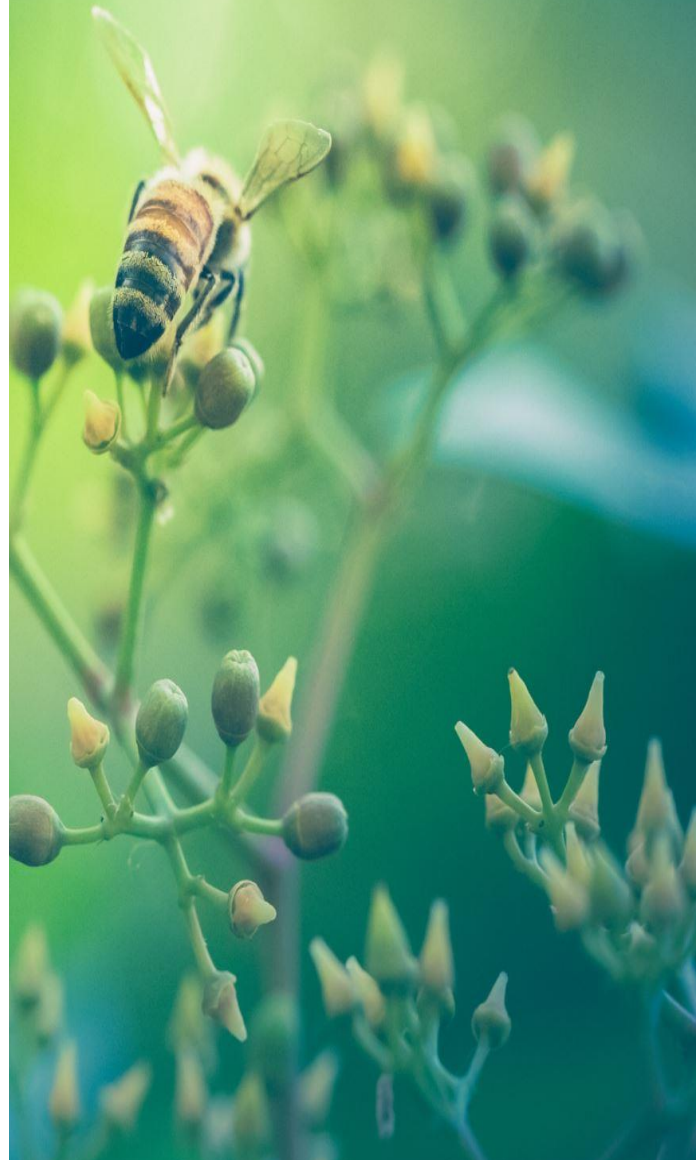


# STAGE 3 REPORT

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**NOVEMBER 11<sup>TH</sup>, 2020**

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**T03: Hessam Djavaherpour**

**Team I:**

**Max Dou , Perjot Sidhu, Ali Akbari, Anastasiya  
Lazarenko, Ejaaz Lakhani**

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# Project Idea

Our mobile application called “Photo-synthesis”, is an AR application which would engage younger demographics with a fun and creative way to learn about plants. Cartoon-figures will provide step-by-step assistance, helpful tips and positive feedback when the user accomplishes a task. Additionally, the app would also contain several features which on average, usually require accessing a web-browser. This includes doing research, having explanations, or product shopping, etc. We’ve also included a settings menu where you would have the ability to filter out the kid-friendly features.

## Revisited User Tasks

### Vertical Tasks:

**Scan the plant to find out its species.**

- By using the scanner, they would be able to detect what the plant is; it’s species, and type, etc.

**Game-like plant caring process, along with guidance through successfully raising a plant with good instructions and reminders.**

- Users who use the cartoony graphical-gamified version would experience something like ‘Tamagotchi’ or ‘Cooking Mama’ making it a fun and enjoyable experience. Additionally, step-by-step and easy-to-understand instructions would be provided throughout the setup and maintenance for each plant.

**Read information on plants other than the ones that they scan.**

- If users are looking for a plant index or more information on plant species, soil, or tools, the user interface would contain a convenience wiki-like glossary.

### Horizontal tasks:

**Check additional statistics based on the plants current condition.**

- Aside from knowing the plant’s name and traits the user will also be provided with the specific plant’s current condition, it’s hydration level, what type of soil it’s using, or what types of problems could arise from the plant.

**Perform an environmental scan in a designated room.**

- Scan a room or specific area in your house and get suggestions on where to place your plants.

**View, shop or buy products through a common shop-system.**

- Browse plants, or plant-caring tools which are available for purchase.

**Settings menu with custom features.**

- A settings menu is provided for those who want to change the color theme, have volume control or turn off the gamified features.

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# Storyboard

## Written Version:

**Problem:** Jimmy's mother has been trying to find ways for 8-year-old Jimmy to better understand plant caring. Her main challenge is the fact that; she struggles to give Jimmy productive advice seeing that she is no expert on plants, and routinely finds herself too busy to answer Jimmy's question. Moreover, Jimmy himself is often confused as what his mother is trying to tell him or simply doesn't find it "interesting" or intuitive for someone his age.

**Solution:** An application provides a fun and engaging experience with regards to plant caring. (Scene-to-scene)

**(Start) Scene 1:** Using the app, Jimmy points his tablet at the flowerpot.

**Scene 2:** After successfully scanning the plant, a small cartoon figure would appear from the sidelines of the AR screen. It would then greet Jimmy.

