

Assessment 3 Final Product and Documentation

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Steam	B
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Introduction

Pedestrians are the most serious victims of traffic accidents and one of the weaker groups in traffic accidents. Their unsafe behaviour is an important factor in traffic accidents. Pedestrians' perception of the road environment is perceptual. Cognitive psychologists believe that the three stages (perception-judgment-response) constitute the human information processing system. Because pedestrians have limited knowledge of outside information, any phase error can cause pedestrians to exhibit unsafe behaviour when crossing the road (Ding et al., 2014).

Therefore, for waiting times beyond the threshold of pedestrians, at some large intersections, pedestrian red-light time is found to be more than 100 seconds, which far exceeds the psychologically affordable time of pedestrians. The long waiting time caused pedestrians to lose patience and illegally cross the road.

So we created the "Press to boom!" button game to attract the attention of the pedestrians and reduce the probability that they would illegally cross the road.

Introduction

Buttons are a reward system. When we push a button, we expect something to happen – and usually, it's not a *bad* thing. Look at the ever-addicting text message: we essentially have to push (or swipe) a button to get the message. Like a rat in a lab tapping a pedal that makes food drop into the cage(Hill, 2016).



So we designed this button game to attract attention and reduce the probability that they would cross the road illegally. This device can increase the safety of pedestrians crossing the road.

Overview of design process

Based three rounds of testing on our three concepts, we've improved and develop our final concept in assessment 2. The final concept we've choose is "Blooming flower projection", the flower will bloom when motion sensor detects that the pedestrian has a foot lift. In order to make the design more attractive, we've add different themes to the design.

After receiving tutor's feedback we realised our design concept has lack of expectation, the flower just keep blooming after sensor detected pedestrian has a foot lift. There are unclear ending in this concept, user don't know what will happen in the end. This will result reduce the attractiveness of the game and create unhappy user experience, as user unsure when will it end and what is the end.

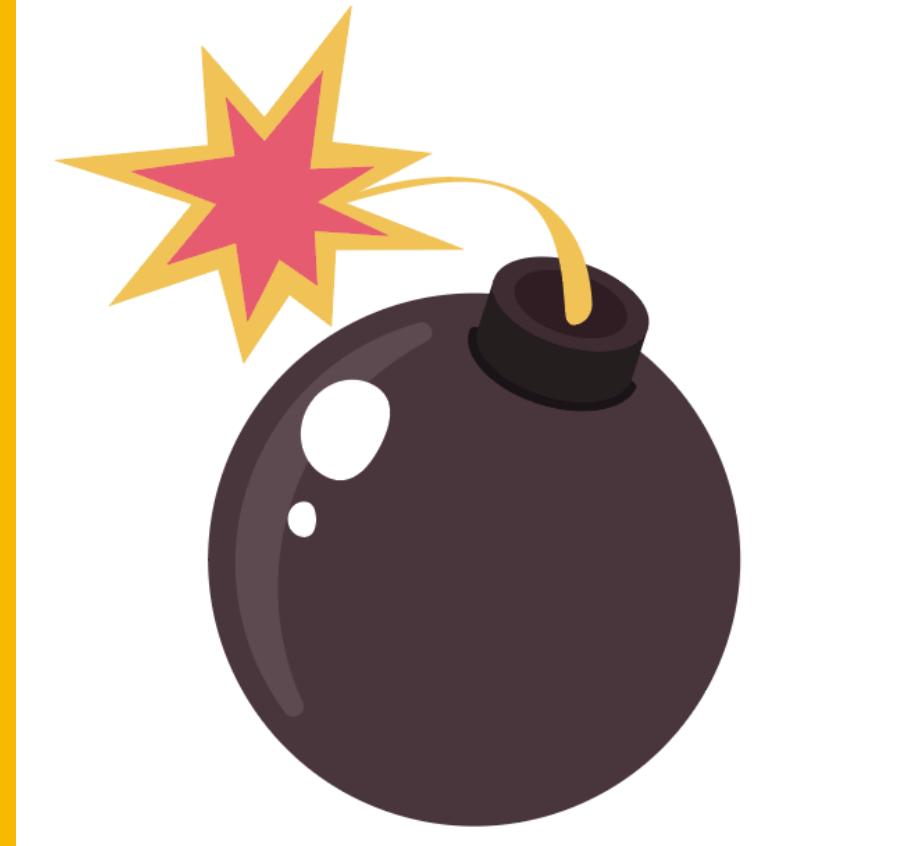
Need to achieve

- Stimulate user's expectation, attract them to interact with our design
- Have a clear ending, also it's intuitive and simply game.
- Simply rule, as trivial rules will reduce user interest.

