



## **CST2120 Web Applications and Databases**

### **Coursework 1: Game Website**

#### **Project Proposal**

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## Introduction

### Website Design

The developer has decided to go for a minimalist web design by reducing extraneous components or content that doesn't help users to complete their goals, minimalist web design aims to make interfaces simpler.

Firstly, the user navigates to the homepage, where a navigation bar at the top will be available to navigate through below HTML pages:

1. Home - redirect the user to the home page, where a small demo video with playback options.
2. Leaderboard - redirect the user to the leaderboard page, where he/she can view the current leaderboard table.
3. Help - redirect the user to the help page, which will display how to play the game.
4. Setting - redirect the user to the setting page, where he/she can change his/her current password to a new one.

Additionally, below features are present on all html pages as well as the navigation bar:

1. Log in/ log out button - redirect the user to the log-in page, where a registration link is also available to create a new account. It will redirect the user to the registration page.
2. Dark Mode toggle button - change the UI/UX of the website to a dark theme.

If the user clicks the play game button, he/she is redirected to the game page. It consists of below components:

1. Game window - the user will play the game.
2. Game Volume Slider - the user can change the volume of the game.
3. Leaderboard table - displays a dynamic leaderboard table that changes as the user beats the current top scores.
4. Play/Pause button - the user can play/pause the game.
5. Reset button - the player can reset the game.

Moreover, all pages will consist of a footer that will redirect the user to the developer's social media like Instagram, GitHub, Gmail, and Facebook.

## The Game

### Game Design

The proposed game is a Space Invader/Shooter. It is an arcade game where the user controls a spaceship in space with a 2D view.

Your objective is to survive the alien invasion and complete the different skills level. If the player dies 3 times, it is GAME-OVER.

The levels are as follows:

- Beginner level - the player shall kill all the aliens without touching an alien, or else the player dies. Each time the aliens touch the game window walls, they step forward and move toward the player's spaceship.
- Normal level - same mechanism as the Beginner level. However, each time the aliens touch the game window walls, they step forward and move toward the player's spaceship at a relatively faster rate.
- Time Attack level - same mechanism as the Beginner and Normal level. However, the player must kill all the aliens within a set time limit.

The scoring system will be displayed in the GAME Page which each time the spaceship successfully kills an alien, it will increase the score by a predefined number of points. If the user completed the level, he would receive additional points before starting the next level.

### Leader board/Ranking System

Once the player is GAME-OVER, a check is made regarding high score of the logged username and if new score is higher than the username's top score, a comparison with the current leader board top high score made. If the new score is higher than the current high score, the leader board database and table is updated. Else, the new score is compared to the next current high score in descending order and a comparison is made if the new score is higher than the current high score.

Furthermore, the scores are sorted in descending order in the HTML Local Storage and the top 5 scores are displayed on the leader board tables and page. Any new username created will have a score of zero.

### How is the game played?

The player will use the arrow keys (UP, DOWN, LEFT, RIGHT) to move the spaceship and space bar to shoot bullets. The developer has taken into consideration the left-handed people. Below keyboard keys are to be used:

W - To move the spaceship up

A - To move the spaceship left

S - To move the spaceship down

D - To move the spaceship right

The spaceship will be allowed to move up only at a certain distance.

### Game Inspirations

Here are some screenshots of Space Invader/Shooter.



Figure 1 Space Shooter (Northfield, 2018.)

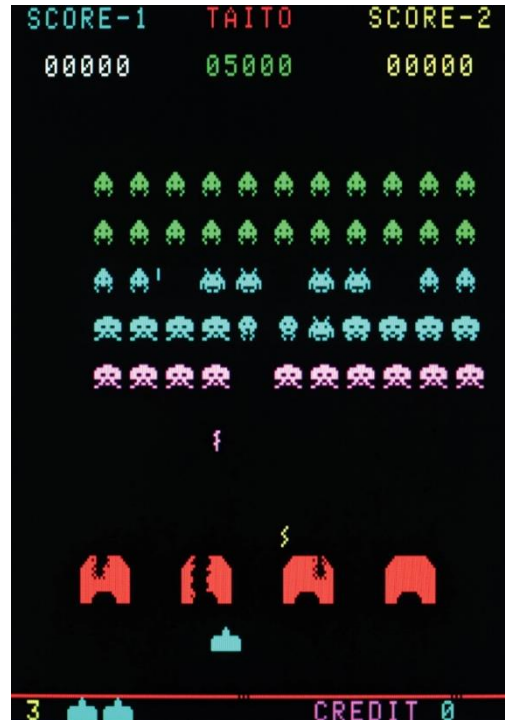


Figure 2 Space Invasion (Northfield, 2018.)

