Presenting Partner

L&T Electrical & Automation

IoT - INFINITY OF THINGS !

The **Internet of Things (IoT)** is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

Note:

1. Devices made by the participants should have web or application based interfaces to communicate with an array of devices interconnected through the internet. Participants are not restricted to any one particular subject mentioned below, participants combine any two of the subjects and make a prototype on that combined subject also.
2. **The projects should also be applicable in village areas. The projects applicable in village areas will be given more weightage.**

1. Solution for pollution 4M (measure / monitor / manage / mitigate)
In developing countries poorly planned urbanization has serious implications on the health of people. Increased exposure to the pollution (air, noise and water) levels is serious concern to the planners and stakeholders.

Problem Statement: In this theme, participants are advised to submit their innovative ideas/proposals to measure/monitor/manage/mitigate the pollution level. The idea/proposal should be based on Internet of Thing concepts and has high scalability.
Eg: The CITI-SENSE Citizens' Observatories Web Portal provides an access to air quality information (www.citisense.eu/)

2. Home automation
A smart home or building that is equipped with specially structured wiring to enable occupants to remotely control or program an array of automated home electronic devices by entering some commands.

Problem Statement : In this theme participants are advised to submit their innovative ideas/proposals based on Internet of Thing concepts to improve quality of life (by improving security, aesthetics, communications, entertainment, convenience, and information systems).
Eg: A homeowner on vacation can use a touch phone to arm a home security system, control temperature gauges, switch appliances on or off, control lighting, program a home theater or entertainment system, automatic controlling of the light brightness in house according to the outside weather and perform many other tasks.

3. IoT in Healthcare

The analysis of the data amassed through electronic medical records, diagnostic information gathered through imaging equipment, monitors and handheld personal devices enhances the decisionmaking powers of professionals and enables patients to take a more active role in managing their personal health.

Problem Statement: In this theme participants are advised to submit their innovative ideas/proposals based on Internet of Thing concepts to reduce lag in diagnostics, to facilitate physicians both in urban and remote areas, devices that can help in elderly care, to device smart prosthetic devices, personal accident (fall) reporting system for senior patients, etc

4. IoT in Agriculture

Understanding the Soil, Water and Weather interactions with Crop is a key to improve the agricultural productivity. Available tools and techniques to monitor these important parameters are often fell short due to high cost, low scalability, etc.

Problem Statement: In this theme, participants are advised to submit their innovative ideas/proposals based on Internet of Thing concepts to address issues related to agriculture. The real world problems related to following (not limited to) agricultural aspects can be considered: improving crop quality / quantity, minimize of postharvest losses, monitor soil / plant/ water nutrient levels, etc.

Note: Solutions for this problem statement **(IoT in Agriculture)** has separate prize money of INR **1.2 lacs** out of total prize money.

5. IoT in Transportation

The transport sector is trying its level best to improve the safety, reliability, and cost of transportation. And, there is no doubt that if they are provided with better information and connectivity, they will do a lot more. This is where Internet of Things enabled devices equipped with sensors can be helpful.

Problem Statement: In this theme, participants are advised to submit their innovative ideas/proposals based on Internet of Thing concepts to improve the transportation system. Some of the common problems that can be considered are over speeding detection, vehicle health monitoring, road conditioning monitoring, collision avoidance system using proximity detection, monitoring traffic, street light controlling, etc.

6. IoT in Surveillance, Safety and Security

The network centric security and surveillance industry enabled by the IP-based cameras has been steadily progressing over the years. Now the advent of the Internet of Things (IoT) promises to turn this segment into a mass surveillance infrastructure. However, the crossover between IoT and

surveillance is also demanding the edge devices like security cameras to get connected as well as get smart.

Problem Statement: In this theme participants are advised to submit their innovative ideas/proposals based on Internet of Thing concepts to improve the security system, safety and surveillance especially of children, elderly person and women.
Eg. Take the use case of object recognition in the context of home security and surveillance. First, an object, for example, a person is recognized. Next, the camera has to identify if the person is part of the list of approved people that have access to the home or building. Then, the camera must identify the situation; for instance, if the person has fallen or has entered a certain area that is prohibited for him and give a notification/ warning message to the smart devices connected to it.

STRUCTURE:

Progress Report

Teams will be required to submit one report on or before 15th September 2016 to iot@techfest.org . This report should contain the idea they are looking forward to work on. Submission is to be done by ALL the participants.