**Scene 3:** After looking at the plant, the cartoon figure tells Jimmy his flower condition, using very simple and straight forward explanations.

**Scene 4:** As of currently, the flower needs water, and hence the cartoon figure requests that Jimmy go do so. Jimmy gets up and heads over to the sink, while carrying his tablet. While he is getting a glass of water, the cartoon figure will also tell funny jokes and fun-facts with regards to plants.

**Scene 5:** Once Jimmy returns to the flowerpot; he sits back down. After pouring the glass of water, he points his tablet once again at the plant. Cartoon figure has another look then gives Jimmy a thumbs up, telling him the updated condition of his plant.

**Scene 6:** After having successfully watering the flower. The cartoon figure thanks Jimmy for his hard work and then reminds him come back at a designated time such that he can continue to care for his plant.

**(End) Scene 7:** Jimmy closes the application; however, he remains eager to come back and continue taking care of his flowerpot.

## Comic Version:



# Cognitive Walkthrough

## Discussion

We realized that we had a couple repetitive tasks and hence we opted to combine some of our user-tasks. After that we separated our verticals with the horizontal tasks. Once our initial low-fi was designed, we were mostly satisfied with the way things turned out. As we continued with our walkthrough, we realized that while our steps themselves weren't all that complicated. It was the indication between each transition in which with we needed to work on. For our main scanner, we still have it set to a default auto-detection/scan however we added in a crosshair to illustrate what/when it is scanning. Originally, we wanted to cartoon figure to walk to us automatically, but we found that disjointing, so as a change, we set the cartoon figure such that, you need to click on him such that you can move to the next step. Other changes involve IU edits to make more flexible to for the user.

## Reflection

This stage had unanticipated difficulty spikes, at times the course of action was clear, comparatively less during others. The sketches went very well for us, each member was assigned to sketch out a specific component of our application. The affinity

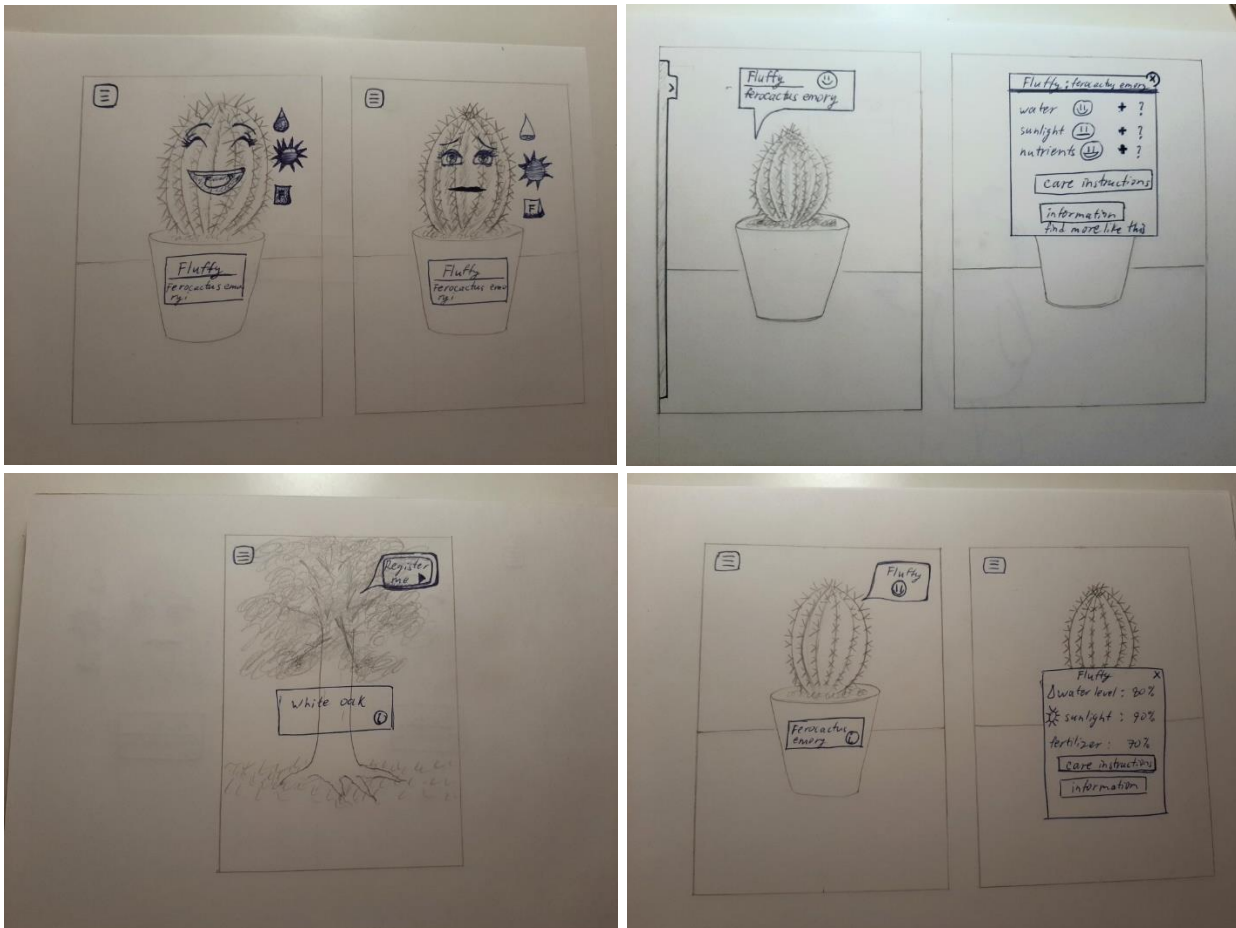
diagram was relatively challenging, its realization was complex and caused discord within the group. Additionally, we also had to re-work our user-tasks from Stage Two. In the end, we were able to formulate 3 ideas for the affinity diagram and selected the one which we preferred the most.

