TECHFEST 2022-23
HOME AUTOMATION

INTRODUCTION

Atomberg, the institution behind this competition, is a technology company founded by alumni of IIT Bombay and currently focused on improving user lives through their smart(er) home appliances. They pioneered and introduced the BLDC fan in India, which is making the industry move toward a better, more sustainable alternative. Having a strong focus on R&D spanning motors, IoT, electronics, mech, and industrial design, **Atomberg** is disrupting the $10 billion consumer durables market through innovation, design, and digital distribution. One or more Atomberg products will be found in almost every home of 2030, and this competition gives you a chance to be a part of this journey and make an indelible mark on the Indian household.

AIM

Ideate, Home Automation wants to create and encourage teams to imagine one aspect of a home from 2030 and create its prototype, which can be implemented in today's life.

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. Your prototype can have a combination of appliance themes that are listed below.

Theme 1- Basic omnipresent appliances

Omnipresent appliances are the appliances that are widely or constantly encountered on a daily basis. You can term fans, lights, doorbells, locks, switches, etc. as omnipresent appliances. Participants are required to come up with innovative technological solutions of omnipresent appliances that are smarter than current appliances:

Examples:

1. Gesture-controlled fans or lights
2. Occupancy-based appliance turn-off

3. Smart home lighting helps save energy by adapting life to the ambient condition and switching on/off or dimming the light when needed.
4. Smart locks leverage IoT-enabled sensors to operate keyless entry devices that allow users to access doors remotely.

Theme 2- Kitchen Appliances

Kitchen appliance is a machine intended for use in the kitchen, such as mixer grinders, juicers, cooktops, chimneys, etc.
For example, participants can think of the following ways to come up with innovative technological solutions for kitchen appliances:

Examples:

1. Use Machine Learning in a mixer grinder that notes down the steps and time you take to prepare chutney so that it can run the process by itself the next time.
2. Cooktop and chimney working in coordination.
3. Smart refrigerators that can process what vegetables and fruits are stored in them on that basis could suggest what to make, which can lead to lesser food wastage and send updates to the users when an item is low on stock.

Theme 3- Heavy electronics appliances

Heavy electronics appliances include all those appliances which use a large amount of power while operating. Popular heavy electronics appliances include Air conditioners, washing machines, geysers, etc.
For example, participants can think of the following ways to come up with innovative technological solutions for heavy electronics appliances:

Examples:

1. Click 'Night Mode' in your app, and curtains get drawn, lights get dimmed, AC turns ON at a specific temperature, and so on. Fan and AC working in coordination.'Energy Saving Mode' uses the interaction between the two to save power.'Pleasant Mode' tries to stabilize the temperature and the breeze.

2. IoT can be enabled in washing machines to gather information like temperature, laundry weight, water flow, and cycle times to optimize the water level, detergent, speed of the motor and rinsing time.

ABSTRACT FORMAT:

i. Title

ii. Abstract
   1. Objectives
   2. Beneficiaries (For whom)
   3. Value of results (Usage)

iii. Background

iv. Statement of Problem
   1. Succinct definition of the problem addressed (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/will your solution be better than the existing products that address the same problem?

vi. Technical Report
   1. Description of concepts, theories and/or approaches involved in the proposed Solution
   2. Financial details 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/Verification done to establish the workability of the above
7. A link to the video of the working model/ prototype

vii. A link of the Google Drive Folder, which contains Pictures and Video of the working model/Bench prototype

1. Create a breadboard circuit (if applicable) and a bench prototype showcasing your idea in action
2. The code at this stage can just be executing the basic functionality without the error check mechanisms
3. Submit a video of the bench design in action

viii. Final Prototype Creation (MVP)
1. A working demonstration of the MVP, with the code complete with error checks and state transitions

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

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

xi. Future prospects, research in it and further development (in brief)

xii. Any other details: (Patent/Business plan etc.)

EVALUATION:

Home Automation 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 application area and should have a high potential for impacting society.

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

3. Performance

4. Financial viability and Acceptance

5. Durability and Usability: Durability of the prototype/method proposed.

6. Aesthetic appeal (if applicable).

7. Error handling

8. Implementation ability: Is the solution implementable as described? Is it repeatable? Is the solution feasible for diverse and changing conditions?

9. Scalability: Is the solution scalable to a higher level, how easy is it to scale up and what are the factors affecting it?

