

## **Kaizen2K18**

### **ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT**

#### **Concept:**

KAIZEN 2K18 ,a memorable event of the year 2018 to mark the continuous improvement of Project Work leading to tangible outcome by the final year students was launched by L. D. College of Engineering in 2016 . Since 2016 onwards, every year all the projects of final year U.G., P.G., and P.D.D.C. are showcased and adjudged by the renowned experts from the industries academia and R&D organizations. This unique event boosts up the skills, confidence and their innovative approach in taking up challenges providing ample opportunity to win prizes.

**Date:** 12th and 13 th April 2018 (10.30 AM to 5.00 PM)

**Location :** Electronics and Communication Engg Dept,LD College of Engg

**Venue:** Seven Labs (951,953,958,960,970,975,977)

**Collaborators/Sponsors:** LDCE – Ahmedabad, LAA

#### **Event Description:**

To mark this occasion, Electronics and Communication Engineering Department of the institute has come forward to organize the event through display of final year projects of UG, PDDC and Dissertation work of PG students with full of energy and enthusiasm. There was IDP/UDP (Industry Defined Projects/User Defined Projects) display competition which has helped the students to showcase their work and experience during the implementation of the major project work /Dissertation work. The department has continuously motivated and encouraged the students to streamline their projects. The projects and research works were covering almost all the future leading technologies of Wireless Communication, Modern Networking standards such as Wi-Fi technology, IoT based 5G standards, Rasberry Pi processor ,machine learning and AI,DSP processors etc. The event was inaugurated with formal welcome and introduction of the juries by the Head of Department, Prof. Usha Neelakantan.

A total **41 UG group** projects of **103 students**, **22 individual research work of PG students and 9 PDDC group** projects of **18 students** were on the display in seven laboratories of the Electronics and communication department. All the registered participants of the event had thronged all the venue locations of the department with enthusiasm and anguish to partake with dedication backed up by their peer group, juniors and the visitors. The PDDC groups of students with their project and ME students with their research work were also part of the event showcasing their remarkable work to the students, staff, parents and visitors. This type of activity arranged mainly for the outgoing students at the institute would help to develop professionalism in students and emerge as engineers for acceptability globally.

## Jury Members :

- **Mr. H. D. Pujara, Retired Scientist – IPR,**
- **Dr. Mehul Raval – Professor, Ahmedabad University,**
- **Dr. D. J. Shah, EX Vice Chancellor, Sankarchand Patel University and Managing Director , Shruj LED Technologies Ltd and**
- **Mr. Ujval V. Buch, Government Polytechnic Ahmedabad**

The above jury members had graced the event . All the judges have wholeheartedly taken keen interest in observing each and every project of UG, PG and PDDC students and motivated them for their contribution and the great work. The Jury members were pleased with the qualitative research work of the students.

Many of the projects had involved latest technologies and innovative grassroot research with application to the Societal cause and benefits .The jury ,the guests and the media appreciated the novel work carried by the students and the great talents displayed to showcase their work. The students were very happy for having given a great platform to display their innovative work to the outside world with opportunity to face the camera during the interview by the press and the media. Three groups were identified for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Prizes in BE, 1<sup>st</sup> Prize in ME with Cash money and three prizes in PDDC with Certificates were sponsored by LAA.



Formal inauguration and welcome of judges





## **Under Graduate Winners**

**First winner (Group ID as on PMMS portal 29413)**

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**Project Title:** NEST – A BELIEF THE NEW ERA OF CRADLES

**Prepared by:**

<b>Name</b>	<b>Enrollment no</b>	<b>Contact No.</b>	<b>Email I.D.</b>
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**Guided by:** Prof. Urmi Unagar

- In today's generation, men and women are living their independent life and women are no more just housewives, they are playing more than one role every day. When they are away from home at work, it is not possible to look after their child as they want to.
- NEST-The Smart Cradle is a step to enhance the care of newborn babies, which will also help parents to carry on with their routine work along-with looking after their babies with the focus to fill the gap between parents and baby when they are not together.

## Second winner (Group ID as on PMMS portal 29333)

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**Project Title:** SMART COAJUTOR

**Prepared by:**

Name	Enrollment no	Contact No.	Email I.D.
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**Guided by:** Prof. Shweta Bhuriya

In this project, the student have tried to approach to create a smart assistant which can do small task assigned to him using his know intelligence. For further enlightenment, if we give command to him bring something from a place whose coordinate are preprogrammed in it. It will simply go bring that thing back to starting point. Looked little simple? what if something obstruct it?... at that the intelligence portion come into play. At that the coadjutor will use its brain and create new paths to complete the task. We will be using odometry and inertial measurement sensors for path following

## Third winner (Group ID as on PMMS portal 12670)

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**Project Title:** VISION

**Prepared by:**

Name	Enrollment no	Contact No.	Email I.D.
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**Guided by:** Prof. Abhay Upadhyay

Inspired from increased pace of development in field of IoT and Robotics the idea of Vision is derived. Vision is a robot that has a arm and a camera on it. It is controlled by user through a certain set of gesture hand gestures. The data of gestures is streamed over internet and sent to robot so that it can move. The data sent is mainly of two type- one is for the motion of robot and one is for motion of its arm. Moreover robot also continuously streams video of its camera to users phone. This provide live view of robots workplace to user. Hence the whole

system allows user to work perform a certain tasks and carry out surveillance activities by sitting at one place only.