Through that one design, we made a storyboard-scenario of our application and we also refined a universal sketch for which we could make a low-fi from. Using the cognitive walkthrough, we were then able to fish out some problems from our user-task layout and low-fi design. Once both were adjusted, we recorded our demo, and started working on the presentation/report. Overall, we are relatively satisfied with our results.

# Appendix

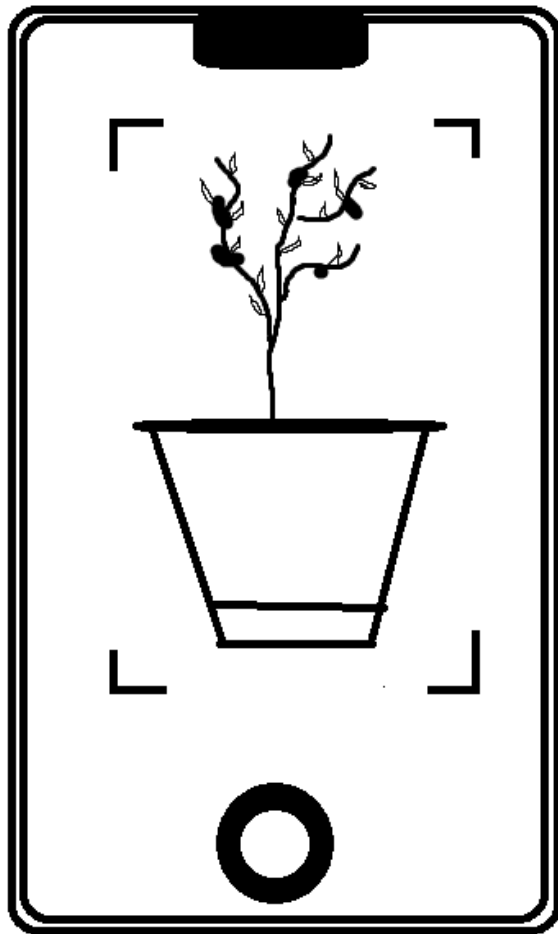
## Sketches

### AR-screen v1:



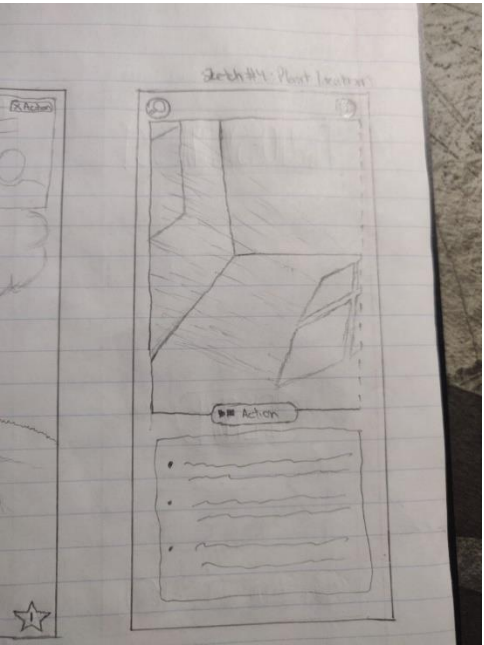
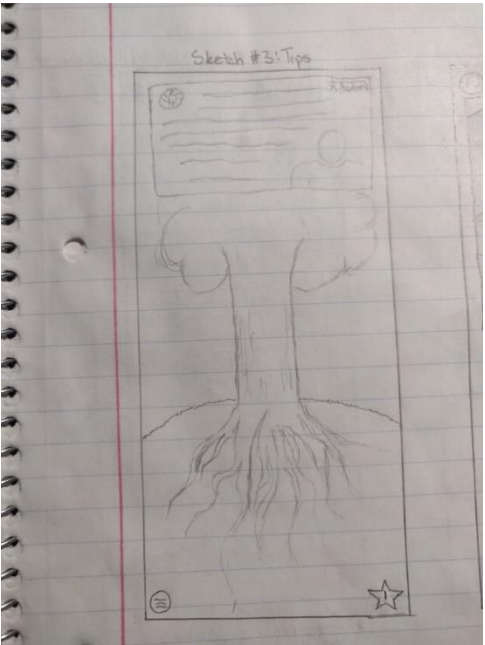
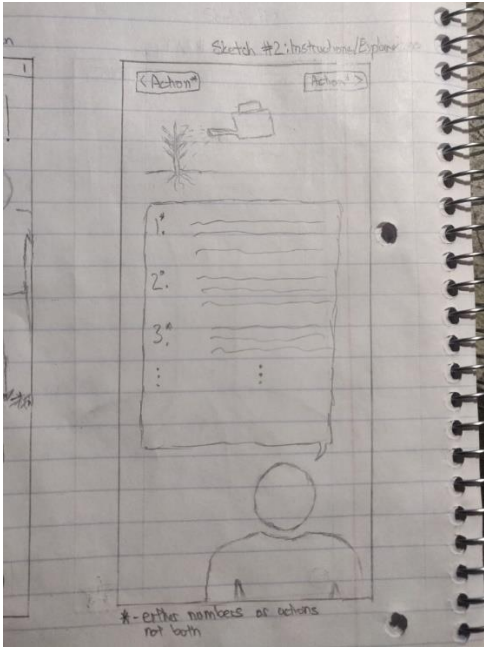
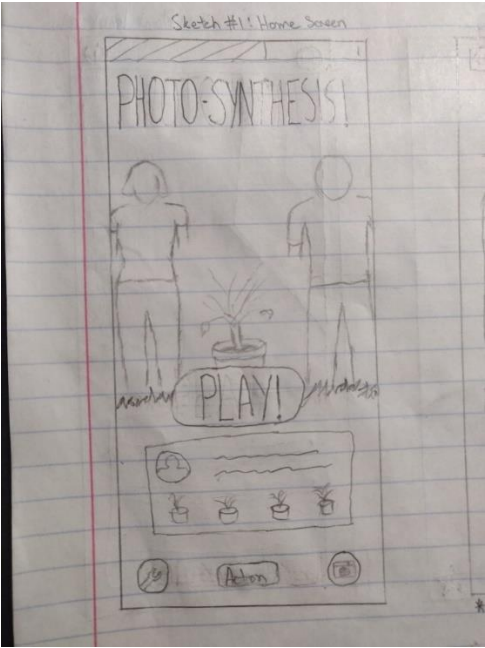
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AR-screen v2:

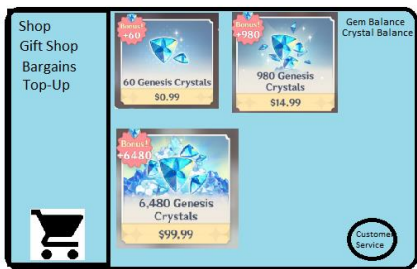
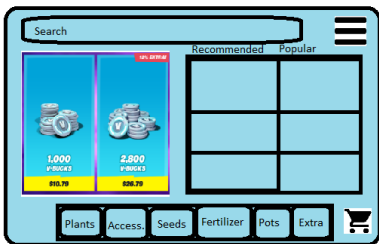
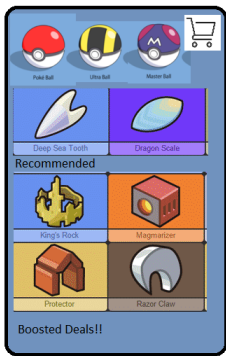




Potential Menu and Environmental scanner:



Shops-Menu-V1:

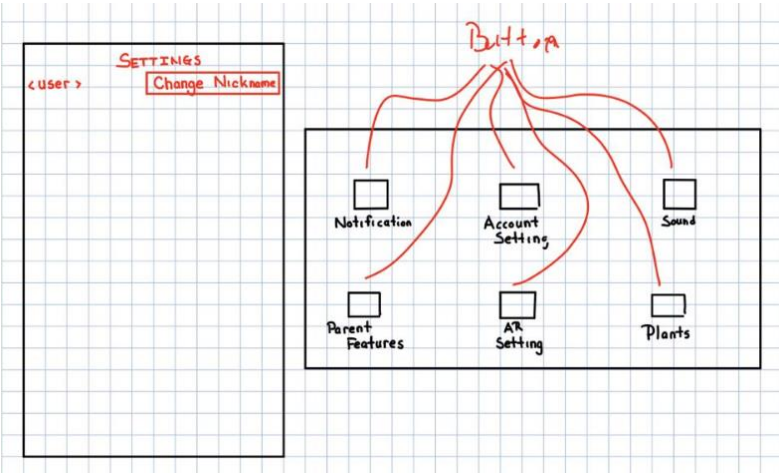
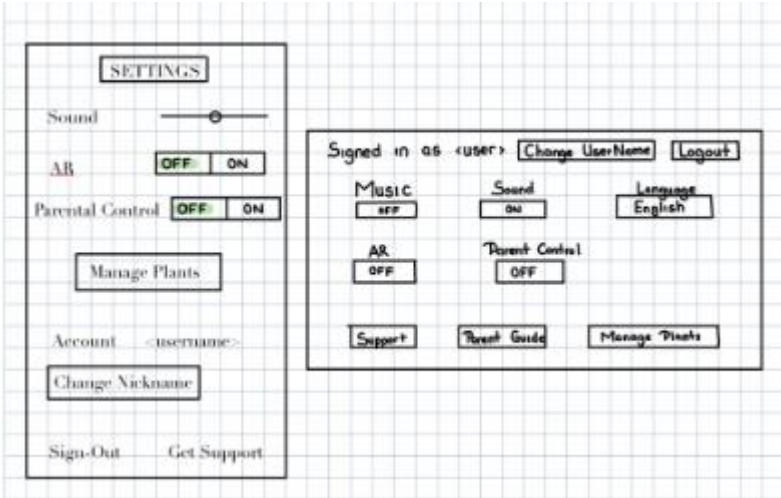


Shops-Menu-V2:

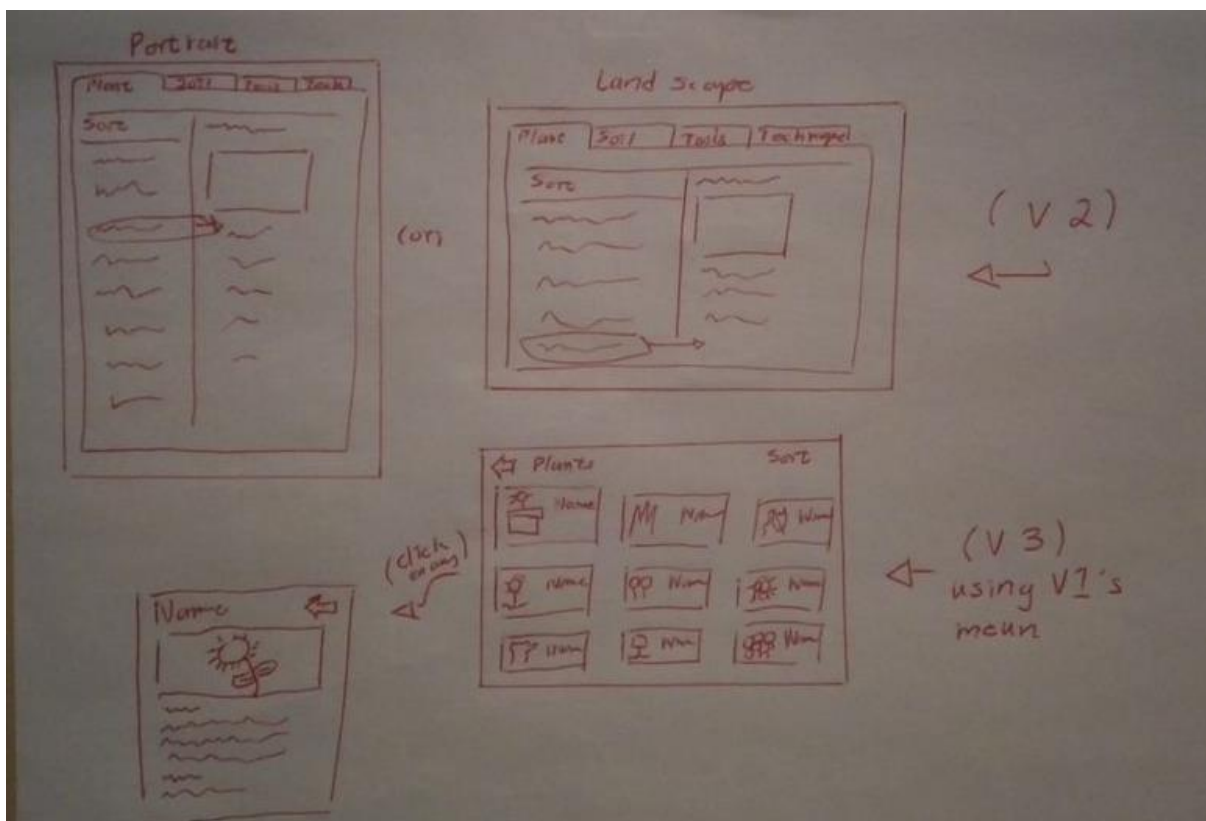
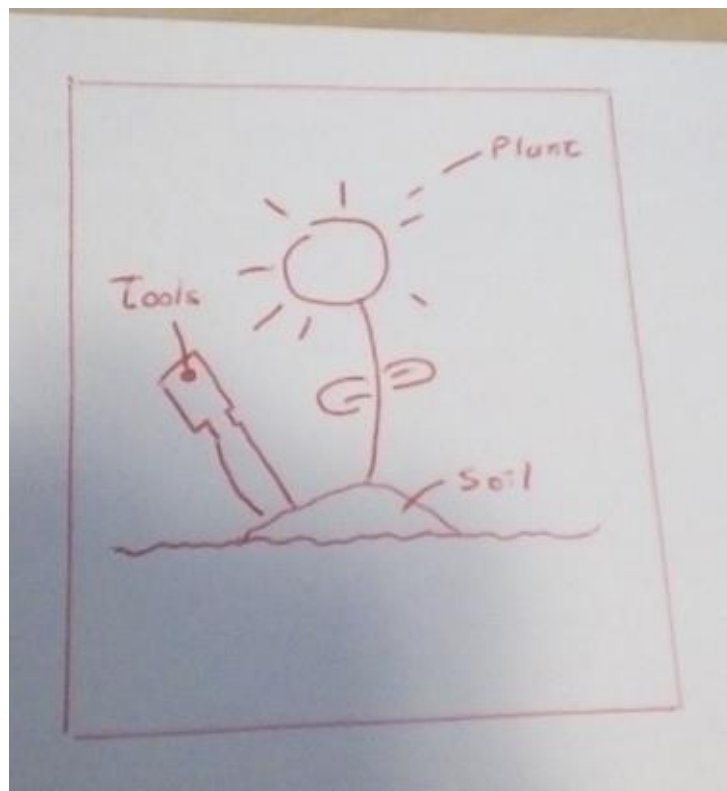
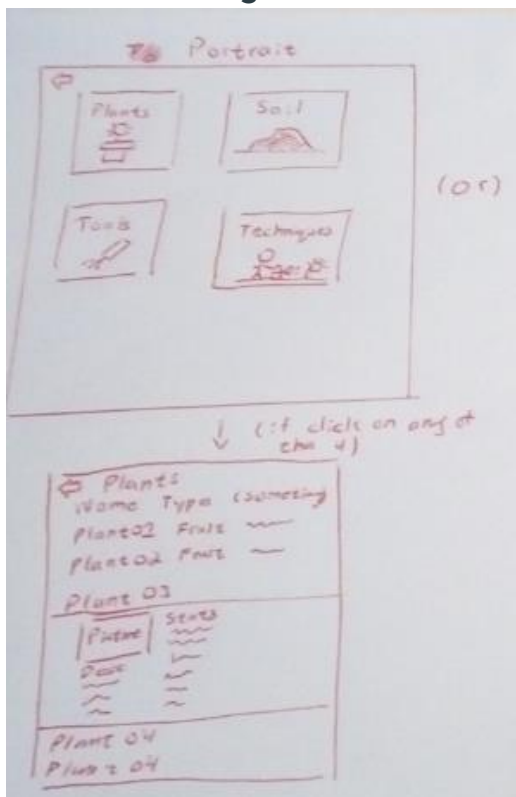