10. Potential of Impact: How does it benefit society? The scale of the problem that it solves, the intensity of the solution and number of people catered from the solution directly and indirectly.

11. Design: Has the design been taken into consideration? How optimized is the product?

12. Ergonomics (if the team decides to make a well-designed product)

In case of any discrepancies, the decision of the Organizers or Judges will be final and binding on all.

CONSTRAINTS:

Usage of sensitive personal information (including biometrics) of any user is not allowed for any application.

SUPPORT:

1. Once your abstract and video submissions are accepted, **Atomberg** can provide you a unit of any fan or mixer grinder that is currently manufactured by **Atomberg** to work with if your MVP consists of fans or mixer grinders.
2. A team of engineers will guide you through after the video submission stage.
3. Travel expenses for final presentation at the **Atomberg plant** (if held) shall be provided

ELIGIBILITY:

1. Individuals or teams from the following categories are allowed:
    a. Students/research scholars of authorized institutions (students have to show their Valid College ID)
    b. Early stage startups or up to 3 years old college pass-outs.

2. A team is allowed to have a maximum of 4 members.

3. If the participating team feels that their idea requires more participants in their team, they can forward their request, with suitable reasons, to <email id> with the subject "Ideate: Team number increase request."

REGISTRATION AND SUBMISSION:

The Participants have to register on the official Techfest Website and fill all the necessary details. www.techfest.org ->Competitions-> Ideates ->Home automation -> Explore More -> Register -> Fill all your details - > Now you must create/Join a team

ABSTRACT SUBMISSION:

Teams are required to submit one report to <email id>. This report should contain the idea they are looking forward to work on.

PROJECT REPORT SUBMISSION:
The project report should be mailed to with the subject 'Ideate: ''Home Automation'' Project Report:
(for e.g. Ideate: ''Home automation'' Project Report: HM12345). The report must be submitted in PDF format only mailed to homeautomation@techfest.org

SHORTLISTING:

Top 10 to 20 teams(depending on the feasible ideas) will be selected and would get the chance to present their model/idea in the Final Round at Techfest IIT Bombay. Participants will get a slot for presenting their model/idea to the Judges based on which they will be evaluated.
Top teams would get an opportunity to display their projects in the Ideate exhibition during Techfest, IIT Bombay. These teams will be selected by a panel of judges.

GENERAL RULES:

1. Every team has to register online on our website for the competition. A Team ID will be allocated to the team on registration which shall be used for future references.

2. A team can register at any point of time before 2nd November 2022 and submit the final abstract and video (as mentioned in the structure).

3. The decision of the organizers or 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.

4. No responsibility will be held by Techfest, IIT Bombay for any late, lost or misdirected entries.

5. The idea presented by the teams should be original (not protected by means of patent/copyright/technical publication by anyone else).

6. 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.

7. All modes of official communication will be through the Techfest e-mail.

CERTIFICATE POLICY:

Only those teams that are shortlisted for the finals and also give a final presentation about their work during Techfest 2022-23 would be awarded an e-Certificate of Participation. The top 5 entries from this event would be provided with a Certificate of Excellence.

PRIZES:

The prize money will be awarded to top 3 winners via NEFT and will be processed within 30 working days after receiving the prize money from sponsors.
Winners have to mail the following information (immediately after the announcement of results) to abhishek@techfest.org
FORMAT OF MAIL :
Subject: Home automation, <Team ID> - <Your Position>
(example- Home Automation, HA1003 - 3rd Position)

Body of mail:
1. Account Holder's Name
2. Account Number
3. Bank name and Branch name.
4. IFSC Code

TIMELINE:

First Project Report Submission	23rd October 2022	Submission of First Draft Report
Last Date of Registration	23rd October 2022	Participants need to register before this date
Final Project Report Submission	8th November 2022	Submission of final project report along with **video prototype** has to be submitted before this date
Declaration of Result	12th November 2022	Declaration of shortlisted teams to work for final project reports
Mentorship Stage	13th November to 12th December 2022	Mentors will be allocated for the guidance of the participants.
Improvisation Stage	12th December to 14th December 2022	Shortlisted participants are to improve upon their model and prepare a presentation for the final round.
Final presentation & video submission	14th December 2022	Participants have to submit the final video of the prototype and presentation to be displayed during the festival before this date
Presentation Stage	16th-18th December 2022	Final presentation along with a demonstration of the working prototype
Exhibition	Mid December 2022	Techfest would give an opportunity to teams selected by judges to exhibit their projects