

Gavin McRoy

Dr. Sabarish V. Babu

HCI – CPSC 4140/6140

July 23, 2021

IOS Platform Requirements

Usability Study

Use the following rating scale to judge and rate certain features on their importance. After rating a specific feature, explain your choice. The scale works with “1” representing very little importance and “5” being extremely important. Rate each of the following questions on a scale 1-5.

1. How important is the leader board feature in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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2. How important is the options menu in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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3. How important is the mini map in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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4. How important is the fish and other aquatic creatures present in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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5. How important are the different camera angles present in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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6. How important is the control mapping on the bottom left

Not Important	1	2	3	4	5	Extremely Important
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7. How important is the information tab present in the top right in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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8. How important is the dynamic water skybox (The moving water when you look up)

Not Important	1	2	3	4	5	Extremely Important
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9. How important is the ability to change control mapping in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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10. How important is the tutorial in the ROV simulation

Not Important	1	2	3	4	5	Extremely Important
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Summary Report

“No.” Represents which participant we are asking the question too and their response. Each table is broken up into which question was asked

1. How important is the leader board feature in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1.	2	“Leader boards are good for highly competitive games but having one for a mobile version of this game doesn't make sense”	Leaderboards have better use in multiplayer games
2.	1	“Leaderboards aren't essential for a mobile game. It seems pointless to implement”	User doesn't like leaderboards in mobile environment
3.	2.	“I could see leaderboards being somewhat useful to encourage competitiveness and increase playtime it just doesn't make sense for such a casual game”	User does not find leaderboards appropriate for game genre
4.	1.	“Leaderboards aren't essential for games that are casual. Beating your own high	User does not find leaderboards

		score is where the fun is”	fitting for game genre
5.	1	“Leaderboards are not important for a mobile game that doesn't have much multiplayer. Seems weird to have one”	User does not like leaderboard on mobile platform
6.	1	“I'd save development time and just ignore this feature. Not a game for leaderboards”	Similarly user does not find leaderboard fitting for game genre

2. How important is the options menu in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	3	“An options menu cannot hurt. Even if there is just a few dials it's nice to have game control”	User prefers to have access to game controls
2	4	“Options menu is a standard requirement for games”	User finds options useful and productive
3	4	“An options menu would add another layer of control to the user”	User prefers having access to game controls
4	2	“Options menu doesn't make sense on a mobile implementation. It's not like you can remap controls on a phone and audio is just adjustable on the phone itself”	User does not prefer options on mobile games
5	4	“I'd like to see an options menu. Most well polished games have one”	User prefers an option menu for better user experience
6	5	“This is an absolute must. There is almost no game around anymore that does not contain an options menu”	User needs option menu

3. How important is the mini map in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
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1	5	“This feature is crucial. It's extremely difficult to navigate without the mini map”	User finds minimap essential for gameplay
2	4	“I couldn't imagine the game without a mini map. It's so useful when completing the level	User finds minimap essential for completing level
3	5	“The minimap is nice because I understand where I am all the time. Plus I can tell if I am going the right or wrong direction based on the little arrows	User likes to know their current location in the game world
4	5	“The minimap is wonderful. I depended on it my entire playthrough to find COTS	User depends on mini map to complete levels
5	5	“The game is built around the mini map. The little orange circle tells you where COTS are.”	User finds minimap essential for gameplay
6	5	“Absolute Necessity. The game is centered around the minimap.	User finds mini map to be essential

4. How important is the fish and other aquatic creatures present in the ROV simulation

No .	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	3	“The fish are more of a polishing effect. It helps with immersion but they're not critical to gameplay”	User prefers good gameplay over immersion
2	4	“The fish are nice. It helps with game immersion”	User prefers immersion over gameplay
3	3	“The fish are just there for immersion. I don't believe they should be removed nor should they be prioritized.”	User prefers gameplay and features over user experience
4	5	“Having an underwater game with no fish is like a racing game with no other cars. It	User prefers immersion over

		just makes no sense. The fish help with the games immersion and I like them”	anything else
5	3	“An aquatic game has to have some aquatic features to help with immersion. But it doesn't have to be fish. It can be anything”.	User finds immersion to a extent appropriate
6	3	“I really didn't pay the fish much attention while playing but they are a nice addition to the game. It helps with user experience and immersion.	User prefers features over immersion

5. How important are the different camera angles present in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	4	“I find the different camera angles useful. Front is good for cruising, injector is critical for cots and ROV is nice when attempting to avoid obstacles”	User finds camera angles helpful but not essential
2	3	“I really only used two cameras while playing. The ROV camera wasn't all that useful. The cameras are helpful but the game is fine with just two	User finds camera angles helpful but not essential
3	4	“Only the front and injector were useful. Camera angles are important for this game”.	User finds cameras to be essential for gameplay
4	4	“Really the only super crucial camera angle is the injector but you can't look around when selected on that cam. I think the mobile game should lock on the injector but you can look around”	User finds certain cameras essential for gameplay
5	4	“Camera angles are useful. All 3 should be brought over into the mobile game”	User finds all cameras essential for game play
6	4	“I used all 3 cameras very often in my gameplay. It's just like a car game. All those different angles are going to get used depending on the player	User finds all cameras essential for gameplay