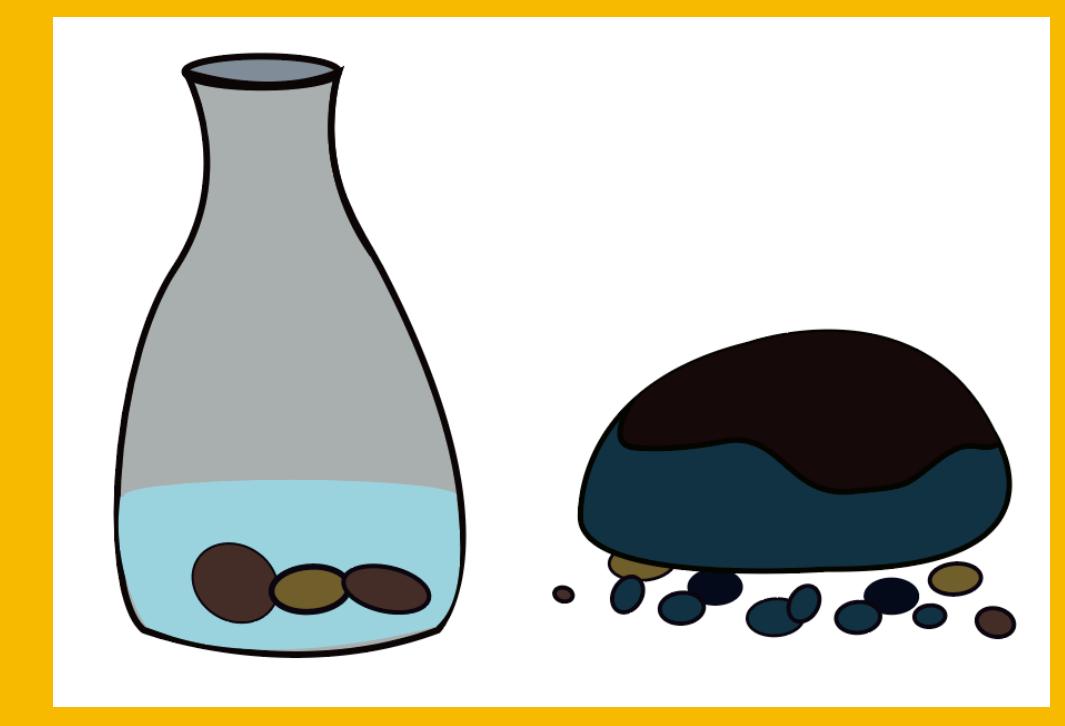
Overview of design process

Follow this direction, we've come out many design concepts, based on press button to complete the game.

