

CS549 ASSIGNMENT 4

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The application is called SpaceStalker VR. It is a game which you play with VR glasses. It takes place in space where you control a spaceship to complete different missions.

In the main menu, there are 3 main options. From there you can select a mission to play, check upgrades or architect. Missions contain several types of challenges to pass such as moving your spaceship, shooting the enemies and solving puzzles. There is a crosshair placed in the center of the screen. User moves his head to put that crosshair on desired location. You control the direction of the ship. By doing that, your task is to protect your ship by avoiding mines and rocks. Furthermore, when there are enemies who try to take you down, you can aim at them. Moving your head you can place your crosshair in a place to perform a specific action. You can control your direction, aim at enemies to shoot or hold that crosshair on an object for a while to select it. A person would spend 7 to 10 minutes to complete a mission.

The two-pass process involves a structured approach to identifying usability issues in an application. The first pass is identifying surface level issues. It focuses on familiarizing yourself with the application and identifying broad usability challenges.

During this stage, the main menu, game mechanics, and controls were explored using VR glasses. Core features such as head movement to control the crosshair, aiming, and object selection were tested. Foundational usability principles were applied, including visibility of system status, match between the system and the real world, and consistency and standards (Nielsen Norman Group, 2020a; Nielsen Norman Group, 2020b). Observations revealed issues like a lack of feedback when aiming or selecting options, overly sensitive head movement controls, and confusing navigation in the main menu.

In the second pass, a deeper exploration of usability issues was conducted to propose solutions and prioritize their severity. This involved detailed testing of gameplay mechanics, such as aiming, obstacle avoidance, and object selection. The evaluation applied heuristics like error prevention, recognition rather than recall, and help and documentation (Nielsen Norman Group, 1994; Nielsen Norman Group, 2020a). For instance, it was noted that the absence of a confirmation message after selecting a mission could lead to accidental actions. A solution was proposed to add a pop-up asking, "Are you sure you want to start this mission?" The severity of

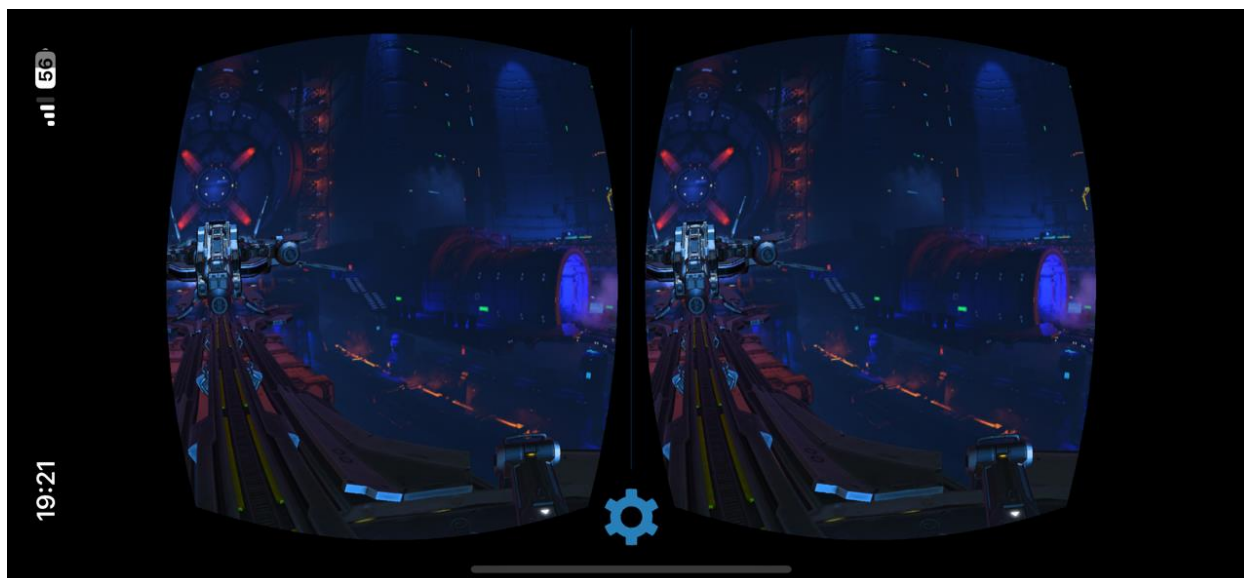
this issue was rated as medium. Systematic documentation of findings was performed, using a structured table to link problems to specific heuristics, propose solutions, and justify severity ratings. Screenshots were included to illustrate the identified issues, enhancing the clarity of the report.

To sum up, the first pass provided an overview of general usability challenges, while the second pass refined these observations with actionable insights and prioritization. I played the trial version of the game and prepared a report below.

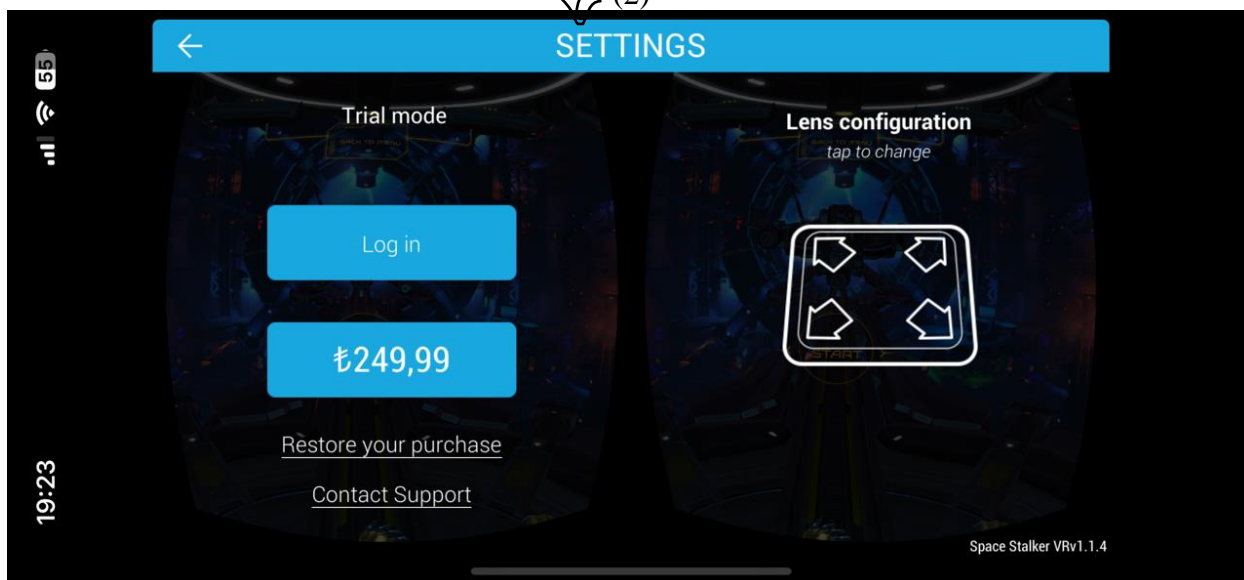
Heuristics Evaluation

Heuristics	Explanation of the Problems Add related visuals of problems from screenshots	Propose Solution(s)	Seriousness of each problem. (Low, Middle, High) Why?
Visibility of system status	When the game is opened first, you just sit on a chair and wait. And there is no indicator where the main menu is placed. That is why users may wait because they think that the game is still loading. But they just would be looking in a different direction. (1)	Put arrows which show where the main menu is placed.	Low
Match between system and the real world	Crosshair movement feels overly sensitive, making control difficult.	Adjust sensitivity settings and allow users to customize sensitivity in the settings menu.	High
User control and freedom	There is no pause or exit option during gameplay. (2)	When the option button is clicked, pause the game and provide an exit option.	High
Consistency and standards	Some icons lack textual labels,	Choose clearer labels and indicators if a	Low

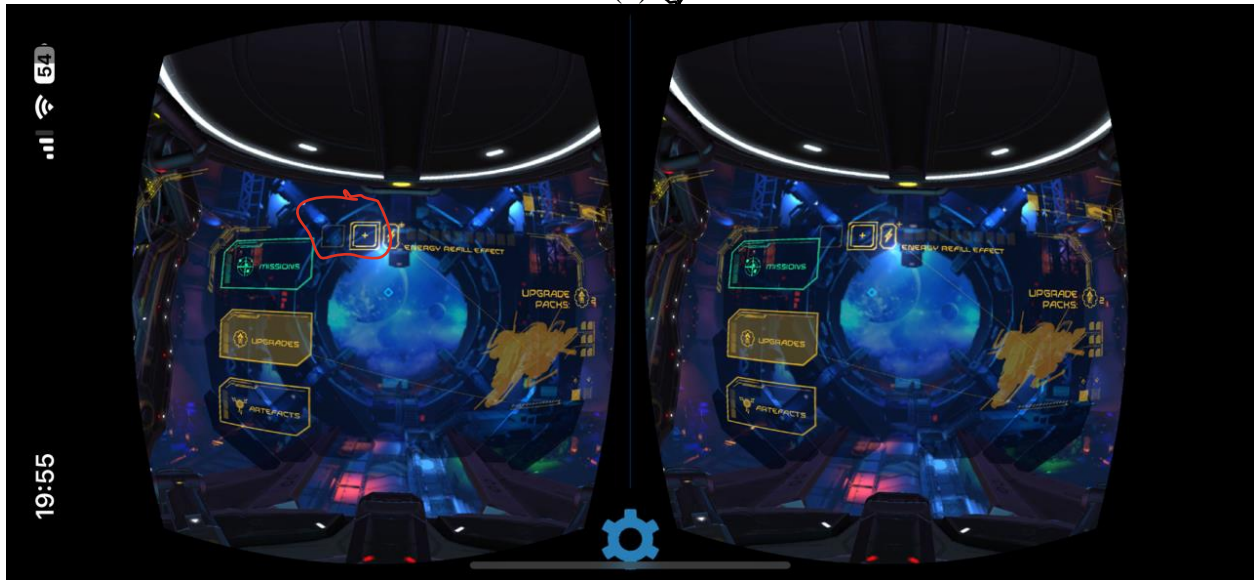
	causing confusion for users. For instance, upgrade buttons have to be clicked twice but they look the same with similar buttons. (3)	button can be clicked twice. Make them look different than normal buttons.	
Error prevention	Accidental doing an upgrade without confirmation. (4)	You have limited upgrading parts, and you may accidentally spend them. So, add a conformation check.	Low
Recognition rather than recall	You need a point to refill your energy. However, the game does not inform users how they earn those points. Users need to understand they get them by shooting enemies. (5)	Inform users at the start of the mission.	Low
Flexibility and efficiency of use	No shortcuts for selecting weapons, it takes unnecessary time. Slows down gameplay. (5)	Reduce the hover time for weapon selection.	Medium
Aesthetic and minimalist design	The remaining health information of enemies are placed in the center of the screen. It is extremely big and makes the screen overcrowded. (6)	Place it on the specific enemy and make it smaller.	Medium
Help users recognize, diagnose, and recover from errors	Game does not inform users why mission is failed. (7)	Give feedback at the end of failed mission.	Medium
Help and documentation	No clear instructions for setting up VR glasses properly for users who are new to VR technology.	Add an information button for unexperienced users.	Low



✓(2)



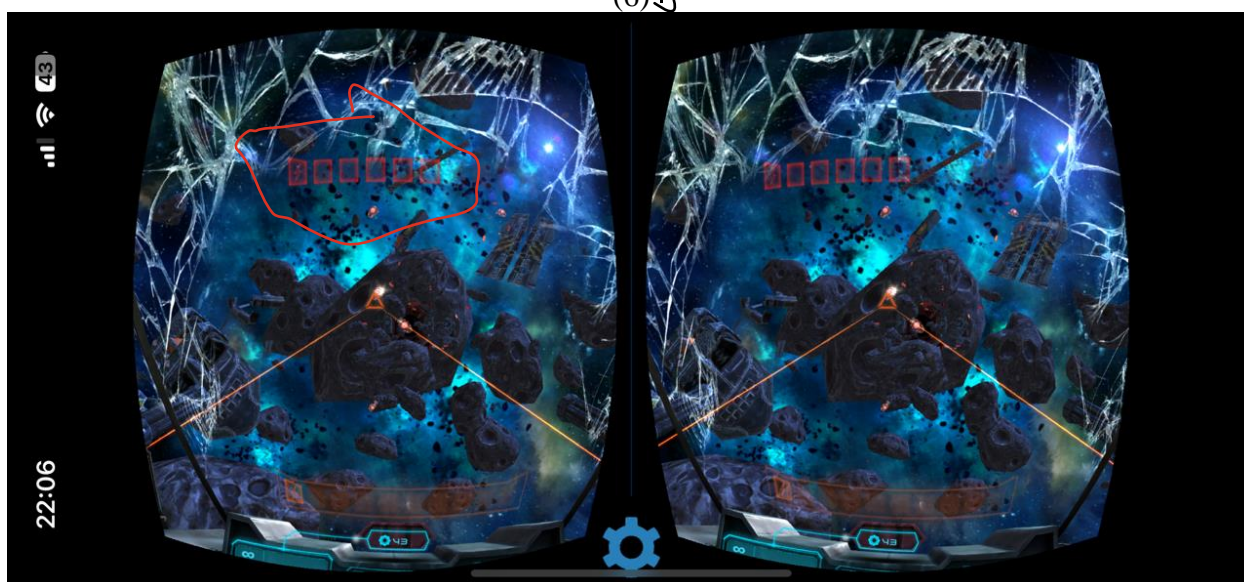
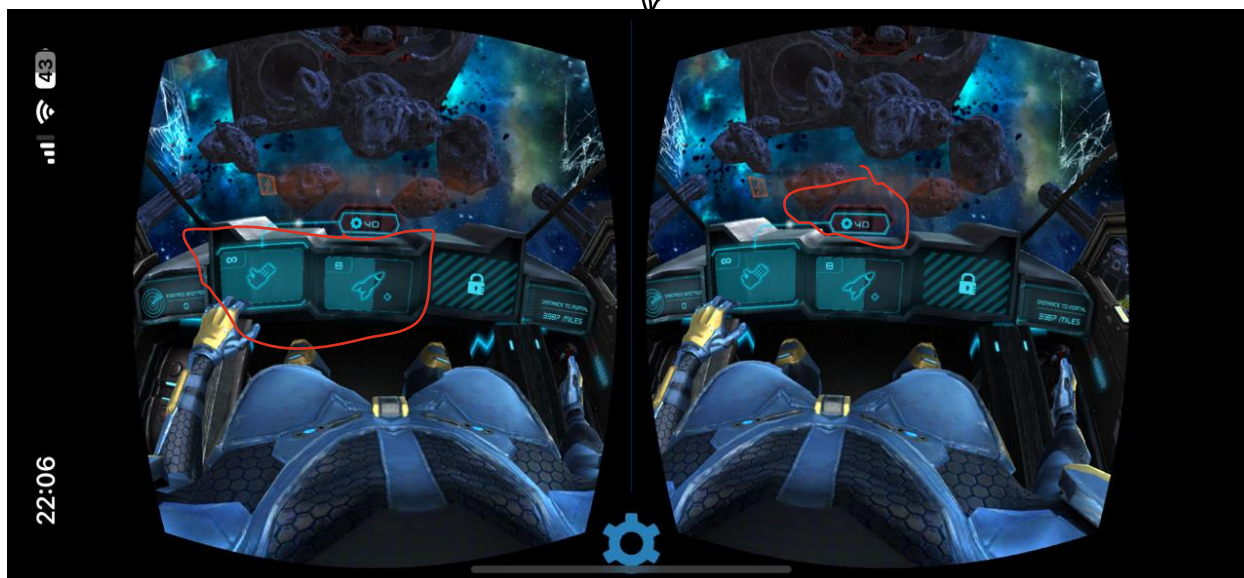
(3) 3/



(4) 3/



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References

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Nielsen Norman Group. (2020a). *10 usability heuristics applied to virtual reality*. Nielsen Norman Group. Retrieved from <https://www.nngroup.com/articles/usability-heuristics-virtual-reality/>

Nielsen Norman Group. (2020b). *10 usability heuristics applied to video games*. Nielsen Norman Group. Retrieved from <https://www.nngroup.com/articles/usability-heuristics-applied-video-games/>