Gujarat Technological University

Community Innovation and Co-Creation Centre (CiC3)

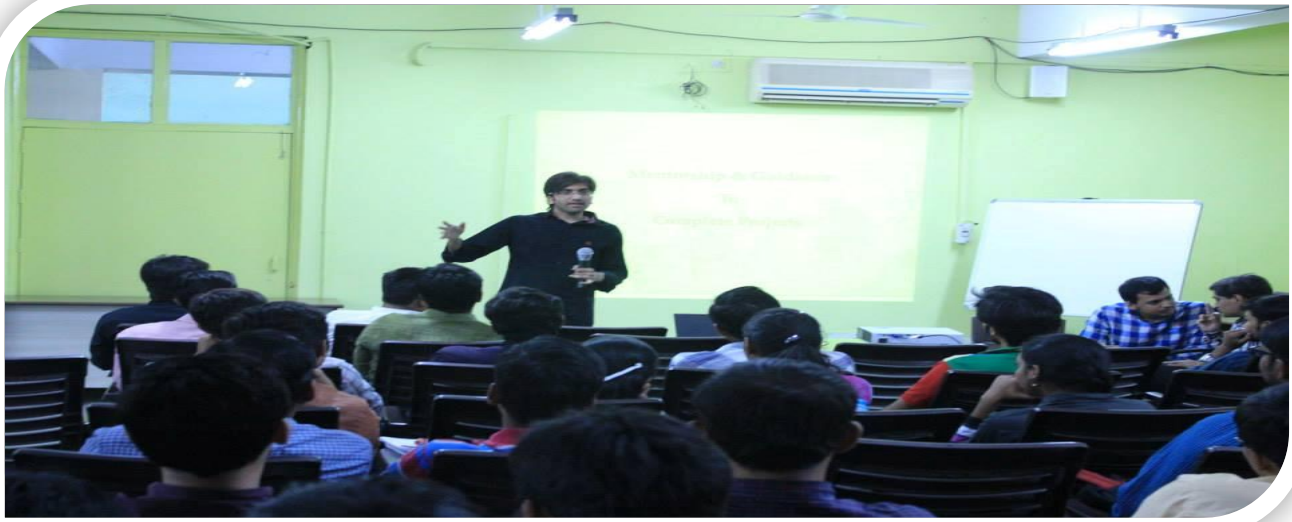
Workshop Report on Hack-Pi-Dunio – *Hackathon that originated new innovations in 36 hours only*

Organized during 11th- 13th April 2014 at CiC3, GTU ACPC Building, Ahmedabad

Gujarat Technological University has started Community Innovation and Co-Creation Centre to foster Innovation, Research and Entrepreneurship among students of Gujarat. At CiC3, Hack-Pi-Dunio was organized during 11th to 13th April 2014.

Hack-Pi-Duino was Gujarat's first ever Arduino based Hackathon organised by GTU. It provided a platform for all hackers, developers, hobbyists and students to showcase their talents and compete with the brightest minds. In Hack-Pi-Dunio a total of 14 teams were selected from the pool of applicants. GTU had provided one Arduino Board and a hardware module to each participant. These 14 teams worked enthusiastically day and night to bring out running prototypes of their ideas.

Hack-Pi-Dunio started with a welcome address by *Sohil Patel* (Co-Founder of Printajoy, Jayso Labs and mentor of CiC3). The event was chaired by *Dr.Mihir Shah* (VGEC,Chandkheda). Sohil Patel discussed the objectives of CiC3. He said that C-i-C3's goal was to promote Open Source Hardware Technologies. He described the working model of CiC3. After that he introduced the Arduino Board.



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Another session in the evening of 11th April was conducted by ***Pratik Parmar***. He introduced Micro Controllers, use of Micro Controller in industries, Arduino and its variant.

About Teams and Projects:

Team: Mechangineers

G.H.Patel College of Engg & Tech.,V V Nagar

Design and development of a hybrid wheel chair for handicapped person

A hybrid vehicle for handicapped person was designed by this team. The speciality of the vehicle is, person can operate it via Joy stick, via voice recognition and also via palm gestures. Voice recognition and gesture application will be developed in Android 3.0. The chair will be having its own Bluetooth connection. If person wants to operate it manually than he/she can go for Joystick module and if person does not have hands, he can go for voice application.