## Wireframe

The following screenshots will represent the wireframes of the website.

### Home Page

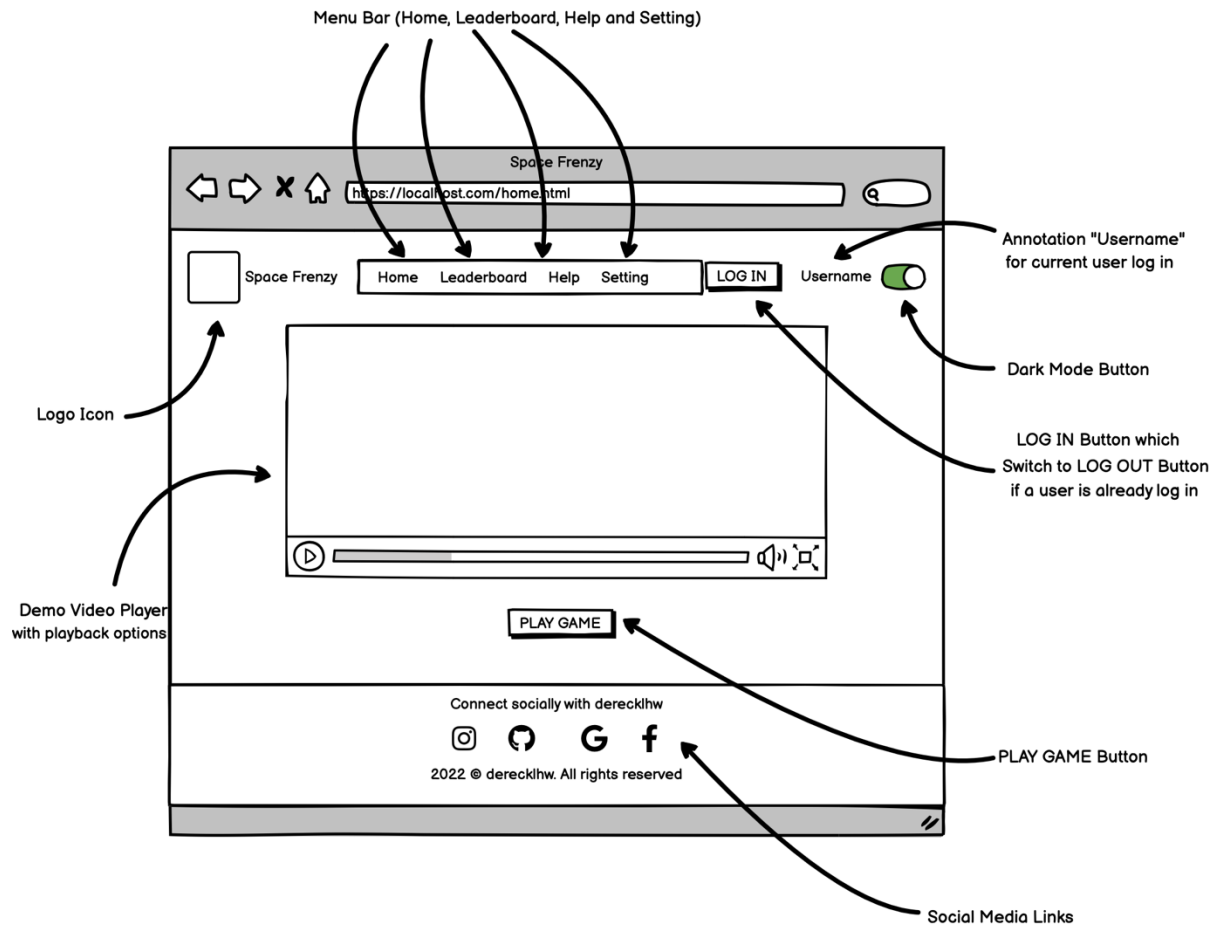


Figure 3 Home Page

Leaderboard Page

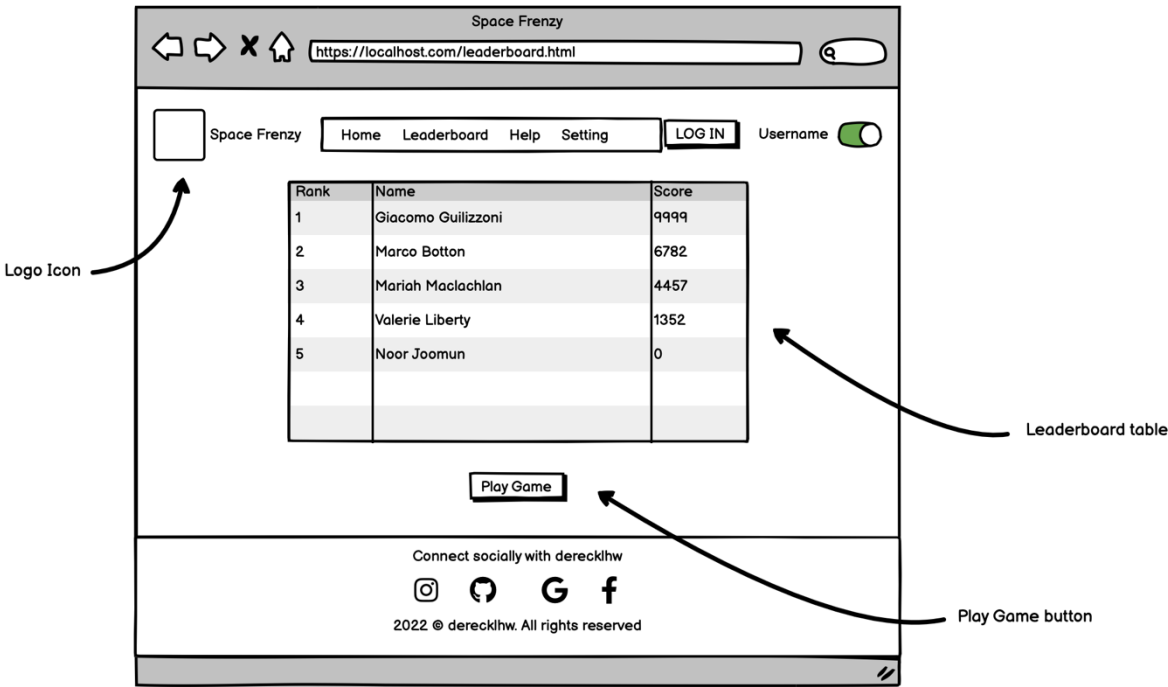


Figure 4 Leaderboard Page

Help Page

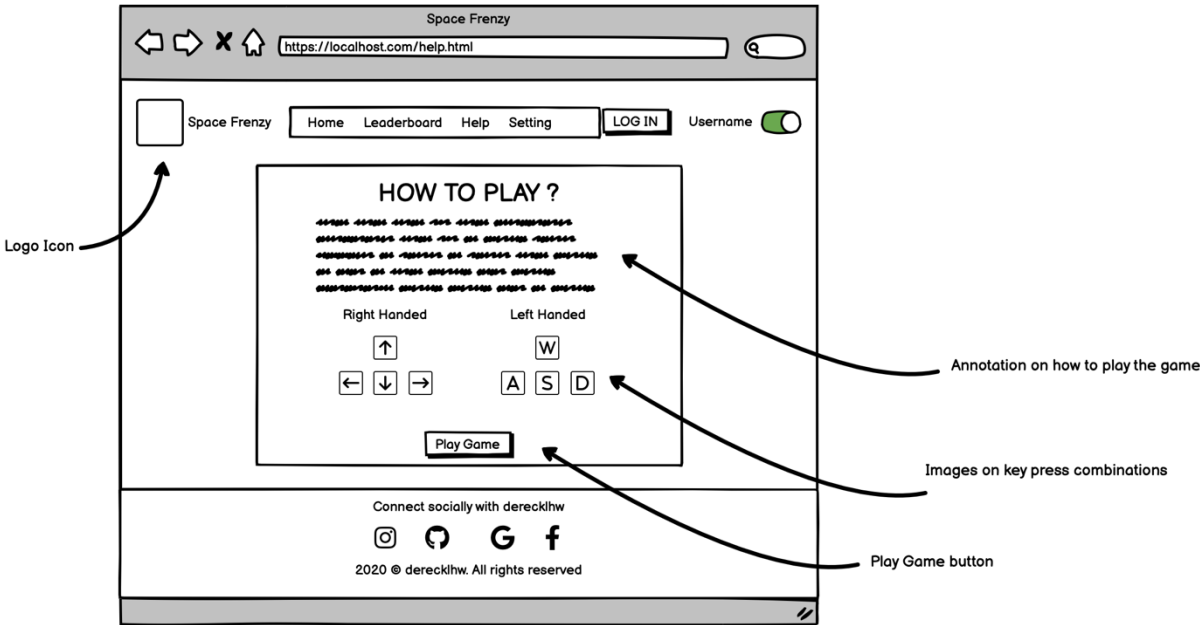


