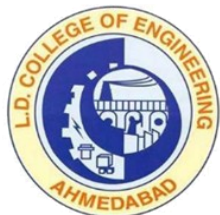


**DEPARTMENT OF INSTRUMENTATION AND CONTROL ENGINEERING**  
**( EST.1972)**

**L. D. COLLEGE OF ENGINEERING ( EST. 1948) AHMEDABAD**

**EDITION 2.0**

**JAN '19- JUNE'19**



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**DEPARTMENT OF IC ENGINEERING NEWS LETTER**

**PRINCIPAL MESSAGE**

**Dear Students and Faculty Members,**

It is a matter of great happiness that the second e-news letter of Instrumentation and Control Department is brought to you.



LDCE had organized Kaizen 2019 on 11th and 12th April 2019 to showcase the project of final year students of UG and PG. Consequently for the fifth year Kaizen has been a great success, so much so that GTU wishes to implement the same in all

affiliated institutes. It is indeed a matter of pride that LDCE has set such a benchmark. Talking of benchmarks, I would like to congratulate all the students who are going to represent the institute and the country in Robocon at Mongolia. The students who have won the Hackathon 2019 at PDPU deserve an equal amount of appreciation. We are also doing great as far as SSIP is concerned. I am glad to see that we have achievers not just in students but teachers as well. Increase in the number of academic events in the institute is a sign that we are continuously striving to improve the academic standards. The institute celebrated International Yoga Day as health, mental and physical, is equally important. I am sure with hard work of the students and dedication of the faculty members we will achieve new heights.

**Dr. G. P. Vadodaria - Principal, LDCE.**

**VISION AND MISSION OF INSTITUTE**

**Vision :** To contribute for sustainable development of nation through achieving excellence in technical education and research while facilitating transformation of students into responsible citizens and competent professionals.

**Mission :**

- To impart affordable and quality education in order to meet the needs of industries and achieve excellence in teaching-learning process.
- To create a conducive research ambience that drives innovation and nurtures research-oriented scholars and outstanding professionals.
- To collaborate with other academic & research institutes as well as industries in order to strengthen education and multidisciplinary research.
- To promote equitable and harmonious growth of students, academicians, staff, society and industries, thereby becoming a center of excellence in technical education.
- To practice and encourage high standards of professional ethics, transparency and accountability.

You have to dream before the dream comes true.” —A.P.J. kalam

### HOD MESSAGE



The Department of Instrumentation and Control Engineering was established in the year 1972. At present department is offering B.E. course in Instrumentation and Control Engineering with intake capacity of 60 and M.E. in Applied Instrumentation with intake capacity of 18. The department was accredited by National Board of Accreditation for the period of 3 years from 2006 and reapplied in 2018-19. The both UG and PG program is affiliated to GTU (Gujarat Technological University).

The Department has a team of well qualified, experienced and committed staff members with a strong sense of ethical and professional responsibility. The department faculties has received their higher education from premier institute like IIT – Roorkee, IIT – Bombay, IISc - Banglore, NIT-Trichy. The department faculty work with excellent team spirit in different technical domain like modern control, Signal Processing, Image Processing, Analog Electronics, VLSI and Embedded System, Process Control, Automation, Instrumentation which leads to good quality students projects and research publications in these areas. Department has five major laboratories and two center of excellence(CoE Labs) established by siemens. The department labs are equipped with software and equipment for wide exposure of students in their practical works as per GTU syllabus.

Department committed to provide students an outcome based education through outcome based teaching and learning process. The department motivates both co-curricular and extracurricular activities, for the overall development of its students. Department has ISA student section to nurture technical and organizational skills among students. Students are also encouraged to apply from institute SSIP (student startup and Innovation policy) funding for development of PoC (Proof of concept).

Department students are actively participating technical and non-technical events at state, national and International level, which in turn gives them horizontal exposure to Engineering concepts and technology. This time our two student represented DD Robocon at IIT Delhi, National level, Department has also organized various events under ISTE student national convention. This new newsletter also includes SSIP projects, students technical posters and placement details.

Our placement records has always being very impressive, with the good number of students being placed year after year in highly reputed core companies and public sector units. on campus placemen of average 40 students in reputed companies with average salaries of around 3.5 to 4 lacs. Our alumni hold senior positions in industries as well as in academic institutions, both in India and abroad. This news letter provide details of activities and achievements of department.

Best wishes,

**Dr. Manish Thakker,**

**Professor and Head, IC Engg. Department**

### DEPARTMENT VISION AND MISSION

**Vision:** Provide quality education and research environment for preparing competent Instrumentation and Control engineers to meet the technological challenges of industries and the society.

**Mission:**

- To impart quality education in the field of industrial automation to match the needs of industries.
- To encourage multi disciplinary research and innovative projects.
- To cultivate technocrats and entrepreneurs with professional skills and ethics.



# 1800 સ્ટુડન્ટસના 540 પ્રોજેક્ટ રજૂ થશે કાયઝનમાં એલડીનો એન્યુઅલ પ્રોજેક્ટ એક્સપો 11થી 12 એપ્રિલ દરમ્યાન કેમ્પસમાં યોજાશે

ફોન નંબર: cbamdavad@gmail.com

એલડીની આઈસીની ટીમ ઓટોનોમસ ડ્રોન સર્વેલન્સ ઘડીને આવશે તો બીજી ટીમ નવી જનરેશનના પ્રોજેક્ટ અને યોગ્યતા ધરાવેલ ઇન્વેન્ટિયોન. એલડી એન્જિનીયરીંગ કોલેજમાં 11 એપ્રિલથી બે દિવસનો એન્યુઅલ પ્રોજેક્ટ એક્સપો કાયઝન 2019 શરૂ થઈ રહ્યો છે. આ પ્રોજેક્ટ એક્સપોમાં 1800 જેટલા સ્ટુડન્ટ્સ 540 જેટલા પ્રોજેક્ટ રજૂ કરશે.

## આ છે ઓટોનોમસ IOT બેઝડ ડ્રોન સર્વેલન્સ



સામાન્ય રીતે ડ્રોનને લીધે રિમોટથી કંટ્રોલ કરવું પડે પણ આપણી ડ્રોનના સ્ટુડન્ટ્સ નિશાંત, બાપિક, શ્યામ અને ડેવિડના ટીમ રિમોટ વિલા સોફ્ટવેર બેઝડ આ ડ્રોન તૈયાર કર્યું છે. જેમાં ગ્લોબીએસ લોકેશન ફિન્ડિંગ ઇન્ફોર્મેશન અને ઓટોમેટિક ડ્રોનને પરત આવે છે.

## એક્સપો સ્ટુડન્ટસને પ્રોત્સાહન પુરુ પાડે છે

ગુપ્તી વડોદરિયા, પ્રિન્સિપાલ, એલડી એન્જિનીયરીંગ

હું માનું છું કે કાયઝન પ્રોજેક્ટ એક્સપો સ્ટુડન્ટસને પ્રોત્સાહન પુરુ પાડે છે. ઉદ્યોગની સતત વધી રહેલી માંગ અને સ્ટાટસ અને સંતોષાવના વિકાસ માટે આ એક્સપો પાતાના મોડેલ વચ્ચે તરીકે દિશા આપે છે. આ ઉદ્યોગમાં પ્રણેતા જરૂરી પેનલ તરીકે ઉદ્યોગપતિઓ અને અન્ય એક્સપર્ટ્સ હાજર રહેશે. હું માનું છું કે એન્જિનીયરીંગ એક એવું ફિલ્ડ છે જેમાં સ્ટુડન્ટસના ઈન્વેન્ટિયોનને મદદ આપવું જોઈએ. કાયઝન આ હેતુ સિધ્ધ કરે છે.

**દિવ્ય ભાસ્કર** ગ્રાહ્ય વિતરણ તા. 10 અને 11 એપ્રિલ, 2019

### WINNER KIZEN2K19

Student Name	Title	Guide Name
Fenil, Shyam, Pathik, Nishant	IOT based human detection system	Prof. C.V Shah
Chauhan Girdhar, Zala Mahendrasinh	Dual axis solar panel tracking system	Prof.K.R Joshi
Jholapara Gaurav, Trivedi Mayur	Solid Testing Insyument for agriculture	Prof.N.A Kanani

*Education breeds confidence. Confidence breeds hope. Hope breeds peace.  
-Confucius*

INSTRUMENTATION & CONTROL ENGG.- PLACEMENT 2019		
Sr. No	Name of Students	Company
1	SHAH NEHABEN JAYESHKUMAR	MG MOTORS
2	TANDON KHYATI AJAY	MG MOTORS
3	HANSA PURA PURVAKUMAR	WELSPUN
4	PISHSAVADIYA JIGAR	WELSPUN
5	JHAVERI HETVI T.	TCS
6	KHATRI DHRUMIL YOGEN	RELIANCE
7	DOBARIYA AVADH J.	RELIANCE
8	PATEL DHRUV S.	RELIANCE
9	SANDEEP MEHTA	ADANI
10	ABHISHEK ROY	ADANI
11	CHAUHAN SHYAM	COROMANDEL
12	KALATHIA JAY S.	COROMANDEL
13	KAJAVADARA KEVAL	ADANI POWER
14	JETHVA VIPUL N.	ADANI POWER
15	PATEL PARTH R.	ADANI POWER
16	PATEL KEVIN M.	ADANI POWER
17	SHAH PRITESH B.	ATUL
18	PATEL KALPIT	LTTS
19	PATEL VISHVESH C.	TORRENT
20	BHAVSAR GUNJAN	TORRENT GAS
21	RAWAT AMEET G.	IDMC
22	JARECHA JATIN M.	ERONKAN
23	DHOLARIA NIKUNJ	HORIZON MICROTECH
24	PATEL SAHIL K.	GUJARAT GAS
25	KATESHIYA RAJ C.	GUJARAT GAS
26	BRAHAMKSTRIYA BHAVESH S.	GUJARAT GAS
27	VYAS SAGAR B.	GUJARAT GAS
28	CHAUHAN VISHAL B.	AMULFED DIARY
29	LORIYA VIVEK S.	AMULFED DIARY
30	FATANIYA ARATI J.	VIFTRI
31	MARAKANA PRINCE A.	RELIANCE

*Never regret a day in your life. Good days give you happiness and bad days give you experience -Anonymous*

## 21<sup>st</sup> ISTE FESTIVAL

ISTE Student National Convention – 2019 is well thought-out to provide students with much needed platform for demonstrating their innovation to empower the sustainable growth of nation at large. This convention was one of the largest student conventions in today's time. It enveloped about 70 different events in various categories and attracted more than 10,000 students of various engineering colleges and universities across the nation. The various events will offered plethora of opportunities for students in terms of dissemination of ideas, notions and knowledge to drive new paradigm shifts in Indian Industry.

### IOT BASED AUTOMATION



**WINNERS:-**1. Kushal & Vrushabh  
2. Vishesh, Zarana , Brijesh

### ROBOMAZE



**WINNERS:-**1. Janmesh  
2. Priyanka & Bhavya

### CIRCUIT MANIA



**WINNERS:-**1. Aninda, Sagar, Dishant  
2. Ravi, Jay, Ashutosh

### POSTER MAKING



**WINNERS:-**1. Vishesh, Brijesh  
2. Meet, Abhishek, Sagar

Judges for the Event: Shri. Jayesh Gandhi, Harikrupa Automation and Shri. Kalpesh Trivedi, TRIO Elevators

*Educating the mind without educating the heart is no education at all.-Aristotle*



**DD ROBOCON** is aimed to encourage the scientific temperament of under-graduate engineering students of the country. It gives a platform to the students to innovate, to create, and to work in a team comprising of students belonging to various streams of engineering. On the other hand, at international level, it gives an opportunity to the students to interact with their counterparts belonging to various participating countries. Further, it strengthens the spirit of sportsmanship, brotherhood, and showcases unity and cultural exchange among the countries of Asia Pacific Region.

**ROBOCON CLUB LDCE** organizes a number of activities throughout the academic year focusing on the overall development of the students. Team Robocon LDCE participated at the National Level DD Robocon 2019 and bagged the title of National Championship at IIT , Delhi.

**ROBOCON** club organized various events throughout the year which includes expert sessions, various tests, Robolympic, Mock placement drills and many other activities.

The Team later represented India at the International Level on 25th August 2019 at Mongo-

*It's not the will to win that matters everyone has that. It is the will to prepare to win that matters.- Anonymus*

IC department has assiduous students both in technical and management team of Robocon who contributed a lot to achieve this goal in Doordarshan Robocon 2019 of national level at IIT- Delhi on 16th June 2019.

This victory gave Robocon Ldce to compete others and represent India at International level event.



### Winners at DD Robocon IIT Delhi 2019



**Aninda Dey Sarkar**



**Jinay Shah**



**Ajay Vegad**



**Maulik Patel**



**Bhavik Patel**



**Chandan Lunia**



**Khushboo Kapoor**



**Vishal Parmar**

*Everybody is a genius. But if u judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid.-Albert Einstein*

## SSIP

Government of Gujarat has developed a policy for providing assistance to Startups Innovation. Under this scheme, any individual/ group of individuals having innovative idea/ Concept will be eligible and/ or Universities/ education institutions, Incubation Centre/ PSUs/ R&D Institutions/ Private and other establishments will be eligible as an institution to support and mentor to innovators as approved by Committee. Startups in an economy's technology sectors is an important indicator of technological performance for several reasons.

SSIP is platform which provides students to develop their ability in entrepreneurship, there are lots of passionate students in our state who has pioneering ideas but couldn't convert their ideas into product due to lack of financial support thus SSIP is an organization which helps those students to carry forward their innovative ideas.

SR. NO.	GROUP NAME	PROJECT	SANCTION AMOUNT
1	Mayank, vatsal Burhanuddin	RECYWAP	20,000
2	Vishesh, Zarana	Advance Data Logger	20,000
3	Ashutosh, Jay Jinal, Yash	Green Clutch	20,000
4	Jinay, Yash, Dhaval Darshan, Suresh, Jay	Hydrosept technologies- UIV 1.0	70,000
5	Sanjay, Vishal, Jeniish, bhaumik	Density meter	25,000

*Every morning you are handed 24 golden hours. They are one of the few things in this world that you get free of charge. If you had all the money in the world, you couldn't buy an extra hour. What will you do with this priceless treasure? Remember, you must use it, as in is given only once. Once wasted you cannot get it back. - Anonymos*





Advance data logger



Hydrosept Technologies UIV 1.0

*“Knowing is not enough, we must apply it. Wishing is not enough, we must do.”- Johann wolfgang*

**Expert Talk by Prof. H.K Patel**

**Dr. H.K Patel is chair-student affairs for ISA District'14 and faculty advisor of ISA student chapter, Nirma University. He presented about ISA student chapter and also told the values of International Society of Automation regarding the role of ISA in the personal and professional development of students.**

**Expert Talk by Prof. B. S. Manke**

**B.S. MANKE is professor and author of Control System Design, Electrical Network & Circuits who gave us expert talk on Linear Control System . Students learned about many innovative projects and circuits from him during the session.**

*If you look for the light, you can often find it but if you look for the dark, that is all you will ever see.-IROH*



Mr. Jageer from Prima Automation Interacted with students at CoE Siemens. Also extended support for Training and filed visit at Prima as part of MoU with IC Dept.



Department's student Janvi Dubal(fine arts), Rutvij Thakar (theatre & music), Khyati Bhatt (theatre), Tej Patel (theatre), Himanshu Joshi (music), and Vipul Kamothi (folk dance) participated in XITIJ 2019 and became Zonal champions. Students prepared drama on menstrual cycle to create awareness about wrong beliefs related to it. They further represented LDCE at inter-zonals and AIU events



**ISA STUDENT SECTION INAUGURAL**

(Left to Right): HOD Dr. M.T. Thakker, Dr. Suryakant Gupta — IPR, Mr. Vipul Patel, ISA Mr. Jagdish Shukla-ISA, Mr. Madhukant Patel— Rev Automation, Mr. P.N. Parikh— ISA, Dr. C.B.Bhatt— Alumni IC.



ISA Inaugural 2019

*Our greatest glory is not in never falling, but un rising every time we fall  
- Confucius*

## DUAL-AXIS SOLAR PANEL TRACKING SYSTEM BASED ON ARDUINO

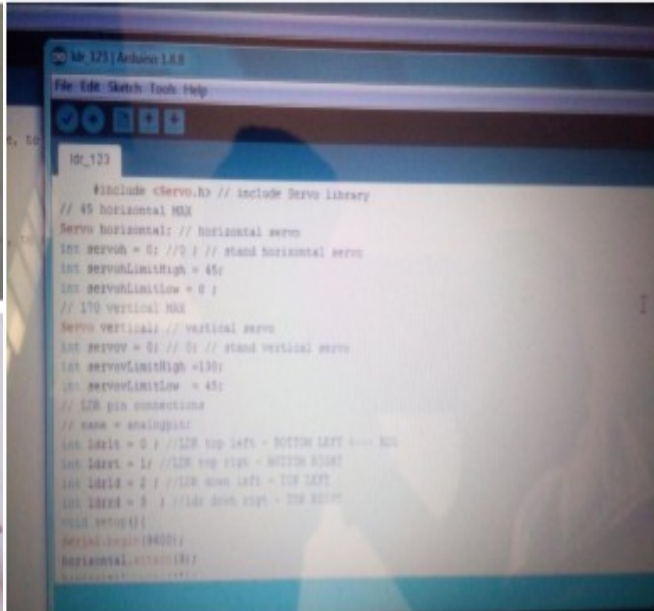
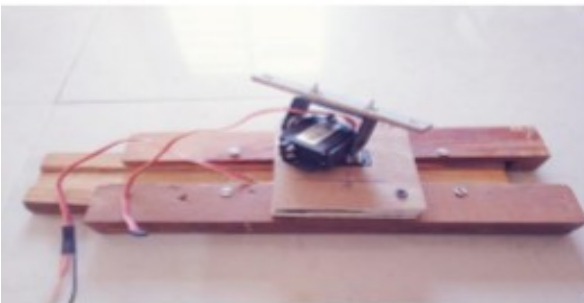
Guide: Prof. Kruti R. Joshi

Student: CHAUHAN GIRDHAR B.  
ZALA MAHENDRASINH R.

## ABSTRACT

The green energy also called the renewable energy, has gained much attention nowadays. Among the renewable energy solutions, solar energy is the very vital source that can be used to generate power. Electricity from the sun can be converted through photovoltaic (PV) module. The efficiency of solar module depends on sun intensity, if the intensity is more than efficiency is more. Since the position of sun continuously changes throughout the day, the intensity of sun rays is not uniform on PV module. So, for getting more sun rays on PV module solar tracker plays a much vital role. Solar tracking allow more energy to be produce because the solar array is able to remain aligned to the sun. A solar tracker is a device for operating a solar photovoltaic panel, especially in solar cell applications and requires high degree of accuracy to ensure that the concentrated sunlight is dedicated precisely on to the power device. The rays from the sun should fall perpendicularly on the solar panels to maximize the capture of the rays and this is done by pointing the solar panels towards the sun and following its path across the sky. The solar tracking systems - Dual Axis Tracker. The design details of Dual Axis Tracker are described which detects the sunlight using Light Dependent Resistor (LDR) sensor. The control circuit for the systems is based on Microcontroller which is programmed to detect the sunlight through the LDR sensors and then actuate the DC motor using motor driver to position the solar panel where it can receive the maximum sunlight.

## Hardware and Software Images



## CONCLUSION

This project is related with green energy. The operation of this project is effectively optimizing solar output as compared to the conventional fixed solar panel. The goal of the project was to design and implement a small scale prototype dual-axis solar tracker with basic tracking functions. Designing and implementing processes have been accordingly completed for the work of the project. The final result was a complete design of such a system, with functionality that met the design requirements.

**IOT BASED HUMAN PRESENCE DETECTION SYSTEM USING AUTONOMOUS SURVEILLANCE  
DRONE PLATFORM**

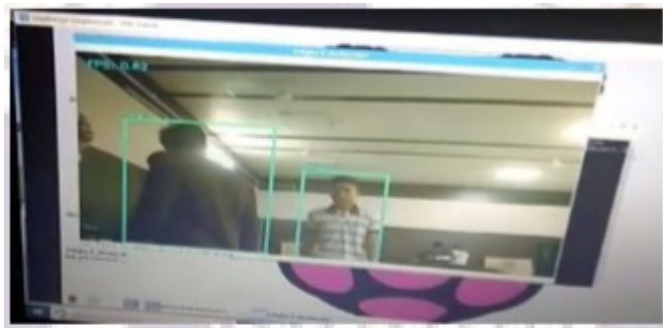
Guide: PROF.CHANDNI V. SHAH

Student: CHAUHAN SHYAM  
PARMAR FENIL**ABSTRACT**

This project is to make one quad-copter which is capable of fully autonomous flying on the predefined paths. Proposed drone has many smart sensors like GPS system, compass system, accelerometer, telemetry system etc. As per specific requirement of the project, latest generation flight controller PIXHAWK has selected. Which is compatible with the ground control station application MISSION PLANNER. Advanced remote controller FS-i6 is used for manual operation.

On the other hand, the artificial neural network for detecting the human presence in the surveillance area using raspberry pi and tensor flow library was implemented. To access the live stream of the area of surveillance at anywhere in the world, the virtual network computing (VNC) is used.

In the field of security and surveillance presented project can be useful. Other application, in forest, to detect any illegal activities like animal show, hunting, wood cutting etc this system can be useful for regular patrolling. Also the drone is useful in agriculture field for seedling, pesticides etc.

**Hardware and Mission Planner Software Images****Result****CONCLUSION**

Project is to improve the security and safety of any area by constantly surveillance and detect the activity which is prohibited using the autonomous quad copter as a base. This project's aim to develop the system which identifies the human activity which can be easier after employing the training model algorithm using artificial neural network.

## WIRELESS SPEED AND DIRECTION CONTROL OF SINGLE PHASE MOTOR

Guide: PROF. M. C. PATEL

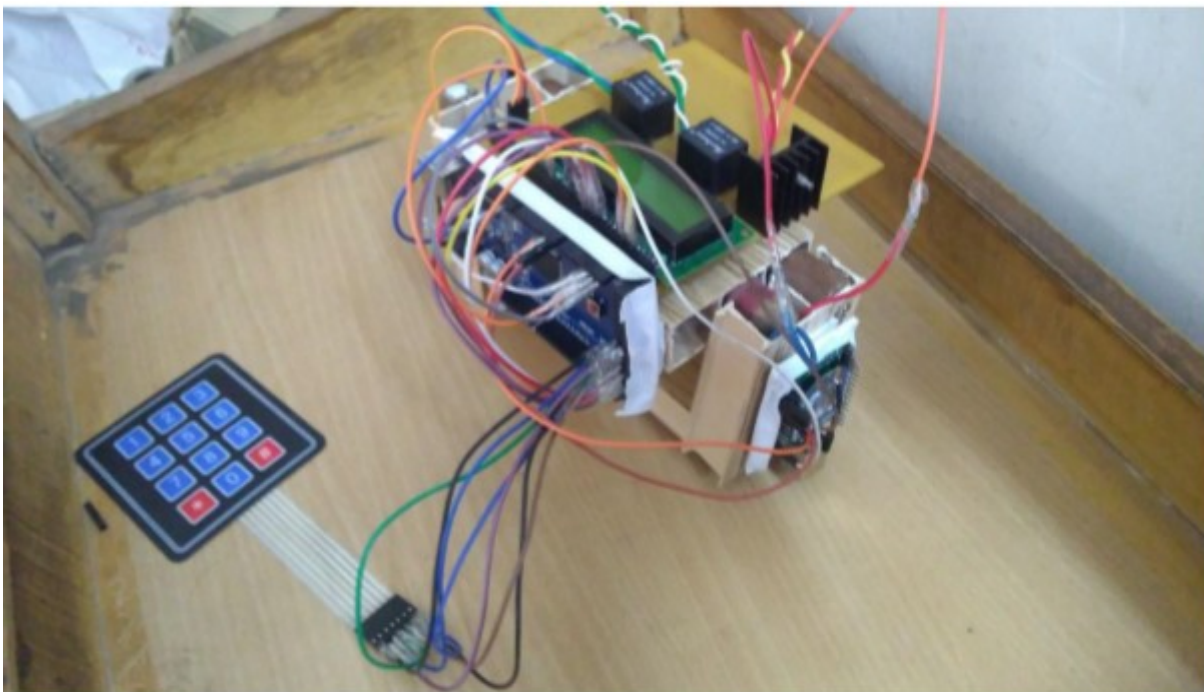
Student: SANDEEP MEHTA

RAJ M. CHOVIYA

## ABSTRACT

The problem involves high consumption of non-renewable resources, huge consumption of electricity, meeting set point requirement despite load changes, oscillatory response of feedback system, complex hardwiring throughout plant, high power and high cost involved in design of controller & meeting high torque requirements. Aim of the project is to control speed and direction control of a 1- phase induction motor. Objective of the project is to design a drive circuit which can provide energy efficient drive circuit, reduce possibility of failure of the component and reduce complex hard-wired system. Further the objective extends towards selecting appropriate control strategy which can provide reliable and faithful output. Voltage regulation is applied to motor through drive circuit and motor was remotely controlled by sending data through Xbeetransreceiver. Also, motor was manually controlled at plant location by keypad which is also interfaced by us.

## Hardware and Software Images



## CONCLUSION

Hence, concluded that this drive provide the most energy efficient means of capacity control. This drive comes in a lead role for energy saving products for the all industries using electrical motors. Adding this drive to a motor-driven system can offer potential energy savings in a system, which has varying loads with time. The operating speed of a motor connected to a drive is varied by changing motor supply voltage through varying potentiometer . This allows continuous process speed control. Motor-driven systems are often designed to handle peak loads that have a safety factor. This often leads to energy inefficiency in systems that operate for extended periods at reduced load. The ability to adjust motor speed enables closer matching of motor output to load and often results in energy savings. This drive can be used for the number of applications of Induction motor and speed can get control as per load requirement so energy consumption get reduced hence this drive becomes very reliable and economically beneficial.

## SOIL TESTING INSTRUMENT FOR AGRICULTURE

Guide: Prof. Miss Nidhi A. Kanani

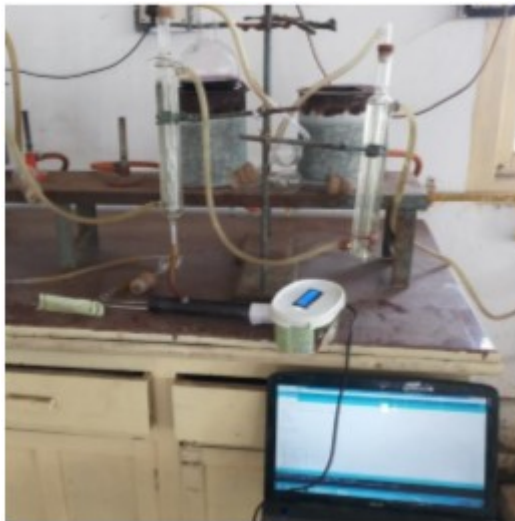
Student: Gaurav Jholapara  
Mayur Trivedi

## ABSTRACT

Agriculture is one of the major backbones of India. The sector is one of the largest employment providers. Though there is a large area under cultivation, we don't get maximum yield. The primitive method is collecting the soil sample and it has been tested in the laboratories. The problem faced in the agriculture field is that the farmers are suffering much to get the farm lands survey reports quickly. Lack of facility to suggest fertilizers for the chosen plant. Lab testing method will not able to visualize the soil parameters for the live monitoring.

The idea is to design a portable soil testing equipment/instrument which can be used for testing of all the types of soils, along with that it can also show the path to the rural farming community to enhance some of the traditional techniques and the best output can be achieved. The amount of proportion of moisture, pH and nitrogen is measured and will be displayed on the LCD screen, making it user friendly. According to the amount of propor-

## Hardware and Software Images



## RESULT

The LCD displays the soil parameters which has been measured, the values displayed are corresponding to the actual value of the soil.

- The pH values are obtained as change in voltage according to the soil pH. The sensor is calibrated with the standard pH meter.
- The nitrogen is measured by the corresponding ammonia liberated from the chemical reaction process.
- The value of ammonia is in PPM and this is then converted to kg per hectare for nitrogen.
- The moisture values are used for the live monitoring of the water content of the soil.



## CONCLUSION

The outcome of this project is providing crop and fertilizer recommendation based on the processing of different parameters of soil. The farmers can get the soil testing services at doorstep. This project replaces the primitive method of soil testing and so, the farmers get to know about their soil quickly. The result provided by this project helps the farmers to take up the decision and prevent them to use unbalanced fertilizers. This project will



**Dr. Jayesh Bharve**

Mr. Jayesh Bharve is Principal Engineer (Controls & Optimization) at GE Global Research Center, Bangalore, India. He is alumni of 1979 batch “IC” engineer.

He completed his M.tech and Phd from Indian Institute of Technology, Bombay.

Jayesh Bharve stated his career as associate professor in IC department at DDIT and continued there for nearly 12 years. He worked with Tata consultancy services, Pune as associate consultant. He was senior engineer and program manager at GE India technology centre. Presently he is principle engineer at GE global research, JF Weltech Technology centre, Bangalore.

He published ~14 patents, ~40 Journal/Conf. papers; and greater than 20 white-papers/reports. He is active in IEEE, ISA, IFAC (ACDOS), ISTE, IEI; & holds Chair/General-secretary/ Treasurer/ EXECOM-member positions. He won few GE awards for Patents, project leadership, management, contributions, technical achievements.



**DR. G. P. VADODARIA, PRINCIPAL, LDCE**

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