The team says:

Priyam: It was a fabulous platform where I initiated my first step to help build my nation.
Darshan: Expecting for more Hack-Pi-Duino's to happen.
Keyur: Resources were the best part of this event. Everything was on hand and easily accessible.

Team: ASSORTERS

Marwadi Educational Foundation Group of Institute, Rajkot

Web Server Based Energy Monitoring and Control Systems

The above statement is the definition of our project. By using Arduino we can measure the different parameters like temperature etc and in this project we will control the different end devices like to switch ON or OFF

Jeenu: It was a vast experience to get our hands on to the computer programming side, server side and especially Arduino experience.

Maharashi: No burden was felt. Environment friendly and very supportive event it was.

Team: AITians

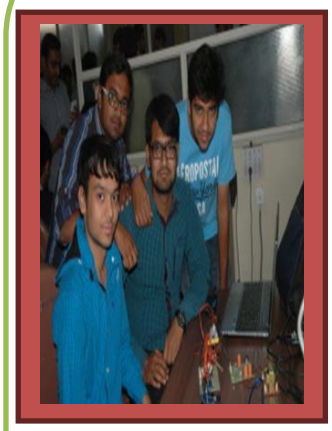
Ahmedabad Institute of Technology, Ahmedabad

GPS Locator for any Movable Object

The purpose of this project is to make a device which can get GPS location of any movable object or automobile like car or rc plane etc. and send the latitude and longitude position detail to users mobile by massage using GSM module SIM900A. Application of this device to track stolen vehicle by using Arduino it provide less complexity of the project.

Chandan: Fabulous experience. Resources were on hand.

Ankit: The co-operation, the team work and the implementation all lead to awesome.



Team: Agent Q

VGEC, Chandkheda

A Basic Stepper Motor Based Laser Gun

It moves in respective direction accordingly the human eye moves. In defence industry this type of guns are used by many foreign countries in combat helicopters. Currently India is using this gun for HAL light combat helicopter and HAL dhruv. In real world there are lots of problems for the soldiers to target any object. They have to move the entire gun of 4 to 5 kgs in respective direction in very short duration also they have to target their object precisely so this type of technology can help them to reduce their burden.

Devan: Great experience it was. A long way to go.

Chintan: Learnt something called Arduino.

Vivek: Expecting to extend our concept through Arduino.

Dev: In future we'll try with image processing techniques.

Team: Techno-Freak Ingeniero

L.D. College of Engineering,Ahmedabad

Led matrix Display using GSM module

A single click and the message is displayed ! What if a professor wants to give an urgent notice to students?? Or one wants to display the seats left vacant in Admission process.. Or if One wants to continuously update the arrival time of train..... Jst send a message using mobile phone and the text is displayed !! Basic description of our idea is: by using a LED display, arduino,resistors,shift registers, FET, GSM module etc. we may display the message using mobile phone.

Megha: GSM model was much more explored through Arduino.

Astha: A platform to showcase, handy and on the spot help.

Drashti: Working like a team was the best part.

Maulin: I just came to learn and I got what I wanted.

Team: AITians(EC)

Ahmedabad Institute of Technology, Ahmedabad

Development of coalmine safety security system

In the era of embedded technology the zigbee protocols are used in more and more applications. Because of rapid development of sensors microcontrollers and network technology a reliable technological condition has been provided for automatic real time monitoring of coal mine. The application designs a monitoring system for coal mine safety based on zigbee wireless sensor network. The underground system collects temperature humidity and methane values of coal mines through sensor nodes in the mine it collects the no. of personnel inside the mine with the help of IR sensor and then transmits the data to information processing terminal based on microcontroller The terminal sends the data to the ground section through zigbee and in the ground section the processing terminals monitors the data and sends the data to the PC to save them and for remote users to inquire A sms is also send to the corresponding member through GSM modem which is connected to controller If any data is received the received data is compared with the predefined threshold values if received values are more the threshold values then buzzer will be on So that warning to the personnel will occur.

Yash: Arduino made us more enthusiastic for our idea.

Gopal: It was challenging and fruitful.

Prayag: Tough yet enjoyable – A rare combo to find.