Settings Menu:



## Wiki-Menu/Navigation:



## Combining sketches, and designing the layout/flow of our prototype:

### Early menu design (Reference to Setup 1 and Setup 2):

#### SETUP 1

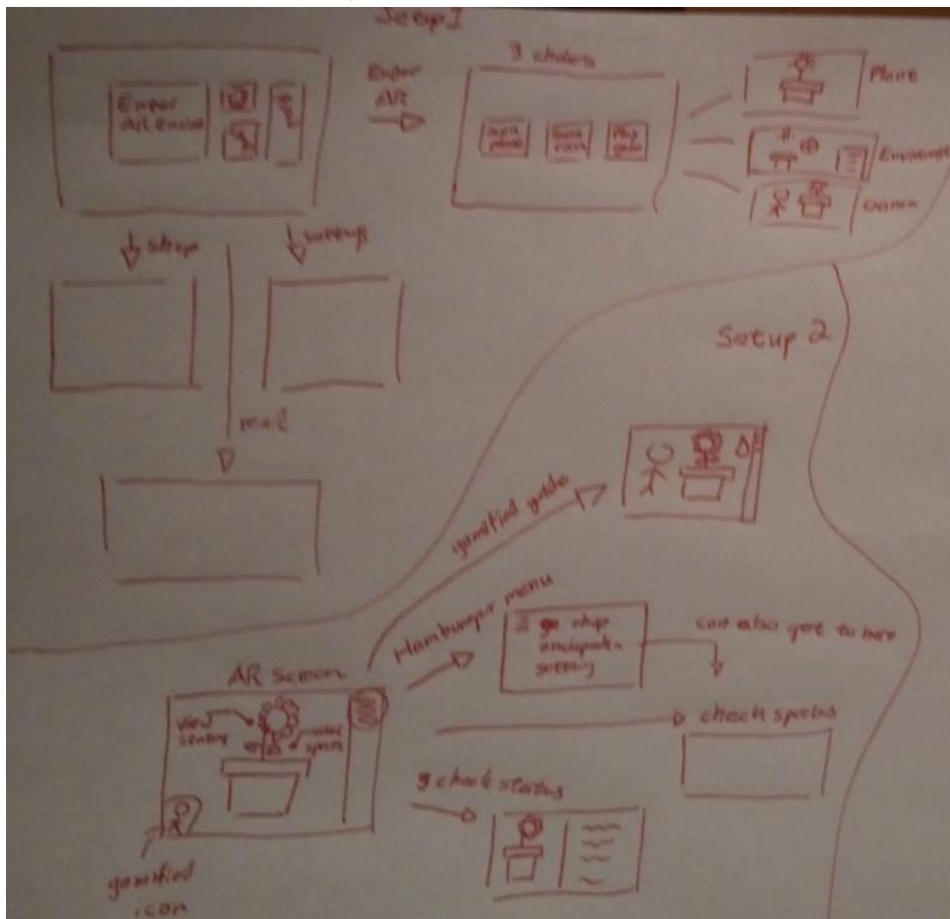
Title screen

Main menu

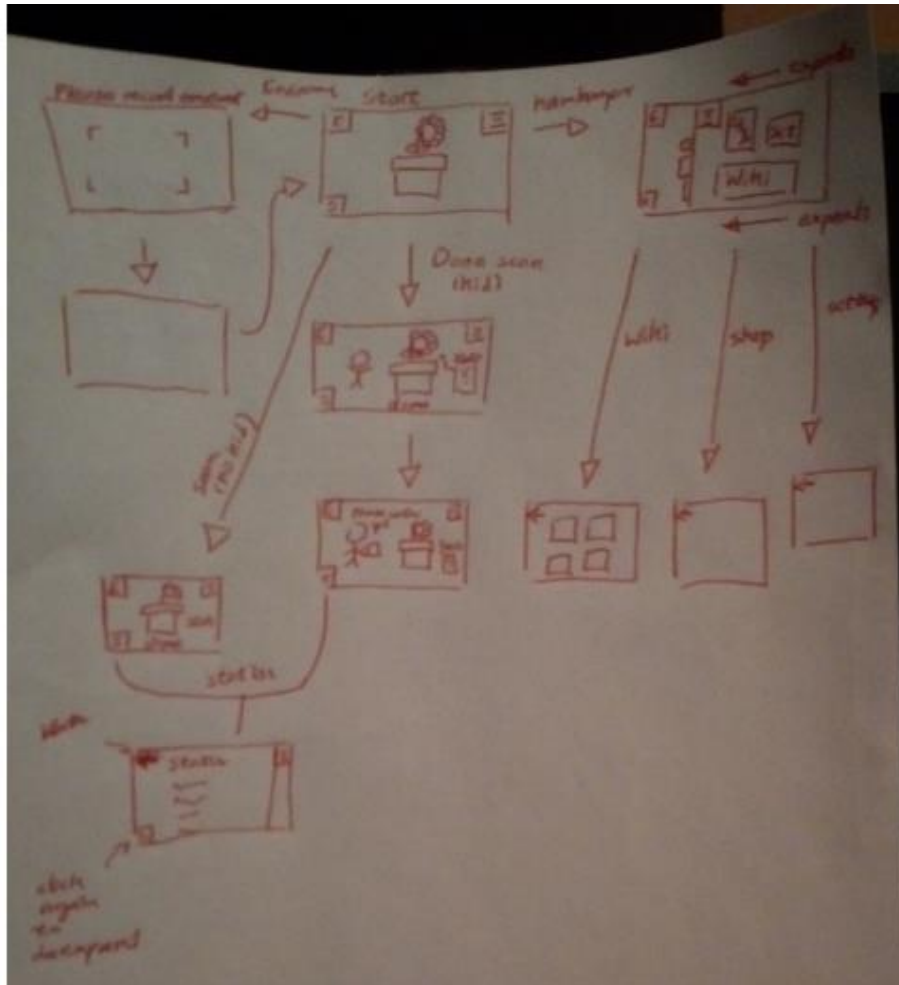
- ENTER AR Environment
  - Scan plant
    - Goes to an AR screen
  - Scan environment
    - Goes to an AR screen
  - See plant (gamified or not, depends on filter)
    - Goes to an AR screen
- View Products
- View encyclopedia
- Settings