Press the button to blow boom

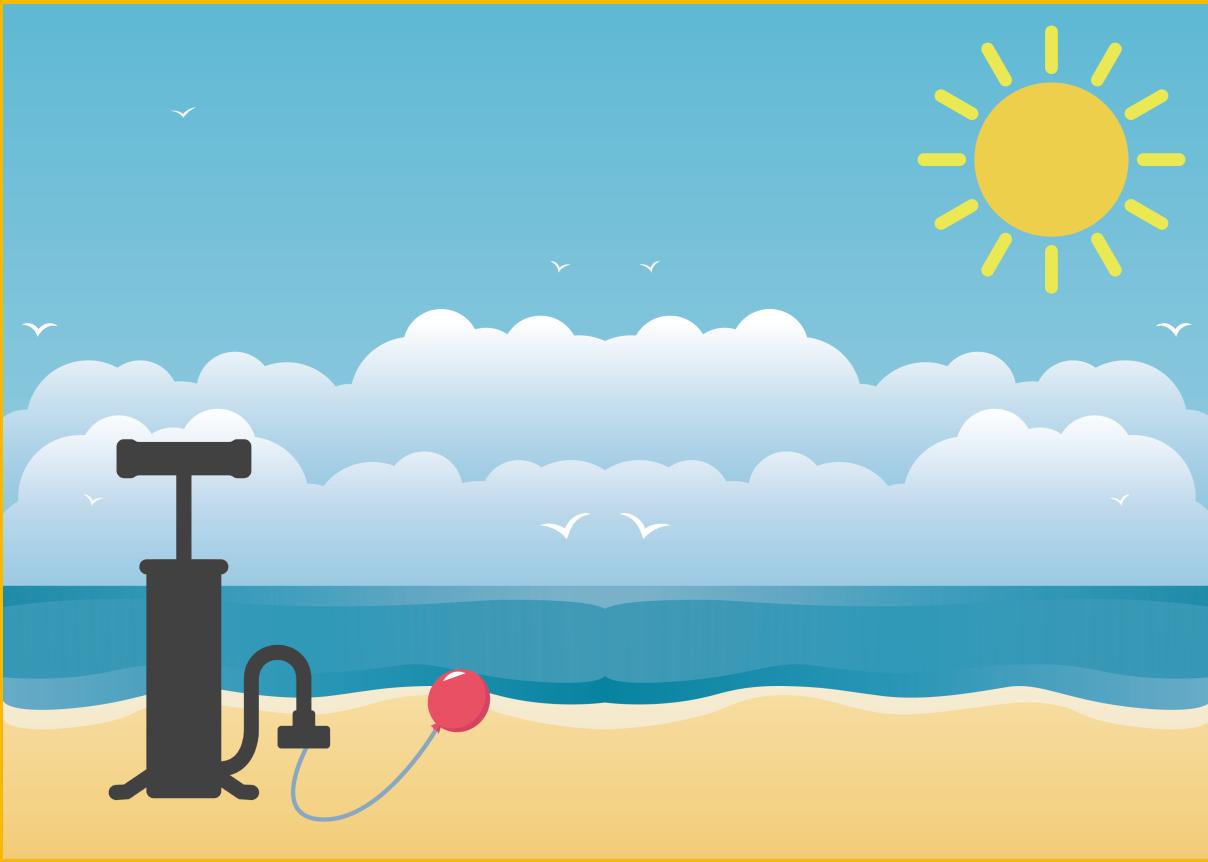


Press the button to fill up the water



Overview of design process

Press the button to pump up the balloon



As the psychologist and professor of California State University Larry Rosen suggest that "People like to push all kinds of button as we hope that it brings a squirt dopamine for pleasure, or at least it reduces the cortisol that makes human feel anxious — until we see what pressing it means." (Bryan Lufkin Why We Always Want To Push The Big Red Button) We want to press buttons as we believe press it can help us to achieve or gain something.

Our final design concept is press the button to pump up the balloon, it's a very simple game and clear game instruction just press the button. User has clear expectation as expect that when the balloon expands to a certain degree, it will explode. The game builds expectations through common sense and what they see in everyday life and press buttons that people can't refuse. This simple game not only reduce pedestrian's bored time encourage them to wait for traffic light, also help pedestrians release stresses.

Core functionality

What is it?

We designed an interactive game, which is mainly for pedestrians waiting for red lights at night. This game encourages them to wait for a red light by pressing a button to boost the balloon in the projection to reduce the boring feeling.



Core functionality

How it work?