6. How important is the control mapping on the bottom left

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	1	“I found it not very useful. It's useful for a tutorial. But the controls are too simple to keep it present the entire time”	User found mapping menu to be cluttering
2	4	“It's helpful to know what options are available. I found the control mapping made the game easier to play	User found mapping menu to assist with learning and retaining the game controls
3	2	“I won't lie, the control mapping is useful but it's not really practical. Once you learn the game there's no point to have it	User finds mapping menu unhelpful after tutorial
4	1	“I haven't played many games that leave the control mapping open. Normally you learn yourself through the options menu	User does not like menu mapping system
5	4	“Controls are a necessity. It makes the game inviting to new players	User prefers having menu mapping system present
6	3	“I don't mind the mapping at the bottom but I can also do without it relatively easily. I prefer a clean interface than a bunch of information	User prefers a clean interface over an informative one

7. How important is the information tab present in the top right in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	1	“I wasn't sure what purpose it served. I prefer simple menus with only necessary information	Prefers clean interface over an informative one
2	1	“The information it provides really doesn't	Prefers a clean

		have anything to do with the game. I think it wouldn't affect the mobile version at all.	interface over an informative one
3	1	"It seems to add more clutter than anything. None of the info makes the game easier"	User prefers clean interface over an informative one
4	1	"I didn't see any importance. I don't think I looked up to the right once"	User does not like abundant information present
5	1	"I wasn't sure of the purpose. I never used any of the information in my gameplay"	User finds unproductive features to be a take away of user experience
6	2	"It's something I could do without. It does seem a little interesting to have more formalized information I just didn't understand the purpose of the info"	User doesn't mind the menu but wants an explanation for its purpose

8. How important is the dynamic water skybox (The moving water when you look up)

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	4	"It's one of those refining features you appreciate. Although it has nothing to do with the game objective. It amplifies the experience"	User prefers user experience and refinement over abundant features
2	4	"I always appreciate immersive details and believe in the idea that no game should minimize immersion. I found the dynamic water to be a great feature"	User prefers experience over features
3	2	"I didn't notice the water until I was asked this question. Although it may amplify immersion I think it can be easily traded out with something else and not change the game one bit."	User prefers features over immersion
4	5	"Never shortcut immersion. Therefore I	User prefers

		find the skybox very crucial	immersion over everything else
5	4	"I thought it was a good feature. Immersion is key to a good game experience"	User prefers a balance of immersion and game features
6	4	"I found the dynamic water to be a great feature. Everyone loves when developers put all the fine details together"	User prefers immersion over game features

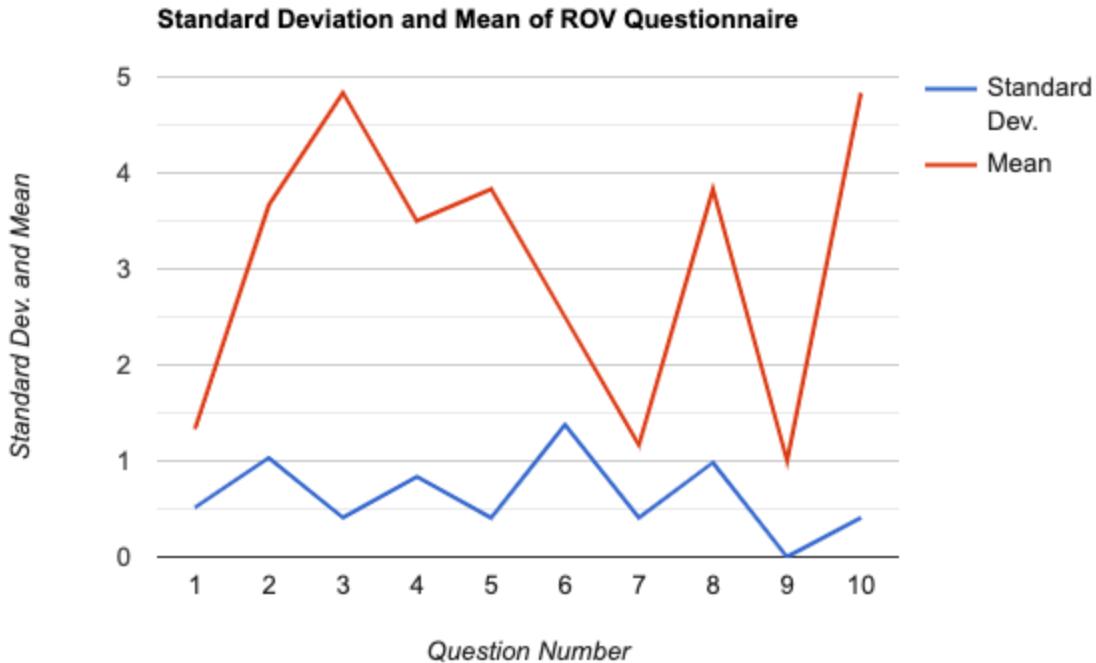
9. How important is the ability to change control mapping in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	1	"Not exactly important. There aren't enough controls to make it useful. To me it adds an unneeded layer of complexity."	User does not find control mapping appropriate for simple games
2	1	"Some games work better by having no control mapping. Such as Geometry Dash. This game is identical. Control mapping will hurt more than it benefits."	User prefers no control mapping on mobile games
3	1	"I saw no importance to this feature. I prefer simplicity over complexity."	User finds control mapping to add an unneeded layer of complexity
4	1	"The controls are already well defined and mapped according to user expectation. Plus there isn't that many controls so remapping them wouldn't be that useful".	User finds control mapping to add an unneeded layer of complexity
5	1	"To me this feature is more confusing than helpful. So I see no importance for it"	User finds control mapping to be more confusing than helpful
6	1	"The game doesn't have enough complexity to benefit from custom control mapping. To me this feature should be disregarded."	User finds control mapping on simple games to be redundant