Figure 5 Help Page



Setting Page

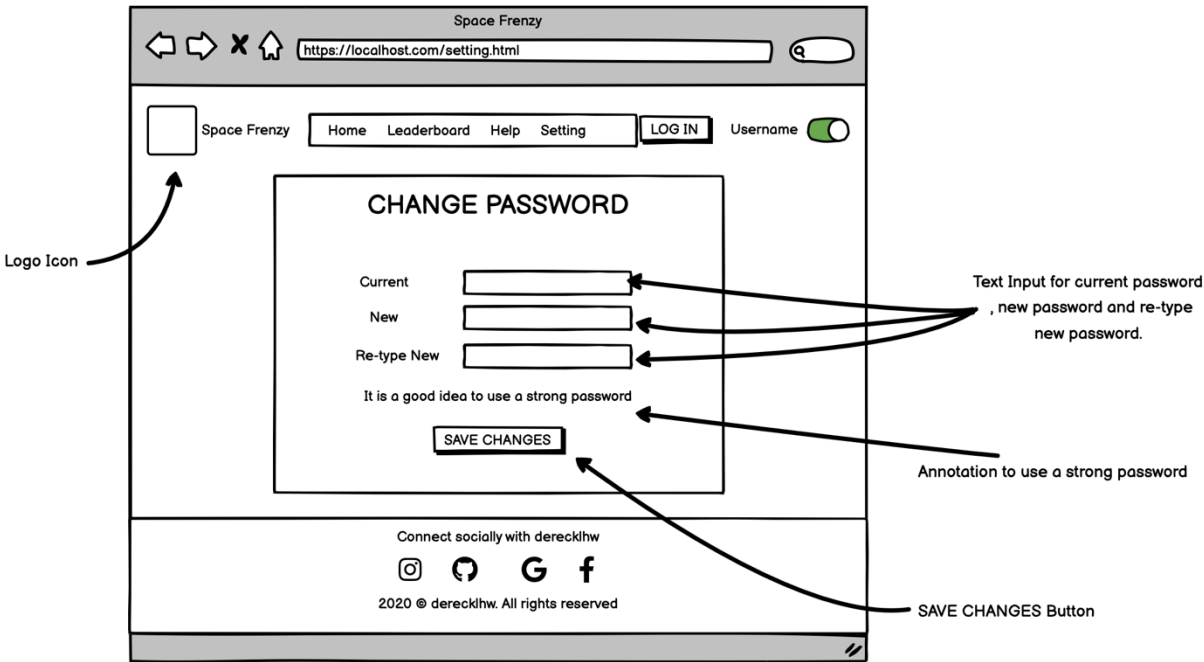


Figure 6 Setting Page

Log In Page

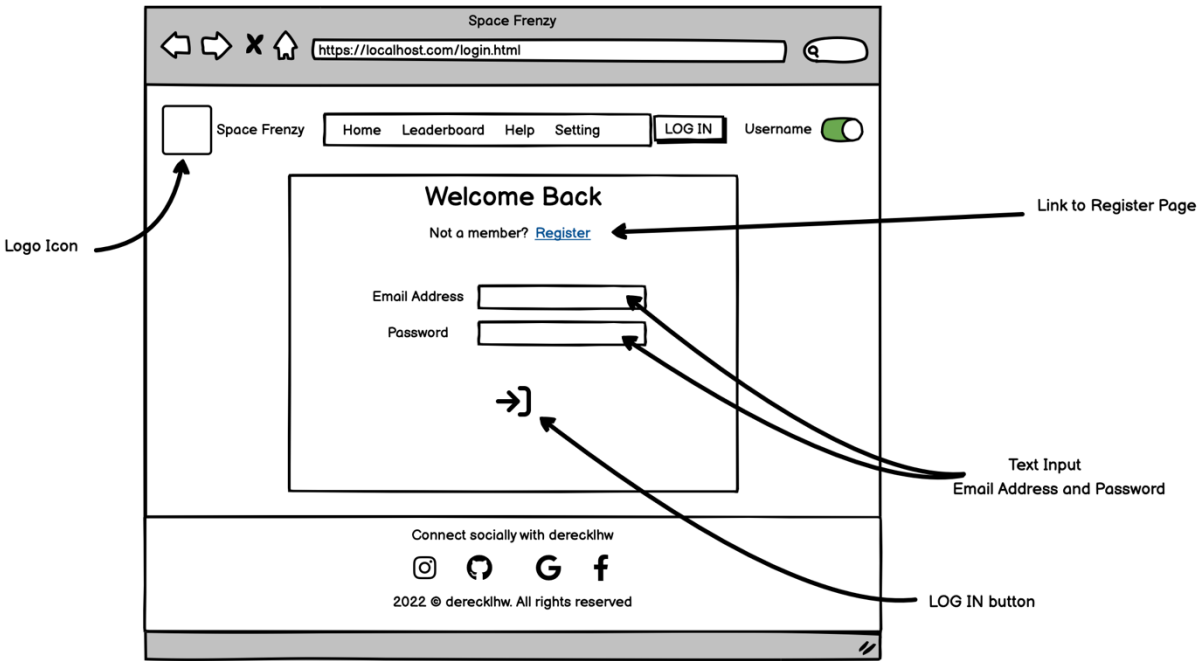


Figure 7 Log in Page

## Register Page

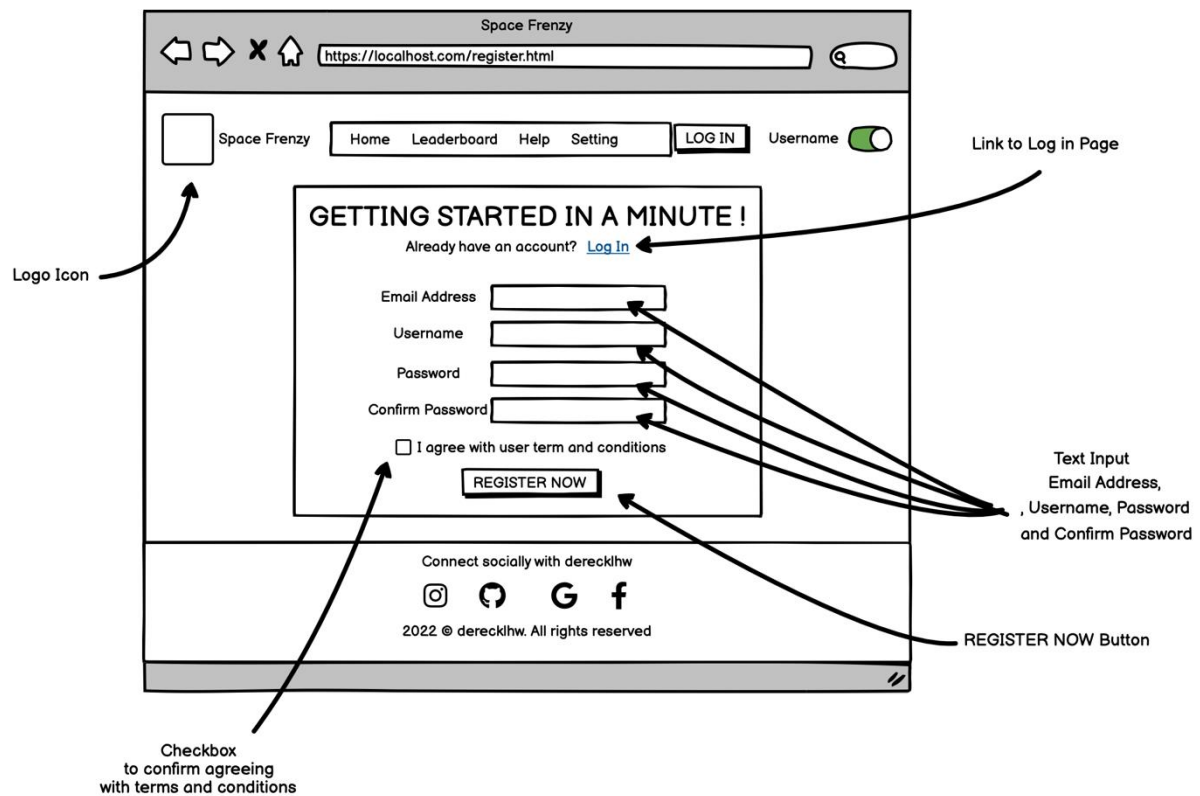


Figure 8 Register Page

## Game Page

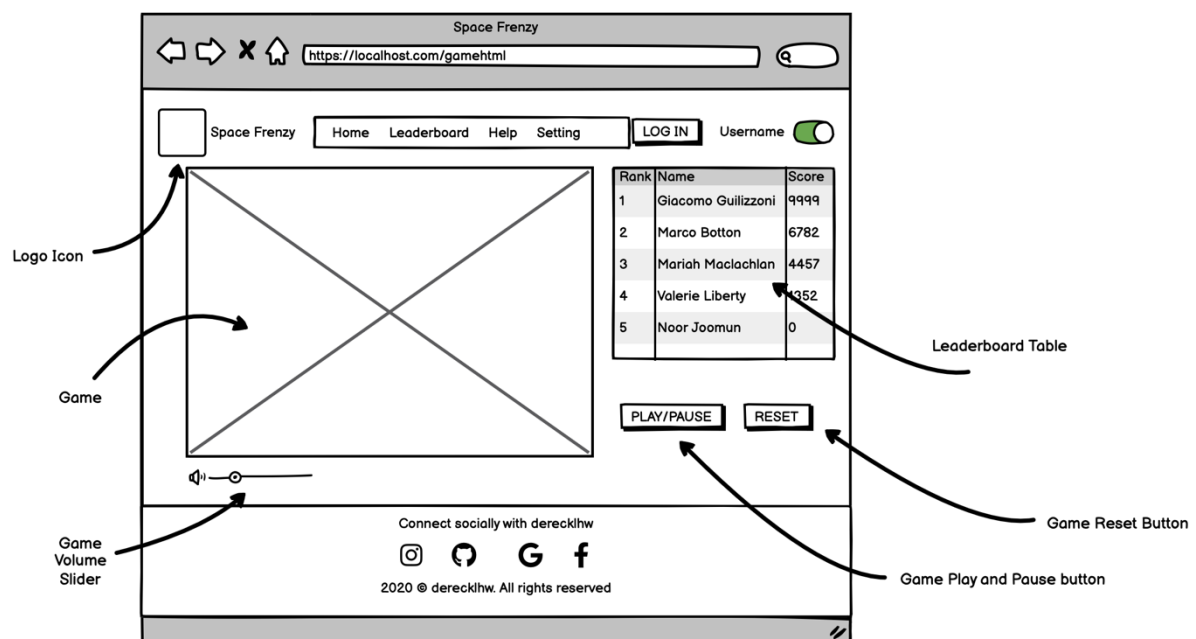


Figure 9 Game Page

## Development Tools to be used

- HTML, CSS, JavaScript, and PHP must be used to build the website.
- Scores and user information are saved in JSON format utilizing local HTML storage.
- To produce navigation menus, footers, etc., PHP functions will be utilized.
- Frameworks such as jQuery will be used to build dynamism to the website.

## Conclusion

The developer will gain hands-on experience creating dynamic websites with HTML, CSS, PHP, and JavaScript thanks to this training. Moreover, the web application will help the user to relax before getting back to coding and debugging their future coursework.

## Reference List:

1. Northfield, R. (2018) *Gaming's golden age: top 10 retro-vintage arcade classics*. eandt.theiet.org. Available at: <https://eandt.theiet.org/content/articles/2018/07/gaming-s-golden-age-top-10-retro-vintage-arcade-classics/> (Accessed: 10 October 2022).