AIM: Participants are invited to come up with new innovative Prototype or Ideas that will help in efficiently solving one or more Problems mentioned below.

Note: The following themes are just guidelines to help you. You are free to think like an unconventional thinker and come up with great innovations. Do not limit yourselves to these themes.

PROBLEM STATEMENT:

- **Disaster Management:** Given the recent natural calamities that shook the foundations of livelihood in major states of India, it is the need of the hour to improve our disaster management and mitigation techniques to better tackle and help people in distress. Better Communication and efficient relief tactics need to be introduced in order to reduce the damage done to property and Lives. Participants are required to come up with unique and innovative ideas to ease out the process of Disaster Relief and Management Operations.
- **Women Safety:** According to the WHO, one in three women globally has been sexually or physically abused. Around 70% women in India are victims of domestic violence. Women's safety is a key issue and tech seems to be a potential solution. A study found that 80% of women of India had experienced sexual harassment ranging from unwanted comments, being groped or assaulted. The participants are invited to come up with innovative ideas that can help in preventing crimes against women and spreading awareness about women's rights, help them in reporting such crimes.
- **Health Care:** Around 5 million people die every year due to inadequate healthcare, a one-third of those are from India. Healthcare sector has grown in the last few decades, but it has not translated into better healthcare for all. Healthcare is a fundamental right (under Article 21), but it is a privilege only to a few. Health systems must effectively protect and treat all people, especially the vulnerable. Participants are invited to come up with innovative technological solutions in the Healthcare Industry.
- **Make me Smarter!** From Smart Lights to Driverless Cars Automation is slowly creeping into every domain of our life. Internet of Things and Artificial Intelligence nowadays go hand in hand. Participants are hence invited to Automate whatever they can. Yes, you read it Right! Make Your Surroundings smarter by any means of Automation.

REGISTRATION AND SUBMISSION:

The Participants have to register on the official IEEE PEC Website and fill all the necessary details. IEEE REGION 10-> Hardware -> Register -> Fill all your details -> Your team will be formed and now you can add other team member

TEAM SIZE:

Maximum Team Size can be of 4

ABSTRACT SUBMISSION:

Teams are required to submit one report to ieee.pecsb@gmail.com with the subject 'Technovation: ''Hardware Hacakthon'' Abstract Report: ' (for eg. Technovation: ''Hardware Hacakthon'' Abstract Report: TeamName). Teams must follow the following details for the submission:

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

Participants are required to mail their ideas in the below mentioned format. Any idea that does not meet the specified format will not be considered for evaluation.

ABSTRACT FORMAT

i. Title
ii. Describe Your Idea (Word Limit 500)
iii. Technical specifications and pictorial representations (block diagrams/ flow chart)
iv. List of Components required and Cost of Prototyping
v. Future prospects
vi. Any other Details

EVALUATION:

Abstracts will be judged by a panel of experts.

Following are the broad guidelines for judging:

1. Creativity and Novelty: How novel is the idea? How different is it from the current solutions available? The innovation must be ingenious and novel in its area of application and should have a high potential for leaving an impact on the society

2. Originality: The innovation should not, by any means, include copied or stolen work. Such applications will be disqualified immediately

3. Cost/Market Value and Acceptance

4. Implementation ability

5. Design

SHORTLISTING:

Top 30 teams will be selected and would get the chance to participate in the Hardware Hackathon at PEC Chandigarh which is from 19th -20th October 2019. Participants will get around 15 Hours to execute their ideas. The participants will then be evaluated by the panel of judges and results will be declared.

TEAM RULES:

1. Each team can have a maximum of 4 participants.

2. A team may consist of students from different colleges.

3. Only students pursuing an undergraduate degree and graduate students will be allowed to participate, so you are requested to kindly bring your student ID cards along with identity proof to the event.

GENERAL RULES

1. Over a 15- hour period, you'll work in a team of 1-4 innovators to make anything your heart desires, in synchronisation with the general theme provided. We'll provide you with a bunch of prototyping resources and lots of food to keep you fuelled. At the end of the event, we'll have a judging period to choose the winners

2. You are kindly requested to bring your own Laptops.

3. Teams will be provided with the necessary equipment in the beginning of the event

(Refer Appendix 1: List of tools provided at the bottom).

4. Registered Teams need to mail the **complete** list of their component requirements (even if it is not in the appendix) list before 12th October, 2018.

5. The accommodation will be provided (if required) on charge basis.

6. The utilities in this event are completely free; materials will be provided from our side.

7. You will be provided with free Wi-fi and feel free to access any of the online tutorials, lectures or any utilities.

8. The registration fee will include your refreshments and food. A team can register at any point of time before 12th October 2019 and submit the final abstract.