#### SETUP 2

- AR screen
  - View plant status and species
    - Select plant status
      - View details
      - Complete watering/fertilizing actions
    - Select species
      - Go to encyclopedia
    - Select hamburger menu
      - Go to shop
      - Go to encyclopedia
      - Go to settings
  - View gamified guide character
    - Learn about plants (guided)

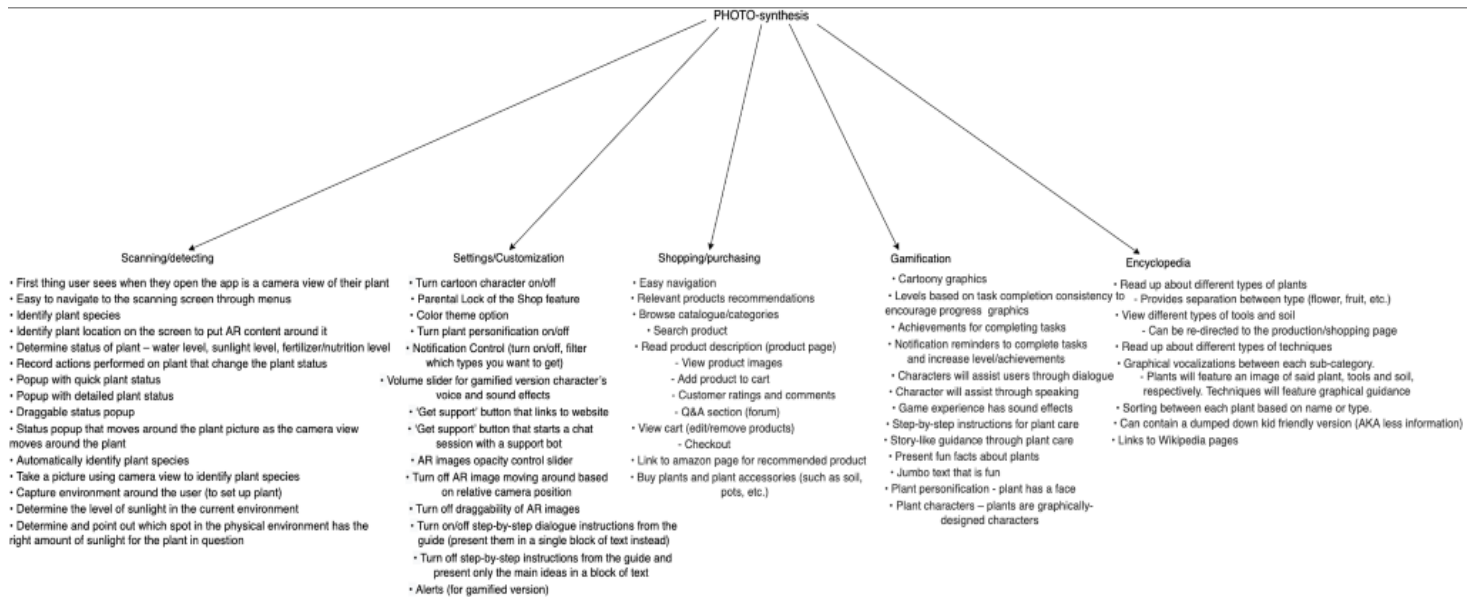


**Prototype reference:**



NOTE: The above design was the one we primarily used to build our low-fid, it incorporates the environment scanner made by Perjot, a hybrid of Ejaaz's settings menu, Max's first design for a Wiki-page, along with Ali and Ana's V2 on their shop and AR screen respectively.

# Affinity Diagram (Focused on functionality)



## Cognitive walkthrough

### Vertical Tasks:

**Task 1:** Game-like plant caring process, along with guidance through successfully raising a plant with good instructions and reminders.

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	
Find a plant to scan	Basic knowledge of user's device camera	Yes	Yes, they want instructions to take care of their plants	User's device is actively scanning in real time, just need user to confirm by tapping on the recognized plant
Select and click on the cartoon bear figure	None	Yes	Yes, they want simple instructions	Instructions are given as simple as possible and needs user to confirm a step of the instruction is completed by tapping on the cartoon figure.