Team : Techno Wizards

L.D. College of engineering,Ahmedabad

Surveillance system

Our project is based on cop car surveillance system. In which GPS , GSM, Accelerometer, magnetometer are connected to the arduino uno . GPS continuous monitoring the car location and the data taken form the GPS module are used for sending it to control room using the GSM based communication. Here GSM communication is bidirectional. Control room also send the information to the cop car like in which direction it should go for pursuit or where should he go for patrolling. We also use Accelerometer to find the accident condition and send instant message to the nearest hospital.

Team: BVMites

B.V.M. Engineering College,V.V.Nagar

A 3 dimensional POV display

Two dimensional POV display is often accomplished by means of rapidly moving a single row of LEDs along a linear or circular path. The effect is that the image is perceived as a whole by the viewer as long as the entire path is completed during the visual persistence time of the human eye. A further effect is often to give the illusion of the image floating in mid-air. A 3 dimensional POV display is often constructed using a 2D grid of LEDs which is swept or rotated through a volume.

Chand: An experience to share proudly.

Hardik: A development on a significant scale.

Viren: I didn't felt as if I am working, I felt as if I am enjoying.

Team: TRAILBLAZERS

IIET, Dharmaj

Arduino Mini Robot

It is a mini robot with camera system for security purpose. We are going to build a robot that could assist in ensuring security to users. This robot will be capable of capturing audio visual display content using Wifi camera or a web camera whichever is provided. Moreover, as per provided equipments, we will be building a robot with four wheels where there will be used four motors for controlling purpose of security ensuring robot. Robot will be having 6v rechargeable battery which will provide good enough life span for ensuring security kind of faraway places. There we are also going to add 9v battery for additional power requirements purpose. All the controls given to the robot will be throught android application interface which would directly connect at arduino through specific ports predefined by user.For motor driver we will make our own shield using l293 IC. The l293 IC is a dual h bridge IC and works up to a output of 9v.

Tejas: I kept the funda of innovation and it worked beautifully.

Chinmay: Making circuits can indeed break nerves but simultaneously it can provide you the enjoyment.

Team: GCET

G. H. Patel College of Engineering & Technology, V V Nagar

Social Media Notification System

Using speech recognition module connected to arduino user will select gmail or twitter account (trying to include facebook also). Then python script will get the notification or number of E-mails for selected site. Then we will send this notification to the arduino environment. Then using GSM module, arduino will send the message to the appropriate user (so that user who doesn't have smartphones or internet access they will also notified if they get new mail or new tweet). If time remains then we will try to print that notification to LCD.

Kush: Just loved it.

Rinkesh: Awesome Experience…!!!

Dip: Embedding programming with each module was just superb.

Team: THE UNICORNS

L.D. College of Engineering, Ahmedabad

Autonomous Vacuum Cleaner

12V DC brushless fan will be kept at the front for suction.This fan can very easily suck dust and small bits of paper with 500 rpm motor. The bot will be programmed to cover the entire room. The obstacles coming in the room will be detected by using IR sensors and the available distance in a particular direction will be calculated by mounting an ultra sonic sensor on the servo motor. The servo motor will enable the bot to estimate available space in any direction. Thus, the bot can effectively sweep the entire room.

Jenisha: A satisfying one and an awesome experience.

Preetha: I gained one more chapter in the world of learning.

Rushabh: I have no words to describe the amazing-ness of this platform.

Team: Fantastic 4

GEC, Modasa

Biometric Secure Voting System to Avoid Bogus Voting

s we all know that in elections, every-time we are suffering from bogus voting. Bogus voting means one erson can vote multiple times. Government provides us all the AADHAR CARD. so the government have l the database of people. so why should we suffer from such problems? so we decided to use this atabase for security purpose. That's the reason for the creation of such project. this project we use fingerprint scanner to store the fingerprint previously. And then take the fingerprint a input and compare with the previous one. If matches with the previous one then and then the EVM ill enable end person can vote. Otherwise person can't vote. In this project we require additionally just ngerprint sensor and make secure system for the country.

mang: Ahaa a good one indeed..!!

arteen: First Hackathon and it was mind blasting.

Sagar: I am over-whelmed to be a part of this.

Trupt: Satisfied to a greater extent for my willingness to learn.