9. The decision of the organizers or judges shall be treated as final and binding on all

10. No responsibility will be held by IEEE PEC for any late, lost or misdirected entries.

11. The idea presented by the teams should be original (not protected by means of patent/copyright/technical publication by anyone else) and same as the one mentioned in the abstract.

12. Teams can not change their ideas once they are shortlisted. Doing so will lead to automatic disqualification.

13. The participant will be held responsible for any damage done to the components provided by the IEEE PEC team and will be asked to pay the equivalent price on the spot.

14.**Poster Presentation:** Selected teams will be given a poster template for this round. The team is required to present their idea through a poster in front of judges during the final Evaluation at PEC Chandigarh.

CERTIFICATE POLICY: Only those teams that are shortlisted for the finals and also give a final presentation about their work would be awarded an e-Certificate of Participation. The Winner of the Hackathon along with "**The Most Innovative Idea**" from this event would be provided with the hardcopy of Certificate of Excellence.

PRIZES:

The Prize money and Goodies would be awarded on the spot during the Closing Ceremony.

Queries

For any queries feel free to contact us at:

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Arnav Malhotra: 8699739350

E-mail us at: ieee.pecsb@gmail.com

Appendix 1 (A-M)

A) Microcontrollers Modules and kits

1. Arduino board
2. TI MSP430 FRAM launchpad / TI MSP432 Launchpad
3. TI CC3200 Launchpad
4. ESP8266 NodeMCU
5. Bluetooth Module HC05
6. Ultrasonic Module
7. 16*2 LCD display
8. Relay Module

B) Sensors

1. Temperature Sensor LM35
2. IR sensors
3. Thin speaker
4. Buzzer
5. Humidity Sensor DHT11
6. Light Sensor

C) LEDs and Displays

1. LED — Red (5mm) LED — Green (5mm) LED — Blue (5mm) LED — Cool White (5mm)
2. LED — IR (5mm)
3. 7 Segment Display (CA)

D) Resistors

1. 1/8 W, 5% 220 ,330, 470, 1k0, 1.5k0, 2.2k0, 4.7k0 ,10k0, 22k0, 33k0, 47k, 330k0, 470k0, 1M

E) Potentiometer(10k)

1. Capacitors — Ceramic 22pF, 100pF, 1nF, 10nF, 47nF, 100nF, 1uF

F) Capacitors — Electrolytic 1. 1uF, 220uF, 4.7uF

G) Analog IC

1. Dual JFET Op Amp TL082
2. Op Amp LM741
3. Dual Op Amp LM358
4. Audio Amplifier LM386
5. Timer NE555
6. Precision Op Amp OP07
7. Quad Op Amp LM324
8. Comparator LM311

9. Darlington Array ULN2003
10. Reference Diode LM336-2 5V
11. Adjustable Reference TL431

H) Digital IC

1. Decade Counter CD4026
2. 2 Input NAND 74HCOO/ SN7400
3. 2 Input NOR 74HCO2/ SN7402
4. 2 Input AND 74HC08/ SN7408
5. 2 Input OR 74LS32
6. BCD to 7-segment CD4511/ DM7446A
7. 3 to 8 Decoder 74LS138
8. 8 to 3 Encoder 74LS148
9. D Type Flip Flop 74LS74/ SN7474
10. Motor Driver L293d

I) Transistors

1. NPN (100 mA) BC547
2. PNP (100 mA) BC557
3. NPN (800 mA) BC337
4. PNP (800 mA) BC327
5. N-channel JFET 2N4392
6. N-channel MOSFET IRF540
7. P-channel MOSFET IRF9540

J) Regulators

1. Linear Regulator (5V) LM7805
2. Adjustable Linear Regulator LM317

K) Diodes/Zeners

1. Rectifier Diode (1A) 1 N4007
2. Zener Diode 3.3V/500mW

L) General electrical/electronic components

1. Ribbon Wire
2. Jumper Wires
3. Wire Cutter
4. 9v Battery
5. 12 V battery
6. Transformer (220 to 12)
7. Breadboard
8. PCB

9. Headers (MALE ,FEMALE)
10. Multimeter
11. Solder Iron
12. Mechanical Actuator(gears rotational and translational)
13. Wheels TECHADROIT 2018
14. D.C. Motor(100 rpm)
15. Servo Motor
16. Extension Cords

M)Stationery

1. Double sided tape
2. Electrical black tape
3. Scissors
4. A4 sheets
5. Pens
6. Ruler
7. Chart paper
8. Cardboard
9. Icecream sticks
10. Thermocol
11. Fevistick
12. Fevicol
13. Paints
14. Spring