**Task 2:** Scan the plant to find out its species.

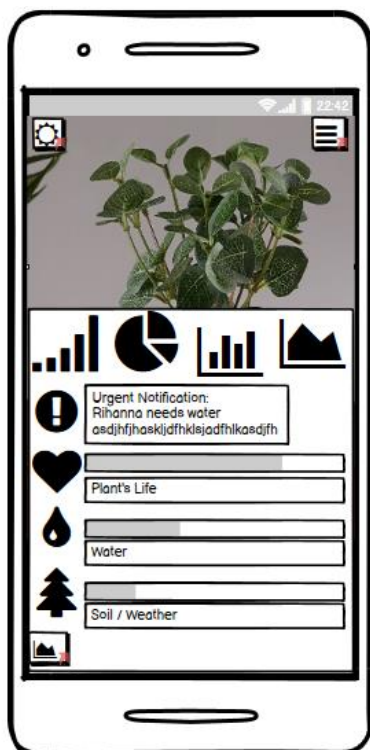
Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	User is motivated to learn more a certain plant
Locate plant and scan it	Basic knowledge of user's device camera	Yes	Yes	The user scans the plant they wish to learn more about
Click the plant's name that appears below the plant	None	Yes	Yes	The user is directed to an encyclopedia page about the said plant
Read the encyclopedia page on the scanned plant	None	Yes	Yes	

### Task 3: Read information on plants other than the ones that they scan.

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	
Click on the hamburger menu	None	Yes	Yes	User would like to search and look up information about a certain plant
Click on the encyclopedia (Wiki) icon	None	Yes	Yes	
Click on the plants section	None	Yes	Yes	Users can look up information regarding tools, soil and different techniques, however in this case information about plants is needed
Search the specific plant by their name	None	Yes	Yes	Users can read and learn more about plants that are in the database and those that the user has not scanned.

### Task 4: Check additional statistics based on the plants current condition.

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	
Locate a plant and scan it	None	Yes, to see statistics scanning needs to be done for updated info.	Yes	
After scanning has been done click the bottom left graph button	None	Yes, the basic statistics are in that section	Yes	Basic information is shown, more visual depictions, can be extended by the next step
Click the bottom right button for a more extensive look at the statistics	Some knowledge to read data	Yes, if needed for better understanding of current status of certain plant	Yes	





### Task 5: Perform an environmental scan in a designated room.

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	
Click on the top left sun-icon to scan your surroundings.	None	Yes	Yes	Instructions are given on how to 360- scan your surroundings for better results.
360-Scan around you to find optimal position to place your plants.	Some skill needed to properly scan an environment	<b>Yes, user would want to find the optimal position for their plant</b>	Yes	Information and instructions are given after scanning is completed.



### Task 6: View, shop or buy products through a common shop-system.

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	Users would like to buy a plant and our application makes it easier for them
Locate a plant and scan it	Basic knowledge of user's device camera	Yes	Yes	Once scanned the user learns about the plant's name and species type, they can then buy the exact plant off the shopping section
Click on the hamburger menu and select and click the shopping icon	None	Yes	Yes	
Search for the exact plant on the search bar	None	Yes	Yes	Users can look for a specific plant and compare prices, they can add many plants to their carts and buy them.

## Task 7: Settings menu with custom features.

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Open the App	None	Yes	Yes	
Click on the top right hamburger menu-icon.	None	Yes	Yes	
Select the gear-icon for settings.	None	<b>Yes, users would want to change certain settings to their liking.</b>	Yes	
Changes the settings to your liking, or get more help/customer service	None	Yes	Yes	Setting changes take effect throughout the whole application, customer service is given to user that need help with certain concerns.

## General:

Description of task step	Does user have training or knowledge to do this step?	Is it believable that they would do it?	are they motivated?	Comments (including possible solutions)
Scanning the plant and reading about it. (V)	The scanning process is trivial, for all you need to do is point the camera at the plant, to learn move, simply click on the plant name.	Yes, seeing an AR application the first thing they will try to do regardless is point it at a plant.	The scanning is automatic; however, their natural curiosity would propel them into clicking on the plant name.	Maybe provide an eye-catching for the name icon.
Using gamified features, to water a plant. (V)	Simply by clicking on the cartoon figure will start the plant-caring process. Following by easy baby-step style instructions.	The cartoon figure would be an eye catcher, which would generate curiosity from the user.	The "cuteness" of the cartoon character will compel them to keep clicking on it, through each step.	N/A
Using the encyclopedia, shop, or settings. (V)	By clicking on the commonly recognized hamburger menu and see 3 icons.	This design is more straight forward and well-labeled, hence	Curiosity along with trail/error exploration might compel them to check it out.	We could change the labels on each hamburger icon menu to make them more obvious.
Scanning the environment. (H)	Once they are in the scanning environment. The system will simply tell them to "please point the camera at room."	Straight forward scanner, similar to the plant scanning but for an environment.	The icon is currently a sun-graphic hence they would be curious enough to click on it and see what it does.	Maybe we can have a clear way of providing information on where the are the best locations e.g. descriptive stats.
Viewing statistics. (H)	The bottom left of the AR screen shows a stats bar, but sampling click on it will open the statistics.	After the current moment, it would be just out of curiosity. But mainly because this is would be considered a "new" popup because it only exists after a plant has been scanned.	Currently this function is an optional choice, and hence they might not even bother with it.	Maybe a "new"-sign new to the statis bar, might compel people to check it out.