PES UNIVERSITY

100 feet Ring Road, BSK 3rd Stage, Bengaluru 560085

Department of Computer Science and Engineering

B. Tech. CSE - 7th Semester

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UE17CS424

HUMAN COMPUTER INTERACTION

Needfinding, Heuristic Evaluation

SMART PLANT HEALTH MONITORING APP

Team Members:

Sai Shashank	Rohan Kamath	Akanksha
PES1201700456	PES1201700811	PES1201701799
ECE	CSE	CSE

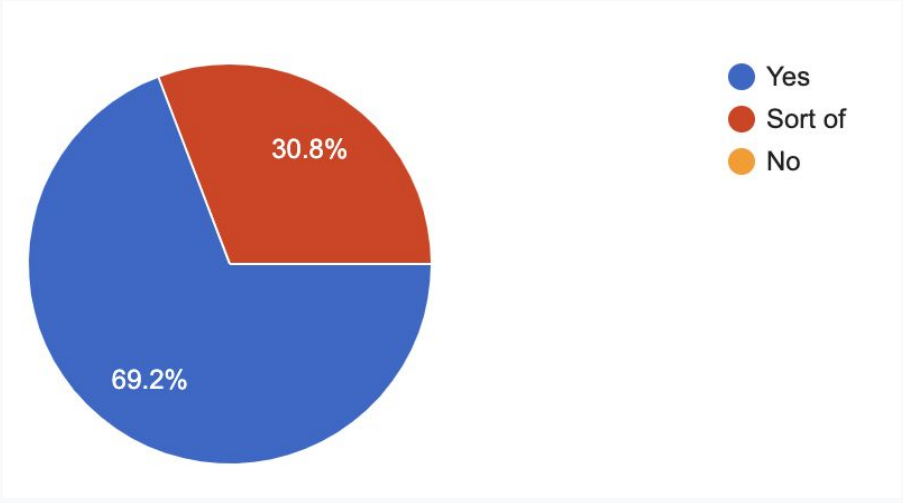
NEEDFINDING

We made a google form containing all the questions imperative to our project. Repeated and similar answers have been removed. Here are the questions and the results -

1. How do you take care of your plants?

Almost all the participants of the survey mentioned watering the plants daily. Some other answers were the use of manure and insecticide, regular health check for the soil and removal of dry leaves.

2. Do you think they are healthy?

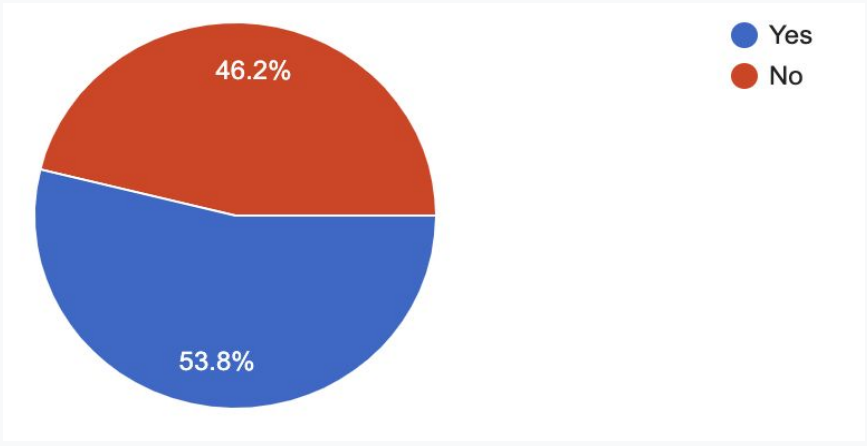


From this we can say, not a lot of enthusiasts are well informed of the right procedures to get desired results.

3. How do you know whether they're healthy or not?

- A lot of check if there are insects inside them
- Check the leaves and flowers for freshness/dryness
- There shouldn't be weed around the plant
- If the plant is grown without adequate sunlight

4. Have any plants died under your care because you didn't know how to care for them?

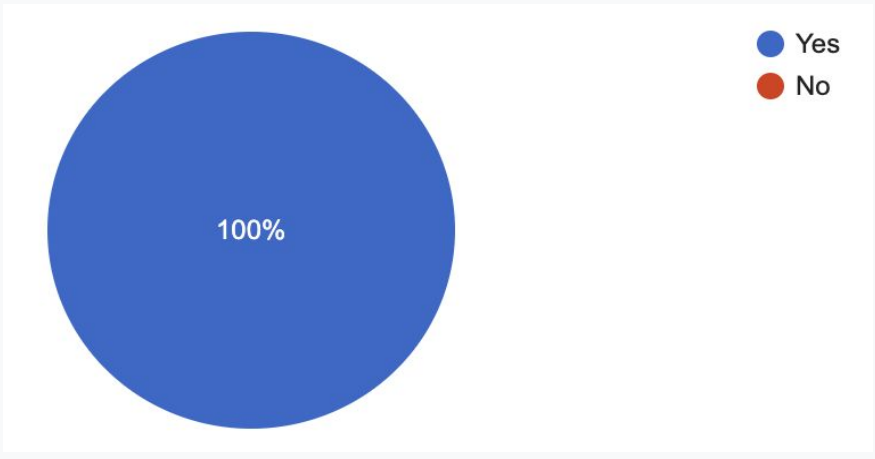


We can conclude the participants do not have the full knowledge to sustain their passion. Even if done with good intentions, some steps taken by the participants could be fatal to the plant.

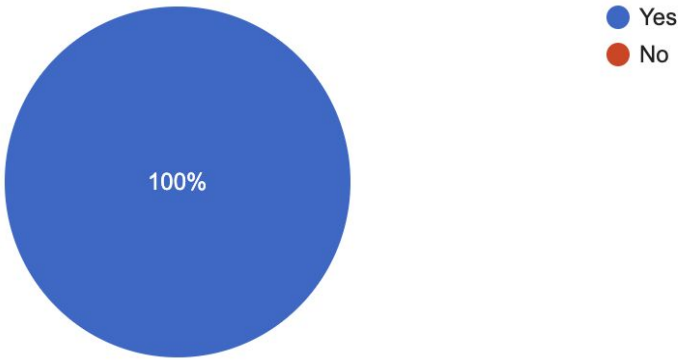
5. Would you like to have assistance with taking care of your plants?

A lot of the participants agreed to seek assistance, after knowing the details, scope, cost and flexibility of the package.

6. Do you think having specific knowledge about the health and needs of your plants would help you take better care of them?



7. Would you use an app that would provide answers to the above question?



8. Give a brief description of what you would expect from such an app.

Here are some inputs we got from the survey -

1) An app that helps me be aware of plant behaviour so I know what to do when.
2) The app should have pictures of healthy leaves.
3) It should be able to tell me what amount of water and nutrition that plant needs . It should also provide methods which I can use to revive my plant if it's showing signs of dying.
4) A. info about how much water is required for different plants
5) B. availability of different kind of plants
6) C. info on how to grow microgreens
7) D. also easy to grow organic plants
8) E. gardening is therapeutic so I'd like to do it myself than getting external assistance but it would definitely be convenient to have an app that educates you about it
9) App with detailed instructions on how to treat a particular species
10) Organic methods of pest control ; manure making at home; information about how to grow maximum plants in less space; details of agencies who sell best equipments; manure and others items related to gardening: contact details of gardeners at best price; etc
11) Data about different species of plants, an accurate scanner to detect infection
12) Taking care of plants especially in winter times
13) Soil moisture level, and bug attack
14) Plant type and its pruning and nutrients care
15) Recognition of disease through photo along with solutions and options to complete the purchase of service/ingredients.

HEURISTIC EVALUATION

10 Usability Heuristics developed by the Nielsen Norman Group.

Heuristic	Difficulties	Opportunities
Visibility of system status The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.	Not knowing which section of the app the user is currently in	Add colored and greyed out sections to visually indicate where the user is and what is clickable.
Match between system and the real world The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system oriented terms. Follow realworld conventions, making information appear in a natural and logical order.	Complicated, verbose language	Simplified, natural words
User control and freedom Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.	Lack of a back button on each page in the lofi app, Inability to add, edit, delete plant details and delete plant data	Providing a back-button to go back to the previous page Providing options to edit and delete each plant
Consistency and standards Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.	Different “added to shopping cart” messages each time	Unified the message for each time

Heuristic	Difficulties	Opportunities
Error prevention Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error prone conditions or check for them and present users with a confirmation option before they commit to the action.	Users can proceed to the next section without adding appropriate data.	Display appropriate messages if the section is not filled.
Recognition rather than recall Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.	Visit each plant's profile to look at care taking tasks for said plant	Have a task section with combined tasks to be taken for each plant, followed by shopping list
Flexibility and efficiency of use Accelerators unseen by the novice user may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.	Each time a user wants to check for tasks to be completed, he/she has to enter plant details and set up the bluetooth device.	One-time set up for all plants.

Heuristic	Difficulties	Opportunities
Aesthetic and minimalist design Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.	Random colour palette with absolutely no aesthetic.	Neat, unified design palette and fonts - futuristic yet very simple design.
Help users recognize, diagnose, and recover from errors Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.	Once the user clicks on delete, even if accidentally, the plant details are gone and the user will have to manually add in details all over again.	A pop up that confirms with the user whether they are willing to delete the plant details.
Help and documentation Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.	Adding a separate help page	Integrate instructions into input field and add help text next to/ under the interactive portion
Notes: What if image recognition isn't right/working Add a button for user to manually input the details		