Team: Orion

V.V. Patel College of Engineering, Mehsana

Automatic guided vehicle (AGV)

This project is based on graphical interface with a 4 wheel drive bot and a computer, which is done with the help of a software called processing and arduino's main programming software. In this project the motion of the bot is controlled graphically, the instructions from laptop are sent through a zigbee module which is recieved by another zigbee module mounted on the bot, and with the help of this instruction and the ultrasonic sensors mounted on bot, the bot performs the given motion successfully. This project can also be used either way, the bot's free motion with the help of ultrasonic sensors can be tracked, and using this tracked motion the bot can be made to move in the same tracked path effectively by making changes in the tracked path. The motors are controlled by arduino with the help of ic l293d.serial parallel shifter is used to convert serial data to parallel at transmitting side and likewise to convert data to serial again on receiving side. This shifter is also used to increase digital ports on arduino board. This project can be used in packaging industries which implement automation, the motion of bots used in these industries can be controlled remotely, and hence maintaining the motion grid of these bots. Graphical control makes easy for any user to implement a given motion.

Amit: Mind blasting and horribly good.

Darshan: Challenging.

Malyaj: Got something new to try out.

Jose: New and Alien to it but achieved the motive which I wanted.

Niraj: It was a huge platform for me and also for the ones who want to do research and experimental stuff.

Team: Dexterous Minds

GCET,V V Nagar

Gesture based Smart Home Automation System

Our project is to build a smart home automation system, using image processing. A gesture recognition algorithm will be running on our viewing device, where various human hand gestures will be processed, and converted into digital signals as per our own generated algorithms. These digital signals will be wirelessly transmitted to Arduino Uno in packet form where it will be decoded by our running algorithm. All the processes will be running in real time. The acquired data will be decoded and transmitted to the various devices which we wish to control. The user will also have a smart capacitive touch screen which will be working as a switchboard for the operator to control various devices in the house.

Niraj: Everything was perfect but still components were not mentioned properly. I think companies must be invited as a judging panel hence, we can showcase.

Pradeep: Had a great time.

Suhel: Awesome…!!!

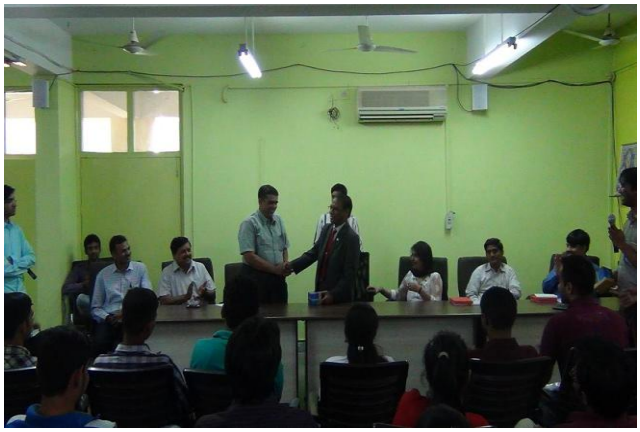
Salman: It seems as if I have finished the circle.

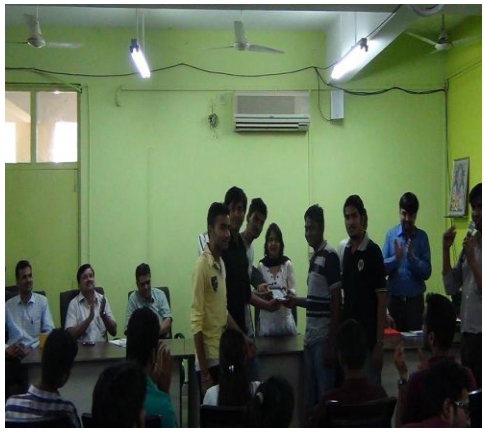
During Hack-Pi-Dunio, many Faculties Members, Principals from various Engineering Colleges and students visited CiC3 lab and all expressed their happiness towards such a great initiative and innovative projects of all the teams.

On the last day of Hack-Pi-Dunio, to decide winners, Mr. Haren Shah (Peach Technovations Pvt. Ltd, Gandhinagar), Mr. Ninad Shastri (Xplora Design Skool,Ahmedabad) and Prof. Mihir Shah were invited in the Judges Panel. The judges were impressed by all the teams' efforts and projects done by them in merely 36hrs. It was also difficult for them to select the best among all. Finally the winning team was Orion and runner up was Mechagineers. The result was based on Concept, Implementation, Presentation and output.