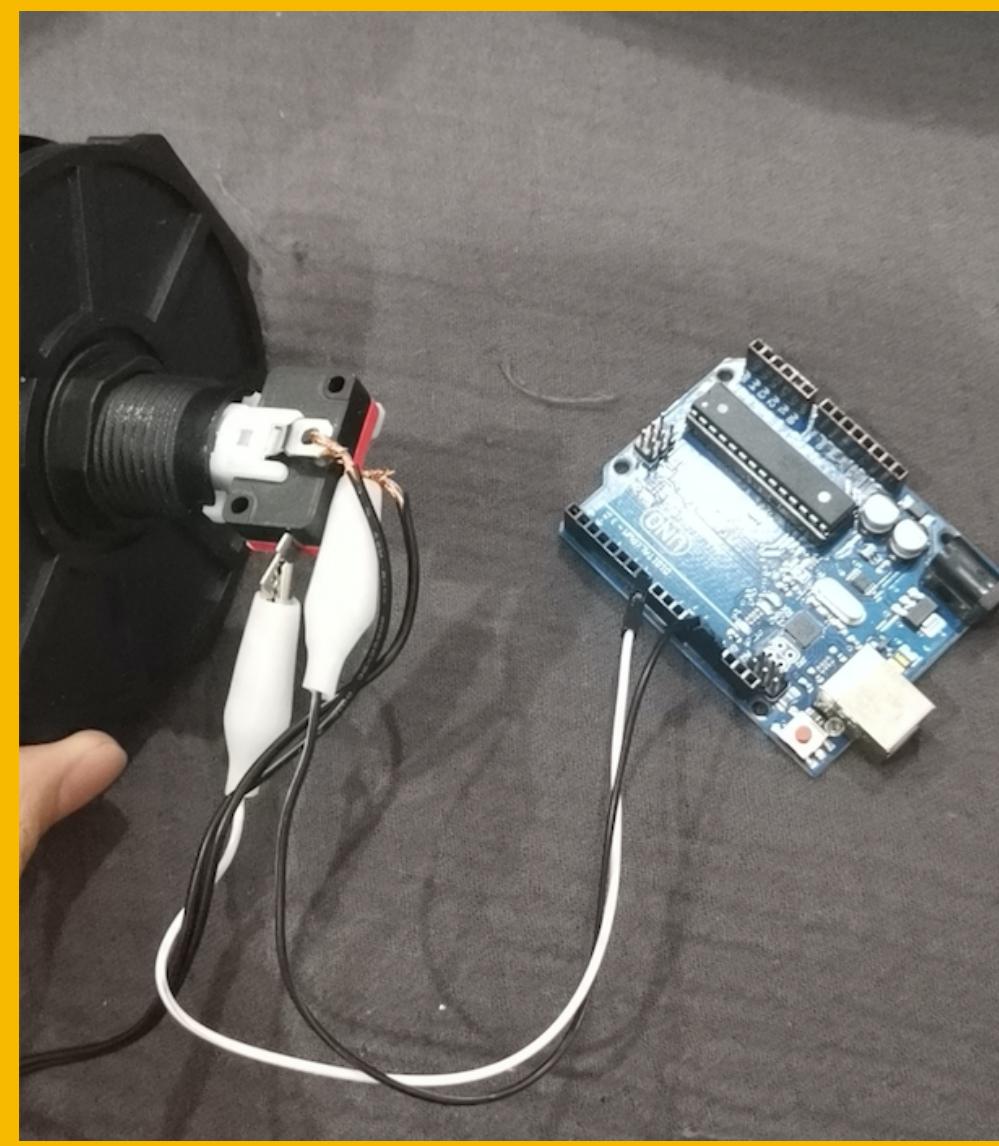
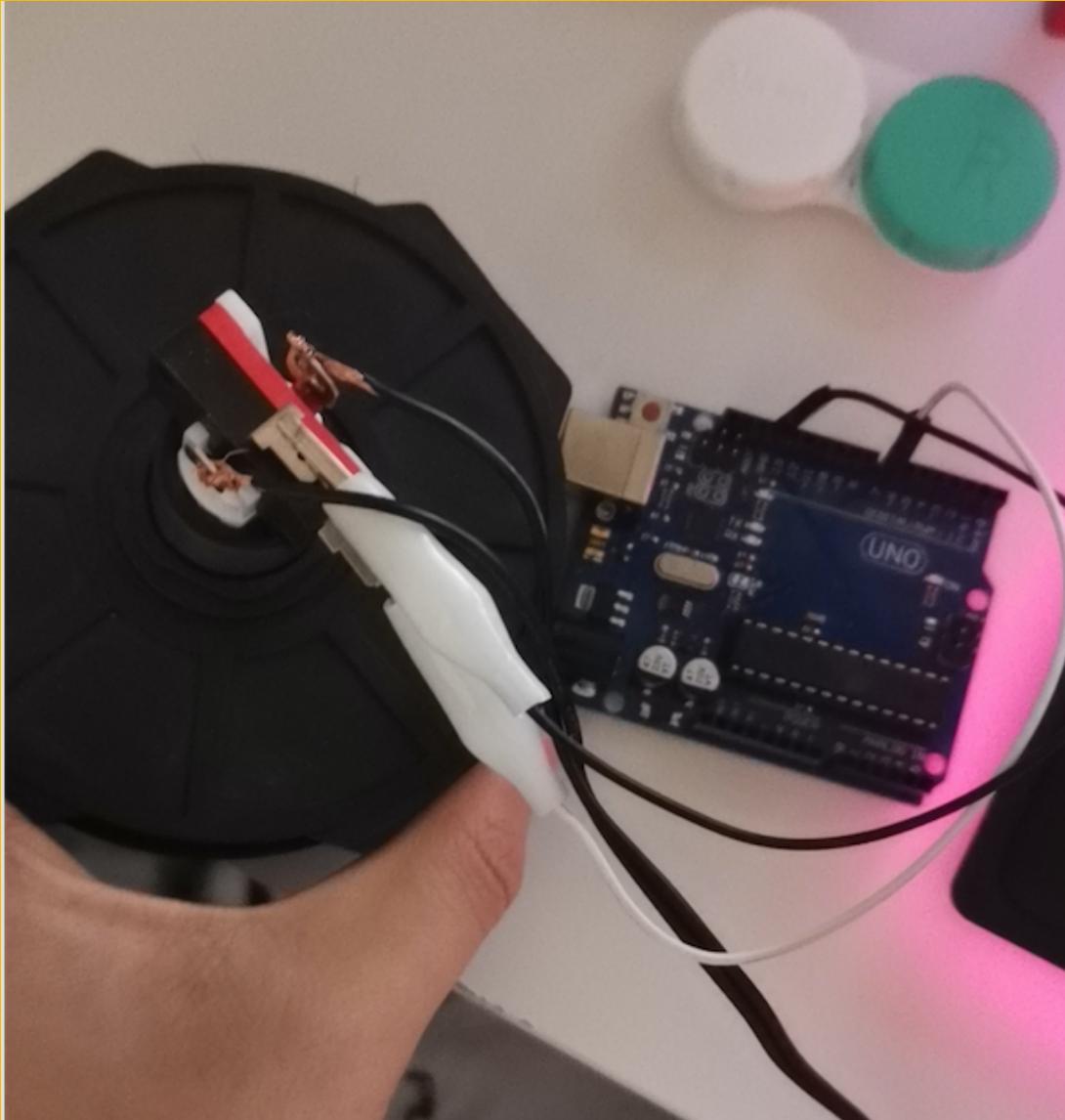
1. When the red light is on, our projector will turn on and the game will be placed on the ground.
2. When the user presses the button, the game countdown screen will appear on the ground.
3. When the countdown is over, the user can press the button to make the balloon bigger.
4. When the balloon becomes larger and larger, the balloon will explode and the game is finish.

The computer uses the e-share screencast function so that the projector can put the screen on the ground, and the sound effect is emitted by the speaker that comes with the projector. The button is connected to the Arduino UNO r3. When the user presses the button, the Arduino UNO r3 will transfer the data to the computer, and the computer will automatically start the game after receiving the data.

Hardware/software requirements

Hardware:

1. Projector
2. Button
3. Led light
4. Arduino uno r3
5. DuPont line
6. power supply



Software:

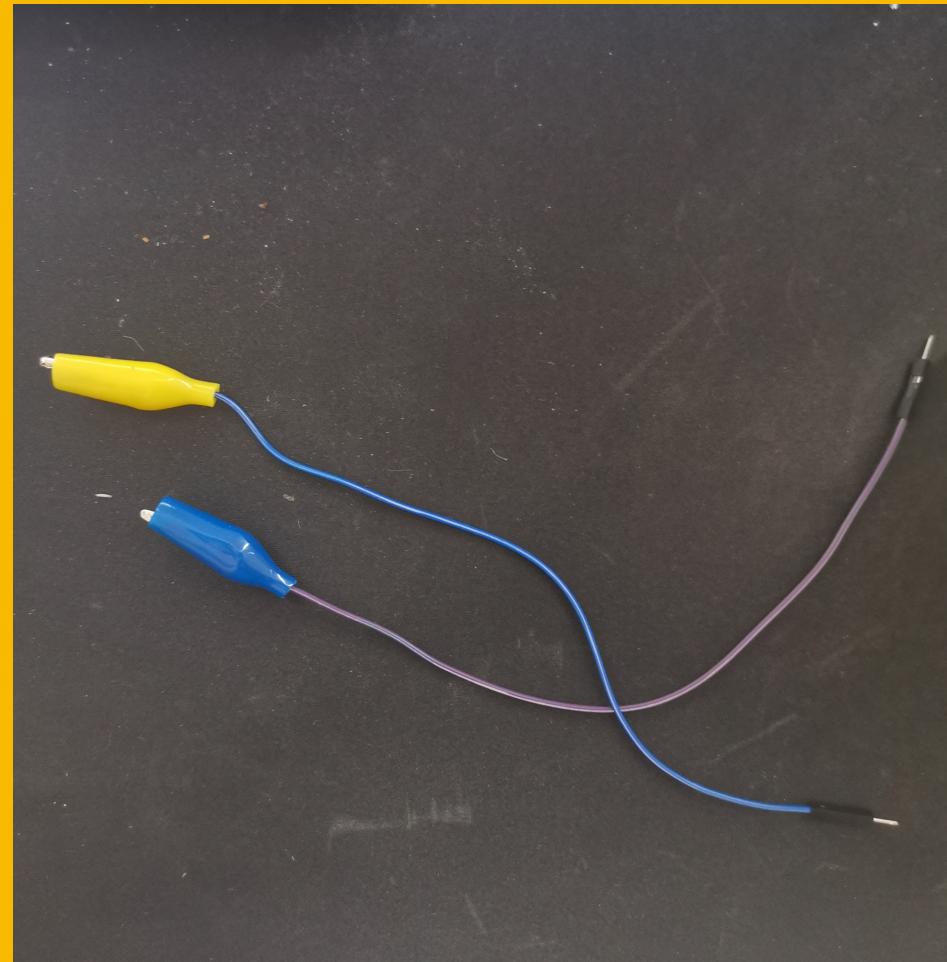
1. Arduino
2. AI



Illustrated setup instructions



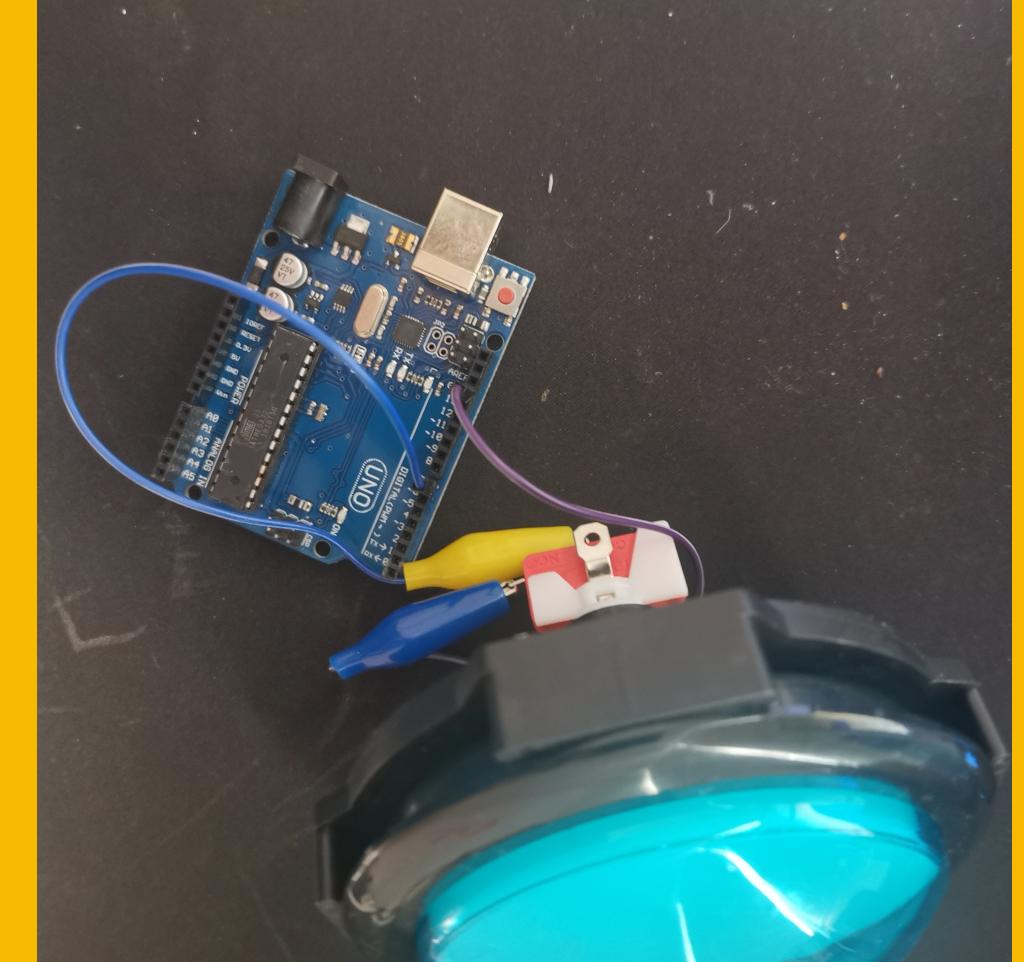
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We made physical buttons using buttons, cables and UNO R3 board. Pressing the button will transfer the message to the UNO R3 board.

Illustrated setup instructions



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With processing, each press of the button changes the picture on the computer. Our picture is from a small balloon to the final explosion. At the same time, the picture on the computer is transmitted to the projector through the same screen. Finally, use projection to show the changes in the picture.

Known issues

Although our products have been greatly improved and improved in the previous rounds of testing and modification, there are still many problems and shortcomings. The following are the main problems and shortcomings of our products:

Our products do not give users enough tips to use, which will cause users to not know how to use this product at the very beginning.

Our products are not linked to traffic lights, so when the traffic lights change, the game can not be used to open and stop.

At the end of the game, there was a player's ranking, but it should be the failure of the database connection. We didn't add the database to the final design. But in the future, we will add the player ranking.

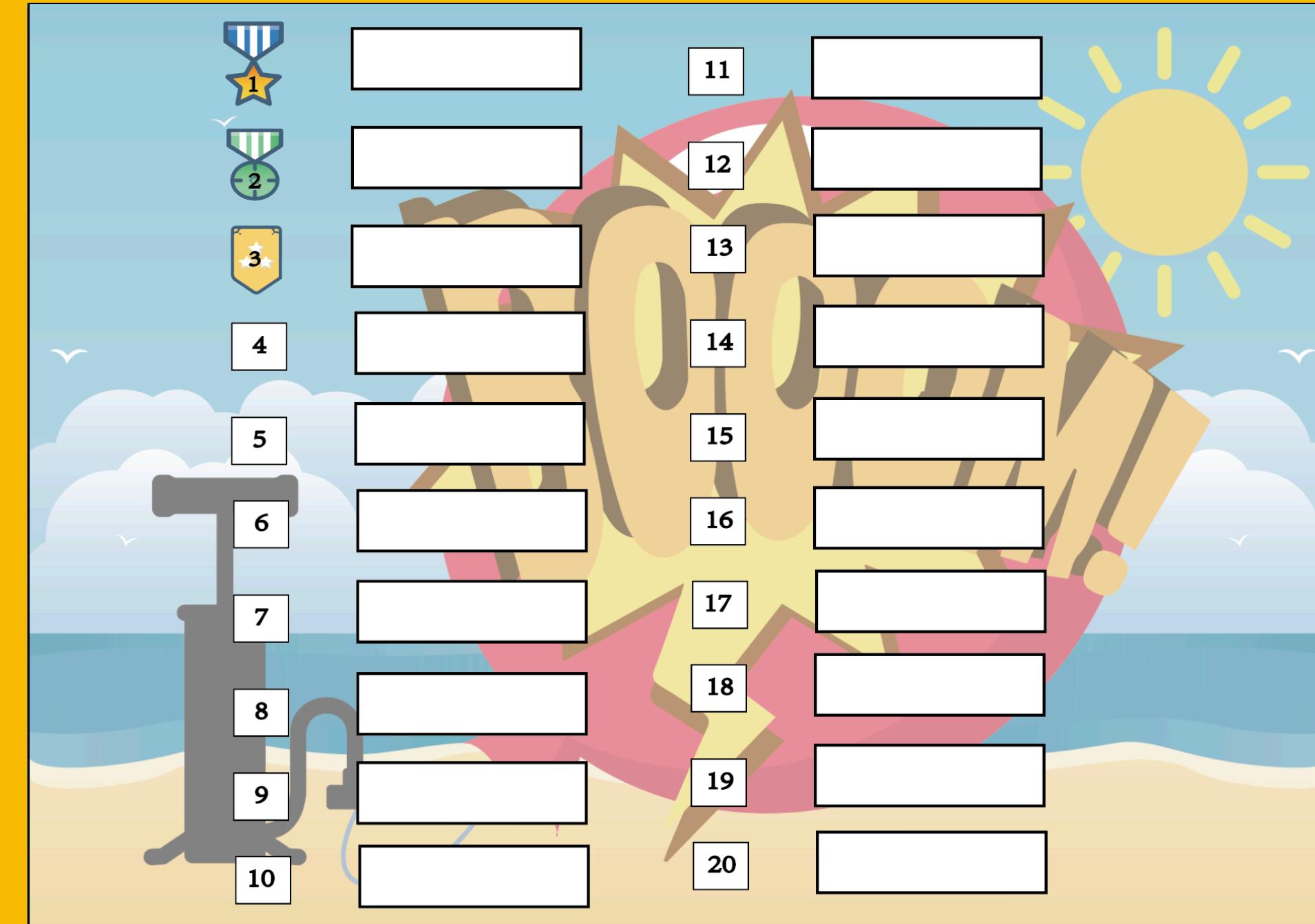
The form of the game is relatively simple, which may make the user feel bored after many uses.

Although our products have many problems and shortcomings, we will continue to improve it in the future, so that will gradually become a mature commercial product.

Future work/versions

Due to the limitation of time period and our skills, we couldn't make the design complete. For the future work we've planning add more functions and polishing the aesthetics of the game to make it more attractive and interactive.

Adding ranking system to stimulate user's desire to win the game. The ranking system will refresh each week and the name of top 20 users who used the shortest time to explode balloon will showing on our ranking system after user finished playing the game.



Future work/versions

Connect with traffic light

Due to the limitation of time and our technique, we unable to connect the game with the traffic light. In future. We planning to connect our game with traffic light, the game will automatically starts when traffic light turn red. There will be 10 seconds count down before light turns green, to inform user when is the green light on. After light turns green, the projector will be switch off and will switch on again when light turn red.



References

- Ding, T., Wang, S., Xi, J., Zheng, L. and Wang, Q. (2014). Psychology-Based Research on Unsafe Behavior by Pedestrians When Crossing the Street - Tongqiang Ding, Shengli Wang, Jianfeng Xi, Lili Zheng, Quan Wang, 2015. [online] SAGE Journals. Available at: <https://journals.sagepub.com/doi/full/10.1155/2014/203867> [Accessed 25 Aug. 2019].
- Hill, C. (2016). What Makes You Click-Worthy? Why Buttons Work - Creative Resources. [online] Creative Resources. Available at: <https://creativeresources.threadless.com/what-makes-you-click-worthy-the-psychology-of-buttons/> [Accessed 8 Nov. 2019].
- Lufkin, B. (2015). Why We Always Want to Push the Big Red Button. [online] Gizmodo. Available at: <https://www.google.com.au/amp/s/gizmodo.com/why-we-always-want-to-push-the-big-red-button-1723914709/amp> [Accessed 8 Nov. 2019].