its hands and head as like humans. The main aim that we had assigned to our Robot is to welcome new students as well as the guests who visit the college.

When we came to our college for the first time, the teachers who guided us for showing the facilities of the college, have to cut their classes and also have to face more difficulties in doing their duties properly. So as a result, we thought about an idea of bring a humanoid robot instead of the teachers, so that it will be much more interesting and effective.

### **Future updates:**

In future, by adding and improving the features of this robot. It can be used in many sectors like schools, college, airports, banks, shopping malls etc., it will be quiet interesting if there is robots for welcoming people in these sectors., As well as it can guide them to specific locations, for that we are trying to introduce infrared sensors, so that it can move and follow black lines and show the path. By implementing more sensors according to the necessities, it will be able to know about things happening around it. It will be better if it can do the jobs that are done by humans at present in more effective manner. Later it can be even used in sectors that humans couldn't handle directly.

by  
Hemalatha – I ECE, Jestin John – I Civil, Gowtham C – I Mech

## **HYDRAULIC SYSTEM**

A **hydraulic drive system** is a quasi-hydrostatic drive or transmission system that uses pressurized hydraulic fluid to power hydraulic machinery. The term hydrostatic refers to the transfer of energy from pressure differences, not from the kinetic energy of the flow.

A hydraulic drive system consists of three parts: The generator (e.g. a hydraulic pump), driven by an electric motor or a combustion engine or a windmill; valves, filters, piping etc. (to guide and control the system); and the actuator (e.g. a hydraulic motor or hydraulic cylinder) to drive the machinery.

Principle of hydraulic drive system Pascal's law is the basis of hydraulic drive systems. As the pressure in the system is the same, the force that the fluid gives to the surroundings is therefore equal to pressure  $\times$  area. In such a way, a small piston feels a small force and a large piston feels a large force.

by  
Barathkumar S, Vikram J – I Mech

## **Anti Bag Snatching System**

Here is a very simple as well as very useful project anti bag snatching alarm , used in bag or suitcase in order to prevent from snatching. The sound produced by anti bag snatching alarm is like police horn to get attention of people when someone attempt to snatch your bag or suitcase .Anti bag snatching alarm highly helps in saving our belongings wherever we go. In this project, the component requires is IC1 (CD4011)

### **RESISTORS:**

R1(1K)-1

R1(4.7K)-1

### **CAPACITORS:**

C1(.1uf)-1

### **MISCELLANEOUS:**

RELAY-1

T1(BC547)-1

D1(1N4007)-1

by  
Hari Vathson, Palaniappan, Dantani Banu – I CSE, Allam Nandhini- I ECE