Project Report Format

i. Title

ii. Abstract

1. Objectives
2. Beneficiaries (For whom)
3. Value of results (Use)

iii. Background

iv. Statement of Problem

1. Succinct definition of problem (follows from material in the background section)

v. Research

1. Present methods of tackling the problem (if any)
2. Proposed Solution
3. Alternate solutions/approaches
4. Novelty of Approach: How is or will be your solution better than existing products that

address the same problem?

vi. Technical Report

1. Description of concepts, theories or approach involved in the proposed solution.
2. Technical aspect of the proposed solution.
3. Detailed technical specifications and pictorial representations (block diagrams/ flow chart)
4. Description of the flow of operations demonstrating key features and functionality.
5. Performance estimate of the solution.
6. Experimentation done to establish the workability of the above.
7. A link to the video of the working model/ prototype.

vii. Results

1. Actual findings, significant output of tests and analysis (Must be readable)
2. Include problems encountered, credibility of results, accuracy estimates
3. Pros and cons of your solution
4. Utility of results

viii. Application

1. Your idea as a solution to the problem
2. Additional applications
3. Benefits to the users

ix. Any other specific details

Project Report submission:

The project report should be emailed to **iot@techfest.org** with the subject Ideate: IoT: Project Report: Team Id (For example Ideate: IoT Project Report: **IO1234**). All the submissions should be emailed to iot@techfest.org. Teams must follow the following details for the submission:

1. The abstract must be submitted in pdf format only
2. Font: Verdana
3. Size: 11
4. Spacing between two lines: 6 pts
5. Spacing between two paragraphs: 10 pts
6. Bottom margin: 1 inch

Prototype and Final Presentation:

After declaration of the finalists, participants are required to improve upon the prototype/ working model of their project. They will also have to make a presentation covering the technical

and financial aspects of their product in a detailed manner. This final presentation and the video will have to be submitted at iot@techfest.org before 18th November 2016. The teams can, however, continue to work on their prototypes till 15th December 2016. The teams will have to bring their prototypes to be judged and showcased at Techfest 2016-17 during 16th to 18th December 2016. The working prototype should be as close as possible to the product that the team intends to present to the end user. This would also help in deciding a better estimate of the cost of the prototype, reflecting closely the actual cost of the product.

JUDGING:

General Rules:

1. The competition is open to all college students and research scholars. All projects being displayed will have a fair chance of receiving further development opportunities offered by funding organizations and Venture capitalists.
2. Every team has to register online on our website for the competition. A registration number will be allocated to the team on registration which shall be used for future references.
3. A team can register at any point of time before 18th November 2016 and can submit final abstract and video (as mentioned in the structure).
4. The decision of the judges shall be treated as final and binding on all. Techfest has all the rights to verify the identity and accuracy of the details provided by the participants.
5. No responsibility will be held by Techfest, IIT Bombay for any late, lost or misdirected entries.
6. The idea presented by the teams should be original (not protected by means of patent/copyright/technical publication by anyone).
7. Note that at any point of time the latest information will be that which is on the website. However, registered participants will be informed through mail about any changes on the website.

Evaluation Criteria:

IoT will be judged by a panel of experts. Following are the broad guidelines for judging:

1. Innovation and creativity in the method used or product developed will be given high weightage.
2. Implement ability of the product to be assessed on the following parameters :
    a. Technical feasibility
    b. Cost of the product
    c. Usability
    d. Acceptability
    e. Market Value and acceptance
    f. Reliability/ durability of the product or method developed
    g. Number of industrial visits and implementation of product (if happened)
3. Performance
4. Ergonomics if the team decides to make a well-designed product.

In case of any dispute, the decision of the organizers or Judges will final and binding on all.

International Participants:

All international participants will have to register before 18th November 2016, and will have to submit the complete report along with video prototype before 18th November 2016. The shortlisted international team details will be put up on the website by 21st November 2016.

Certificate policy:

Only those teams that are shortlisted for the finals and also give a final presentation about their work during Techfest 2016-17 would be awarded a Certificate of Participation. The top entries from this event would be provided with Certificate of Excellence.

Team Specifications:

The participating entries must be in a team of a maximum of **4[four]** people. If the participating team feels that their idea requires more participants in their team, they can forward their request, with suitable reasons, to iot@techfest.org with the subject **"Ideate: IoT team number increase"**

First Project Report Submission	September 15, 2016	Submission of first project report.
Mentorship Stage	October 17 , 2016 to November 05, 2016	Mentors will be allocated for the guidance of the participants.
Last Date of Registration	November 18, 2016	Participants competing in the competition need to register before this date.
Final Project Report Submission	November 18, 2016	Submission of final project report along with video prototype (if any) has to be submitted before this date.
Declaration of Result	November 21, 2016	Declaration of shortlisted teams for final presentation at Techfest, IIT Bombay on the basis of final report and the supporting materials.
Improvisation Stage	November 21, 2016 to November 30, 2016	Shortlisted participants are to improve upon their model and prepare a presentation for the final round.

Final Presentation and Video submission	December 1, 2016	Participants have to submit the final video of prototype and presentation to be displayed during the festival before this date.
Presentation Stage	December 16, 2016 to December 18, 2016	Final presentation along with demonstration of working prototype.

Note:

1. IP Rights - Idea of the winners of the Competition will be taken up by L&T Electrical and Automation and winners will be given prize money. L&T will have the rights to implement the idea on industrial and manufacturing level.
2. Incubation - To provide incubation to good ideas will be decided by L&T Electrical and Automation only.