10. How important is the tutorial in the ROV simulation

No.	Quantitative Response From Each participant	Qualitative Response from each participant	Interpreted Need
1	5	“Tutorials are extremely important. Every game I have ever liked had a wonderful tutorial. Plus it's how I understood ROV simulation”	User finds tutorials extremely informative and helpful when learning new games
2	5	“Tutorials are how users become accustomed and comfortable with the game. To me a good tutorial is crucial to a good game experience.”	User finds tutorial essential for a good user experience
3	5	“Crucial. Tutorials taught me to the game”	User finds tutorials mandatory to properly learn a game
4	5	“The game tutorial was excellent. Without the tutorial I think any new player would be confused out of there mind”	User finds tutorial essential for understanding the game
5	4	“The game was simple enough to learn but the tutorial was also not a waste. I found it useful and a feature worth keeping”.	User finds the game simple to learn but still complex enough for a tutorial
6	5	“Without a question the most important feature of a game. Especially with a game that is as different as ROV simulation. A tutorial is crucial to a happy user experience.”	User finds tutorial to be the most informative way to learn a game

Graph and Data Summary



Based on the data gathered in the questionnaire above, some features are considered vital by most participants, and some are deemed unneeded. The data shows that the two most important features for the mobile version are the MiniMap and the Tutorial system. Both of these as well have a low standard deviation, meaning most participants voted very similarly. Most participants voted for the minimap because the map works as a feed-forward system. There is an orange circle that directs the player to where the COT's are present. Since the entire objective of the game is to remove as many COT as possible, it makes sense that the players enjoy the minimap system.

The tutorial system is liked for another similar reason. The tutorial promotes discoverability by showing what actions are available in the given system. Such a tutorial reduces the chance of a negative user experience. Also, the tutorial provides the player with a chance to experiment and understand the control mapping before playing on an actual level. As a result, the tutorial enhances the user experience reducing the chances of confusion and frustration.

Some features, however, were determined to be unimportant to the mobile version. There are three main features noted in the data. Mainly feature 1, 7, and 9. Each of these has a generally low standard deviation showing most people voted the feature was of little importance.

Feature 1 is the leaderboard system. Many people stated that although leaderboards are an excellent feature for many games, it doesn't make much sense given the game's objective. It's

something that would more than likely rarely be used and not taken very seriously, defeating the purpose of a leader board system. The likely reason for this is there isn't much incentive. The game is not complex enough to be highly skill-based, and the player count is not large enough to receive admiration for being #1. Therefore a leaderboard system would be a feature unlikely to be transferred to the mobile version.

Feature 7 is the information tab in the top right of the screen. Many people said the same thing; that the tab does not present any useful information. On the limited size of a mobile screen, it doesn't make sense to use some of this space for information unimportant to the game. Most people agree it reduces user experience by adding an unneeded level of confusion. Therefore, this feature is likely to be scrapped in the mobile version.

Next up is feature 9, the ability to change control mapping. There was a general agreement that such a feature is vital to most games. However, to simplistic games that do not have many controls, it's more of an extra layer of unneeded complexity. It especially doesn't make sense to have control mapping on a mobile device because there is already a noticeable limitation in possible control mapping due to mobile devices lacking many buttons.

Most other features fall into the average category. Typically people rated these features within the 3-4 range, saying it's better to have than not to have, but it isn't a complete game-breaking loss if it were not to be present.

Prototyping the IOS version of the application

After adjusting and removing the leaderboard feature, the new main menu will look similar to figure 1. Note the small circle to the right. That denotes the player's finger on the menu. Since it is now a touch screen menu, the game will respond with a small circle to show the player's finger when they tap the menu. Worth noting as well, if any of the buttons are pressed, the feedback system will highlight the button itself, notifying the player the button has been pressed.

The original background of the game will be the same as well as the main menu music. The menu will just be adjusted to look similar to the one below in figure 1.

If the player pressed and held the button, the game would not enter a level; it's a feature to prevent misclicks present in many IOS games.



Figure 1: The new Menu

Since the leaderboard system is removed, the menu that appears before loading will no longer be present. This menu can be seen in figure 2 Instead we will adjust this menu to look similar to the following in figure 3

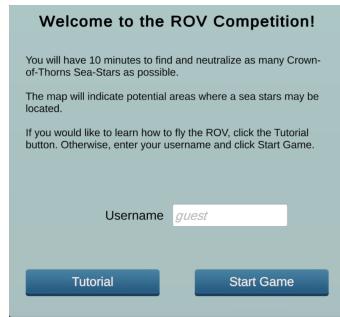


Figure 2: Old Menu

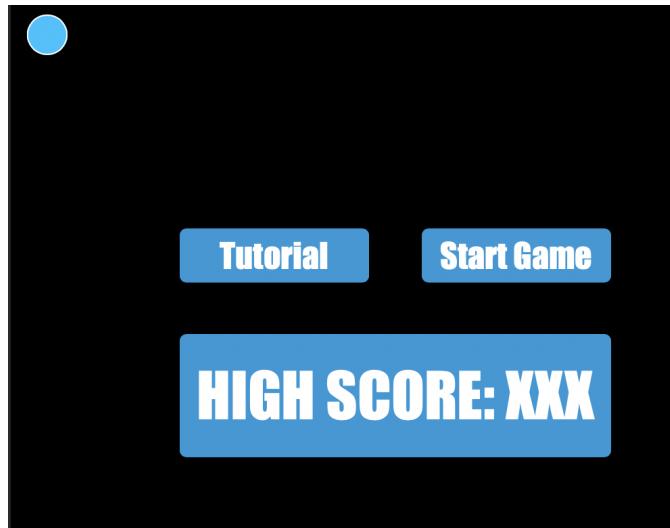


Figure 3 : New Menu is off center cause of screenshot

The new menu removes the giant menu in favor of a far more simplistic window. This window should be a small pop-up that will not cover the entire screen. Therefore it will still be possible to see some of the background worlds just how the old window behaved. Note the two new features: a high score system and a small blue dot on the top right. The high score system is relatively easy. If you get a higher score than what was previous, then that's your new high score. The top blue dot on the right opens up a secondary menu. The menu design is simple. It will have three options. Continue, Main menu, or Quit. Each button shares the same feedback feature as the previous. It will have a gentle gray tint thrown on the button to acknowledge a press. Same with the circle on the top right.



Figure 4: New Exit Menu

This menu layout had a few specific design choices. Initially I was going to put another circle to close the menu, but when I tested the gesture, I found it to be awkward and unnatural.

Plus, most games do not have a swipe to continue feature. So I opted for the continue button in the center to prevent chances of the player clicking top left and accidentally continuing again.

Here is how the new main game menu will look. There are a lot of changes so let's go through them one by one. Note the blue circle on the top left. That will prompt you to the new exit menu seen in figure 4. Look at the new scoring system on the left. We removed the entire menu and replaced it with essential information only. Look at the new movement system on the bottom left. That little circle can move around its boundary. If you move the circle up, the ROV will move up. Go down; it will move down. Move left; it will go left, right it will go right. The white circle in the center of the screen is the player's finger. By tapping the screen and dragging, you decide which direction you want to point. Swipe right to go right, and so forth. Each gesture matches its expected behavior.

The full-screen button is there for screenshotting purposes. If someone happens to like a particular angle of view within the game, clicking full screen will close all widgets except the full-screen button itself. It will change colors to gray to denote it is now active. Clicking it again will bring back all the widgets and change the button back to white. Most reviewers gave a neutral stance on cameras, so to keep the menu simple, we added only one camera angle. Since the angle makes it difficult to gauge the actual ROV size, we reduced the hitbox of the ROV to reduce the frustration of accidentally banging into coral.



Figure 5: New Game Screen

Overall the following changes compromise the mobile prototype of the ROV simulation. The design was aimed at simplicity and utilization of the screen. Since mobile games have small screens, a clean GUI is a must. Overall the prototype seems to accomplish the set goals, but this can only be found from continued testing.