



**GUJARAT TECHNOLOGICAL UNIVERSITY**

**Community Innovation & Co-Creation Centre**

*Report*

*on*

*Hack-Pi-Duino*

*On*

*Raspberry Pi*

*Organized by*

*Community Innovation & Co-Creation Centre*

*on*

*19<sup>th</sup>, 20<sup>th</sup> and 21<sup>st</sup> December 2014*

*at*



**Community Innovation & Co-Creation Centre**

Room No: 128, Gujarat Technological University, ACPC Building, L.D. Engineering College Campus,

Navrangpura, Ahmedabad



### Report

Gujarat Technological University has started Community Innovation and Co-Creation Centre to foster Innovation, Research and Entrepreneurship among the students. After First successful Hack-Pi-Duino on Arduino, GTU organized second Hack-Pi-Duino on Raspberry Pi during 19<sup>th</sup> to 21<sup>th</sup> December 2014 at CiC3,GTU,ACPC Campus.

Hack-Pi-Duino on Raspberry Pi was Gujarat's First Raspberry Pi based Hackathon. Before this hackathon, GTU had organized one day pre-workshop on Raspberry Pi on 14<sup>th</sup> Dec 2014. This Hack-Pi-Duino was a platform for all students to showcase their talent and compete with brilliant minds from industry and academic. In Hack-Pi-Duino on Raspberry Pi, total no of 8 teams were selected from the pool of applicants and GTU had provided all necessary hardware including Raspberry Pi module to each team. These 8 teams enthusiastically worked day and night continuously to make their idea into reality in just 48 hours.

Three days Hack-Pi-Duino started with the welcome address by Mr. Mihir Makwana (Research Assistant, GTU), Mr. Pratik Parmar, chaired by Dr. Mihir Shah (VGEC, Chandkheda). Mr. Mihir Makwana formally welcomed all participants-experts and talked about the vision of Honourable Vice Chancellor Dr. Akshai Aggarwal behind organizing such Hackathon. He shared concept of cic3 Lab and explained how students can use the Lab to convert their ideas into reality.



Mr Pratik Parmar and his team including Mr. Ankit Pitroda, Mr. Vatsal Jethva, Mr. Vishal Barot were present during the entire event and helped students to solve their technical queries



# GUJARAT TECHNOLOGICAL UNIVERSITY

## Community Innovation & Co-Creation Centre

in their projects. They guided students about Raspberry Pi and taught how to utilize all available functions of hardware.

On the second day of the event Honourable Vice Chancellor Dr. Akshai Aggarwal visited each team and motivated them. He appreciated the efforts of all the students. Students demonstrated their project to Honourable sir and shared their ideas with him.



[Students making presentation of their ideas and projects to Honourable Vice Chancellor Dr. Akshai Aggarwal]



### About Team and Project

**Team Name: The Eklavya**

#### **Web Bot**

The webbot is a GUI based and web server controlled robot. The commands for the movement of webbot (Forward, Backward, Right, Left) is sent through pressing buttons of GUI interface and is sent by Wi-Fi to the raspberry pi. The data is received by raspberry pi through Wi-Fi adapter and processed in the pi. The output of pi is given to the motors using L293D motor driver IC. There is one camera module mounted on the web bot by which live video streaming is achieved, output of this video feed is seen on the laptop/PC screen.

Application:

Situations like earthquake, Warfield, and many more including surveillance.

#### **Team Members:**

Patel Megha B.

Panchal Prayosha S.

MandaliaChintak

RavalDhrushit



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**Team Name: Elect-Rocks**

#### **Virtual Hair Saloon**

Elect-Rocks' project title was "Virtual Haircut". They have used a display screen on which the real time streaming of customer will be shown and many different hairstyles will be displayed on the screen, and then customer will select different hairstyles from the given options and selected hairstyle will replace the existing hairstyle of customer virtually on the screen.



## Community Innovation & Co-Creation Centre

If he/she likes the hairstyle, they will tell the barber to proceed with the haircut for the selected hairstyle.

During the Hackathon they mapped a single hairstyle on a lady, though the hairstyle size and position remained constant and the user had to adjust according to the hairstyle. Now they have planned to make changes, like movement of hairstyle in accordance with the movement of customer, making front width of hairstyle equal to the forehead size of customer.

### **Team Members:**

SarvangSanghavi

NiraliPandit

Niral Shah

Ravi Kiri



### **Team Name: MEFGI\_PI**

### **Home Appliance by speech recognition**

This is a creative work focused on designing an intelligent living-space with automatic speech recognition system to control all home appliances, basically electrical and electronics appliances. This research is completely dedicated for those who are physically disabled. In the research, they are trying to automate various home appliances by interfacing them with PC parallel port and controlling them through speech. It is the easiest way of Human-Computer interaction. They have introduced a new technique in which they use speech recognition principles to generate control commands at the parallel port.

### **Team Members:**

ParthJakhariya

DarshanDharajia

Pratik Raval





Kunj Mehta

**Team Name: MEFGI\_I**

### **Car number plate detection system**

During this Hackathon, they have learnt about Raspberry pi and its application and how to connect the raspberry pi with computers and laptops through wireless or broadband usage. And they also learnt about the installation of different libraries, packages, software and many more. They made small project on number plate detecting system and store the data on web server. In that project, they made small program to detect the number that was on the number plate and made the web server to store this detected number in database of server.



#### **Team Members:**

JaimishMendapara

DhavalMajithia

RajulBhuva

**Team Name: M-Mad**

### **Gesture and Voice Based Television control system**

They have made some scripting that can analyse our hand gesture and according to our hand gesture we can remote our television system from particular distance. Another feature is that, we can control our television via speech which means if we want to change the channel then speak the name of channel and automatically channel changes.

These are the 2 main features of their project.

1. They implemented the gesture module of project and they will further work on inserting more advance features.



## Community Innovation & Co-Creation Centre

2. They recorded the speech and further translated it into text, so that they can compare the speech with channel name or particular command.

### **Team Members:**

RadadiyaManojkumar

SatasiyaDhaval

Yadav Ashok

KhorajiyaMoin



### **Team Name: Dream to Reality**

#### **Dynamic Guiding Device**

Their project was to display the state advertisements on the display screen using Raspberry pi Board. For that they took the IP address from the user. From that IP address, they got the specific location of the city, state and country. After that according to the state, they displayed the landmarks of that state and the information about the places.

### **Team Members:**

Swasti M Shah

Shivani Shah

Hetvi Patel

HetviBarot





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### Team Name: United

#### Clone Server as Honeypot

They had worked on making clone server (honey pot) using raspberry pie.

Honeypot: A honey pot is a computer system on the Internet that is expressly set up to attract and "trap" people who attempt to penetrate other people's computer systems.

#### Team Members:

Dave Tapan

Vijay Chauhan

VarshaKirdak

PoojaDubey



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### Team Name: The Beginners

#### Gesture with Depth & Brightness Recognition using Web Cam

The Raspberry Pi (Model B+) with 8 GB SD card and 512 MB RAM was used as the brain and the USB webcam was used as the Eye of the smart computer. Using OpenCV library and Python platform, the program was designed in such a way that the camera could distinguish the Human hands from the rest of the background, could sense the gestures and when the gestures are performed, desired actions would be performed by the Pi. For, example,



"Movement of Pinched hand would make the cursor move accordingly and Re-pinch would make a left click."

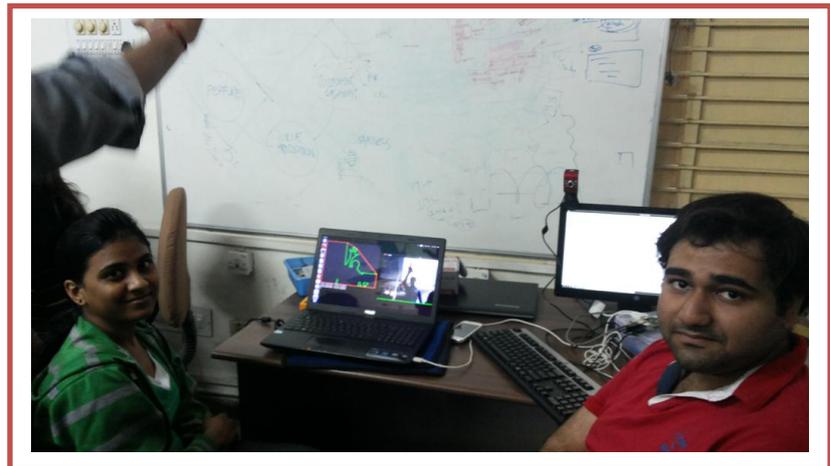
### Team Members:

NisargVasavada

DipikaVasava

Devanshi Desai

RupalRaviya



During these three days, many faculties from GTU affiliated colleges and other faculties also visited CiC3 and appreciated students' efforts.

On 21<sup>st</sup> Dec 14, the last day of the Hack-Pi-Dunio, to decide winners, Mr. Bhargav Shah (Firmware Developer at eInfochips), Mr. Ravi Vagadia (Project Lead - Software Products at Azoilnc) and Prof. Kinnar Vaghela (GEC, Modasa) were invited in the Judges Panel.

Judges were impressed by all the teams' extra ordinary efforts and hard work done by them in merely 48hrs. It was also difficult for them to select the best among all. Result was based on Concept, Implementation, Presentation and output.



Valedictory Ceremony was conducted in the presence of Shri. J.C.Lilani(Registrar, GTU), Shri. NareshJadeja(Deputy Director, GTU), Dr.Mihir V Shah (VGEC)and Prof.KinnarVaghela (GEC, Modasa).

Shri. J.C.Lilani welcomed students to CiC3. He shared his experience of teaching and he found lots of energy in students who worked very hard to convert their ideas into real product.

Prof KinnarVaghela said that it was really difficult for him to judge and rank students as all the students did the best in the event. He appreciated students' interest and work in Open Source Hardware.

Mr.HiranmayMahanta shared his views and emphasized that every student should visit this place as various activities are going on in GIC, S4-C3 and CiC3.

Deputy Director Shri NareshJadeja announced winners of the Hackathon. Finally winning team was 'The Eklavya' and runner up was 'Elect-Rocks'.

Dr.Mihir V. Shah concluded the event with vote of thanks to Honourable Vice Chancellor Dr.Akshai Aggarwal, Registrar Shri. J.C.Lilani, Participants, Judges, Mentors and Staff Members.

GTU is Thankful to all mentors, entrepreneurs, faculty members, participants and all those who worked round the clock and helped during the whole event, without their support, this would not have been a successful event.



[Valedictory Ceremony of Hack-Pi-Duino on Raspberry Pi]



[Winner Team: The Eklavya]

[Runner up Team: Elect-Rocks]



### Media Flash:

# Engg students show their might at GTU Hackathon

dna correspondent @dnashomebhad

Gujarat Technological University students from all over Gujarat gathered at the community innovation and co-creation center (C-i-C3) lab, ACPC campus recently. The engineering students met for 48 hours at Hackathon to change their ideas into reality.

It was a platform for all hackers, developers, hobbyists and students to showcase their talents and compete with brightest minds.

10 teams were selected from the pool of applicants and each team was provided with one raspberry pi board and a hardware module of their choice and other hardware accessories.

Every team had 48 hours to build their idea into reality. There were no entry fees for the students and they were not required to purchase any parts on their own.

The team of students worked



STUDENTS FROM ACROSS STATE PARTICIPATED IN THE MEET TO CONVERT IDEA INTO REALITY

day and night and were able to develop projects such as, clone server as honey pot for studies of security system and gesture recognition among others.

### THE INNOVATIONS

- Dynamic guiding and advertising device
- Clone server as honey pot for studies of security system
- Gesture recognition and voice base television control system
- virtual hair saloon (augmented reality)
- web boot
- Gesture with depth and brightness recognition using web cam
- Operating home appliances by speech recognition

# સ્ટુડન્ટ્સે ૪૮ કલાકમાં ૬૨ ઈનોવેટિવ એપ્લિકેશન તૈયાર કરી

૪૮ કલાકમાં ઈનોવેટિવ આઈડિયા બહાર આવે તે માટે ગુજરાત ટેકનોલોજીકલ યુનિવર્સિટી દ્વારા એલ.વી. એન્જિનિયરિંગ કોલેજના કેમ્પસમાં આવેલા જીટીયુના ઈનોવેશન સેન્ટર માટે 'હેક થાઈ પૂરી' નામની ઈવેન્ટ યોજાઈ જેમાં ગુજરાતની વિવિધ એન્જિનિયરિંગ કોલેજના સ્ટુડન્ટ્સે ૪૮ કલાકમાં ૬૦ ઈનોવેટિવ એપ્લિકેશન મોડેલ તૈયાર કરી રજૂ કર્યા હતા.

ધ્વનીથી ઇલેક્ટ્રોનિક વસ્તુઓનું ચાલુ બંધ થયું ધ્વની ઇલેક્ટ્રોનિક વસ્તુઓને બંધ કરવા કે ચાલુ કરવા માટે સ્વીચ દિવાલ પર લગાવવામાં આવેલી હોય છે જેના વો આપણે કોઈ પણ ઇલેક્ટ્રોનિક વસ્તુઓને ચાલુ-બંધ કરી શકીએ છીએ પરંતુ જ્યારે ધ્વનિ કોઈ વ્યક્તિ નક્કી હોય અને ચાલુ થકવાની પણ હાલમાં ન હોય ત્યારે હાલત વધારે કપરી બની જાય છે. જેનું સમાધાન સ્ટુડન્ટ્સ દ્વારા યોગ્ય ઇલાજમાં આવ્યું છે. આ રીતે આપણી વોઈસ દ્વારા ધ્વનિ તમામ ડેમપ્સ્ટ્રેશનમાં આપણે કોલ કરી શકીએ છીએ.

નંબર પ્લેટને કોમ્પ્યુટર પર ઓટોમેટિકલી રજો કરી શકાયો ટોચ ટેક્સ વસુલ કરતા બુધ પર જવાને ગાડી આવે ત્યારે તેના નંબરની નોંધણી કરી જવા દેવામાં થયો સમય લાગી જાય છે જે ખાખતના સમાધાન સ્વરૂપે સ્ટુડન્ટ્સ દ્વારા કાર નંબર સેવિંગ એપ્લિકેશન બનાવવામાં આવી છે જેમાં કાર નજીક આવવાની સાથે જ કેમેરા તેની ઈમેજ લઈ લેશે અને ત્યાર બાદ તેને નંબરમાં ફાઇનલ કરીને ઓન લાઈન સેવ કરશે.



'હનીપોટ' હેકરથી બચાવશે ઇશી વાર અગત્યની વેબસાઈટ પર હેકરના એટેકથી હેક થઈ જતી હોય છે જે ખાખતના સમાધાનરૂપે સ્ટુડન્ટ્સ દ્વારા ઓરિજન કોર્ન વેબસાઈટ બનાવવામાં આવી છે જેમાં હેકરને એટેક કરે ત્યારે તે ઓરિજન વેબસાઈટ છે તેનું સમજ તેના પર એટેક કરશે. પણ તે કેક વેબસાઈટ હશે જેના દ્વારા હેકરને પણ પકડી શકાયો

અર્થ રોવર રોબોટ અર્થ રોવર રોબોટમાં એક એવી એપ્લિકેશન છે જે એન્ટી-ઓઈ એપ્લિકેશનના આધારે કામ કરે છે. આ રોબોટ પણ રાસબેરી પાય બોર્ડ સાથે કનેક્ટ હશે જેમાંથી રોબોટને મોબાઈલમાં આવતી એપ્લિકેશનના આધારે કંટ્રોલ કરવામાં આવશે. આ સાથે આ રોબોટમાં વોઈસથી કેમેરા પણ લગાવવામાં આવેલો છે જે ડાયરેક્ટ તમારા મોબાઈલના વોઈસથી એપ્લિકેશનમાં વિશિષ્ટ પણ જોવા મળશે.

બુકને મશીન પર મુકવાથી મશીન તેને ઓડિયોમાં કનવર્ટ કરશે બ્લાઉડ પીપલને ધ્યાનમાં રાખી સ્ટુડન્ટ્સ દ્વારા ઈનોવેટિવ બ્લાઉડ પીપલ રિડર્સ મશીન બનાવવામાં આવ્યું છે જેમાં કોઈ પણ બુકને મશીન પર મુકીને તે બુકમાં લખેલા તમામ અક્ષરોને ઓડિયોમાં કનવર્ટ કરી શકે છે. હાલ પ્રોજેક્ટ બનાવવાના પ્રથમ પગલુમાં સ્ટુડન્ટ્સ ૮૦ ટકા સુધી સફળ થયા છે જેના પર વધારે સીક્સ કરીને રિસર્ચ કરવામાં આવશે.

બ્લાઈડ માટે સ્ટુડન્ટ્સ દ્વારા ઈનોવેટિવ રિડર્સ મશીન તૈયાર કરવામાં આવ્યું



- Hack-Pi-Duino was a very innovative, inspirational and challenging Hackathon with very energetic environment. Support, facility was very positive.
- I enjoyed 3 days at Hackathon. I learned many things from this event. I would like to attend such events from GTU in future.

-Nisarg Vasavda, GTU PG School



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*-Ravi Kiri, SPCE, Visnagar*

- *Our Team started with zero knowledge on Python, OpenCV, Linux and even Raspberry Pi and now we are ready with working product and it's commercially cheapest. I enjoyed the whole event.*

*-SarvangSanghvi, VGEC*

- *It was a fantastic experience of learning. We enjoyed and learned a lot.*

*-ChintakMandalia, LDRP-ITR*

- *It was very good experience coming here and working on project. I got to learn so many things and we are very helpful to very supportive mentors.*

*-Hetvi Patel, IET-Ahmedabad University*

- *First of all I would like to say thanks to all mentors. I learn Raspberry Pi with very good programming. I am very happy for all support provided by GTU.*

*-JaimishMendapara, Marvadi Education Foundation, Rajkot*

- *Awesome workshop I have ever attended. Highly appreciate GTU that it provides all resources, mentors, material, food, and every help we need in Hackathon.*

*-DhrushitRaval, Nirma University*