## **PG Winner Details**

**Thesis Title: A WAVE COLLECTION AND TRANSPORT SYSTEM FOR K AND Ka BAND FMCW REFLECTOMETER FOR ADITYA-U TOKAMAK**

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**Prepared by: VARSHA GOYAL (160280705033) Mo. No. 9601060313**

**Guided by: Prof. USHA NEELAKANTAN**

A broadband swept frequency (FMCW) reflectometer is being developed for measuring the plasma density profile for Aditya-U Tokamak. Microwave reflectometry is a well-established fusion diagnostic system for plasma density profile measurements and plasma positioning control. It will be used in Aditya tokamak, providing a robust and reliable diagnostic, which requires little access to the machine.

A wave transport and collection system comprising of oversized and fundamental waveguides, K and Ka band antenna arrangement is being developed which can transport, radiate and collect electromagnetic radiation from 18 GHz to 40 GHz.

A primary requirement of a WCTS is to minimize the losses, like insertion and reflection losses so as to improve the Signal to Noise Ratio (SNR). The primary components of the WCTS are waveguides which carry the microwave energy and horn antennae to radiate and collect the reflected EM waves from the plasma. In addition, since the waveguides used are oversized; linear taper waveguides from WR-28 to WR-90 and WR42 to WR-90 is used so as to mitigate generation of higher order propagation modes. It also involve Design, simulate, integrate and characterize the four antenna assembly using the CST Studio, its arrangement such that the final assembly fits a standard 150 CF flange on the tokamak viewport. The requirements of the transmitting antennae are a highly directive beam with more than 20 deg of beam width in both K and Ka bands which also covers the majority of the plasma radial spread at mid plane of the tokamak plasma. The transmitting beams widths should not interfere with each other and avoid the metal flange on which the antennae arrangement is to be installed. The simulation tool used is the Computer Simulation Technology (CST).The experimental and simulation results were carried out for taking the desired measurements.



## PDDC Winners

### First winner

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**Project Title:** EEG BASED MENTAL STATE RECOGNITION ON PC AND SWITCH

**Prepared by:**

Name	Enrollment no	Contact No.	Email I.D.
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**Guided by:** Prof. Pankaj Prajapati

In this project, we are trying to develop a system where we can control device with our mind waves. Controlling any device is a common thing nowadays in the era of robotics and latest technologies but controlling any device with the brainwaves will be somewhat exciting. Also, it is a wireless system so one can use it easily.

EEG headset reads different types of brain waves. We are using Electroencephalography (EEG) headset for detecting brainwaves. The headset converts these brainwave signals into electrical form. These digitized brainwave signals are then translated into computer programming means into various commands to power up the user interface of the games, computer and health applications. We can control various device using the mind concentration, meditation and eye blinking, Facial Expression, eye-brow wink, smile etc.

### Second winner

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**Project Title:** LOW TEMPERATURE CO-FIRED CERAMIC- A NEW PCB TECHNOLOGY

**Prepared by:**

Name	Enrollment no	Contact No.	Email I.D.
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**Guided by:** Prof. Abhay Upadhyay

New electronic systems for space applications have and will continue to challenge both packaging engineers and technology due to the increased performance requirements, higher densities, size and weight constraints and hostile space environment having high temperature, vacuum and radiation.

This challenge mandates the use of unique packaging techniques such as multi chip modules. This packaging provides the increase circuit density but also the reliability, electrical, thermal and hermeticity performance.

Normal FR grade PCB is used for low frequency and multi layer PCB but it is not used in RF frequency and ceramic substrate is used for RF frequency but multi layer is not possible in it. So its size very big. So both (FR grade and ceramic substrate) limitation is overcome by used LTCC.

One such ceramic technology, Low temperature co-fired ceramic, offers significant benefits over the packaging technologies for use in RF and high density fast digital applications that could require hermeticity with good thermal management.

### Third winner

**Project Title:** AUTOMATIC WEIGHT MONITORING MACHINE FOR INDUSTRY

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### **Prepared by:**

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**Guided by:** Shri Nilesh Patel

The main objective of this project is to provide accurate data without need of manpower and saving the time. Now a day all things go virtual its either the sociality or any sensors or machines data. These all things are considering as an Internet of things(IoT). With the help of IoT we can handle anything from any time anywhere. So basically IoT saves our time. Our project is based on weight monitoring using Raspberry Pi and weight machine for Industry. In this project we interface Industrial weight machine which has RS232 output with raspberry pi. to connect weight machine with Pi we use UART protocol. We collect weight machine data on raspberry pi using serial communication and then pass this data to server. The output shall be observed using a IoT technology directly on the server. So our time and cost will be saved. Once we implement this system then we can see the data of weight machine from anywhere at any time

The Head of the department appreciated the efforts of the Jury members to evaluate the projects on display and honored them with mementos. The Kaizen 2K18 has kindled the minds of the junior students to be creative, innovative to visualize and design novel projects in the forthcoming year with ambient platform to win laurels and emerge as entrepreneurs to cherish the dreams of “MAKE DIGITAL FOR A NEW INDIA “

## Media coverage



Electronics and Communication engineering student demonstrating his project on “LOW TEMPERATURE CO-FIRED CERAMIC- A NEW PCB TECHNOLOGY”





**Kaizen '18 L. D. College of Engineering 12-13 April 2018**

Coverage of EC Department team on local news channels