The valedictory Ceremony was conducted in the presence of Dr. Akshai Aggarwal - Hon'ble Vice Chancellor, Mrs.Aggarwal, Dr. G P Vadodaria-Registrar, Mr. Naresh Jadeja (Deputy Director), Mrs. Usha Benkar (Deputy Director) and the judges panel. Mr. Hiranmay Mahanta welcomed all and Sohil Patel briefed about the 3 days' activities.

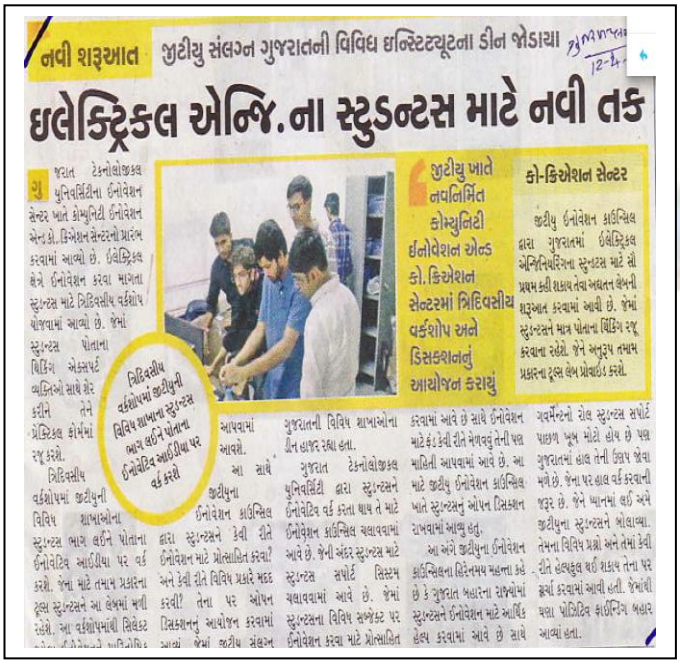
On the occasion Dr. Akshai Aggarwal discussed about the initiative of CiC3 lab and innovative projects done by students and various activities going on at each weekends by GTU. At the end he thanked all who contributed to make this workshop a grand success. Winning awards and Certificates were distributed by Dr. Aggarwal and Mrs. Aggarwal. Dr. G P Vadodaria praised all the team's efforts and project done by them. Prof. Mihir Shah concluded the event with vote of thanks to all the participants, Judges, mentors and staff members.





Down the line what everyone said sums up to be something which was really awesome. GTU had provided the best platforms, great mentors, on hand resources and a friendly environment which is required to work. Though it was a 36 hour long huge and hectic effort, but the participants' faces hardly had tired-ness on their faces. GTU is thankful to the team led by Dr Mihir Shah and consisting of Sohil, Ishan, Arjav, Ronak and the whole of the GTU team's support, without which this would not have been a successful event.

Media Flash:



નવી શરૂઆત

જીટીયુ સંલગ્ન ગુજરાતની વિવિધ ઇન્સ્ટિટ્યૂટના ડીન જોડાયા

ઇલેક્ટ્રિકલ એન્જિ.ના સ્ટુડન્ટસ માટે નવી તક

જીટીયુ ખાતે નવનિર્મિત કોમ્યુનિટી ઇનોવેશન એન્ડ કો.કિએશન સેન્ટરમાં ત્રિદિવસીય વર્કશોપ અને ડિસ્કશનનું આયોજન કરાયું

કો-ક્રિએશન સેન્ટર

ત્રિદિવસીય વર્કશોપમાં જીટીયુની વિવિધ શાખાના સ્ટુડન્ટસ ભાગ લઈને પોતાના ઈનોવેટિવ આઈડીયા પર વર્ક કરશે

36 કલાકમાં ઈનોવેશનનો પડકાર

જીટીયુ ઈનોવેશન કાઉન્સિલના હેકાથોન ઈવેન્ટ હેઠળ સ્ટુડન્ટસ માટે એસેમ્બ્લિંગ કોમ્પિટિશન યોજાઈ

જીટીયુ ગુજરાતમાં ૧૦ કો-ક્રિયેશન સેન્ટર બનાવશે

Some more glimpses of the Hack-Pi-Dunio: