



JUNE 2020

JARED'S PORTFOLIO



Whirlpool



PEDESTRIAN PLUS

JCAP4996
470422942

ABOUT HEIMAN SOFTWARE LABS

Problem Statement

In an observational study conducted in NSW out of 26,390 people, 1,976 (7.5%) crossed illegally (not at a crossing or not during a green light) [3] Jaywalking is risky yet many choose to do so as it's the most convenient option that almost anyone can do. . This behaviour is especially dangerous when children choose to jaywalk as they are more unpredictable and harder to spot for drivers. In NSW there has also been a 13% increase in the pedestrian death rate of those between the age of 12-19 years old [2]. These problems stem from a lack of good design in the current road systems surrounding roads nearby schools zones, which mainly rely on lollipop workers and trust in both the drivers and children, which clearly is not good enough. As a result, Pedestrian Plus has chosen to focus primarily on the safety of children nearby crossing areas.

Product Description

- Description of the final concept/prototype.In our research, we found that the main cause of what makes children so unpredictable and inattentive is due to their behaviour. Their behaviour is affected by their attention span and eagerness to be entertained. As a result, we decided to create Whirlpool, an interactive device place near crossings used to capture children's attention as well as providing entertainment to keep their attention on the crossing. This is done through the utilisation of lights and water that make use of a depth sensor to interact with the children to draw them to the crossing.

Key Aspects

Sound: A sound is played once the children are out of range from the depth sensor, showing that they have crossed safely as well as rewarding the children with an auditory experience to reinforce good behaviour.

Lights: Lights are used to both, draw the children towards the device as well as alert drivers that there are children nearby the crossing.

Water: The clear water tower fills up and drains at the same time to create the whirlpool effect. This was shown to be a really effective way of capturing the children's attention, as was reflected upon in the previous iterations where children who tested the device asked for more natural features and less screens.



Josh (Captain America) Roles: Leader, Secondary Coder, Primary Tester, Building support, 3D Modelling

- Josh was the leader of the team for most parts. He would instruct where he wanted the project to go and what he wanted to see.
- Also worked on some of the coding
- Was the main source for finding participants to test with as well as conducting tests
- Helped with the physical building process of the project
- Worked on 3D models for previous iterations

Victoria (Iron Man), Primary Coder, Organiser, Report Help

- Main coder of the project, which was an extremely good decision as she was the most skilled in coding out of us.
- Organised dates and deadlines as well as the quality of work and the expected outcomes
- Wrote and created most of the reports

Han (Hawkeye) Roles: Researcher, Main Actor, Support, Building support

- Helped in researching design principles to use as well as what makes crossings work and don't work. Mainly secondary research that was not gathered through user testing.
- Main actor of the promotional video for whirlpool
- As there were other assessments that we had, Han was really supportive in helping with external assessments, giving us a lot of time to focus on working on whirlpool
- Also helped with building, providing good ideas for problem solving

Jayce (Black Widow) Roles: 3D modelling, Support

- Had experience on 3D modelling and as a result, he worked on 3D modelling previous iterations
- Supported Han in the secondary research as well as early iterations



MY ROLES AND RESPONSIBILITIES

Tinkerer/Lead Builder

Given my previous experience in metalwork and labour jobs, I was in charge of all the physical building from hands-on work, to finding what would be feasible, to giving ideas of alternatives. I had help from both Josh and Han in this aspect as I was really busy around the time of construction, but most of the physical product was built by me. Most physical problems were also solved by me.

Secondary Tester

Although Josh did most of the testing, I also had access to a group of participants from P.C.Y.C who I also used for testing early concepts. This testing process was completely handled by me alone.

Original Director

I was the original director of the promotional video given that I have the most experience in filming and editing as I've done it in high school. Originally the promotional video was supposed to have a more serious undertone but Josh decided to make it more light-hearted. As light-hearted video's are out of my comfort zone I pulled back from the video directing and gave Josh more responsibility with the video

Skeleton building

I built the original skeleton of the physical product as a test to see if it would work. This skeleton consisted of a bucket, a clear acrylic container, a pump and a silicon tube used to pump the water up. This step was quite essential in testing if the product would be feasible later on and as well as what we would like to add onto it to make it more aesthetically pleasing

MY CONTRIBUTIONS

Collective contribution

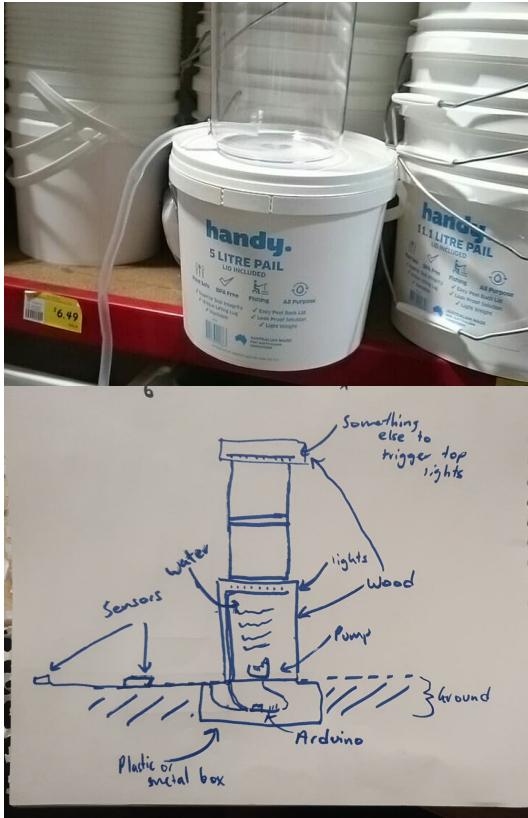
Our contributions lied in where strengths were most needed. In saying that I believe we all worked well together, doing equal amounts of work apart from some weeks where there were some hiccups, but collectively we all contributed as much as we could.

Creating the physical aspect

My main responsibility in this group for the third assessment was to build the physical product. Having the most experience in metal work and carpentry meant that this responsibility would obviously fall upon me. Given that this was a strength of mine, I am confident in saying that the product was in good hands and came out nicely.

I was in charge of the physical model of the whirlpool completely. I had help from both Han and Josh for this job. This task consisted of everything from buying some of the materials to assembling it to quality checks. I also had to do waterproofing which was a big task that I wasn't entirely familiar with. Part of this task was to also assess if some of the ideas put forward were possible or not with our skillset.





Designing the physical build

First, the requirements were given to me by Josh. Victoria added specific aesthetic choices that she would like to see and from there I designed around those requirements. The idea of using sheet metal to act as both a way to hide the bucket and Arduinos as well as to improve the product aesthetically was my idea. Waterproofing using either hot glue or silicone was also my idea. The main aesthetic requirement Victoria gave was to have a clear tube that was tall and slim. As a result, I gave the suggestion of using a beer tower.

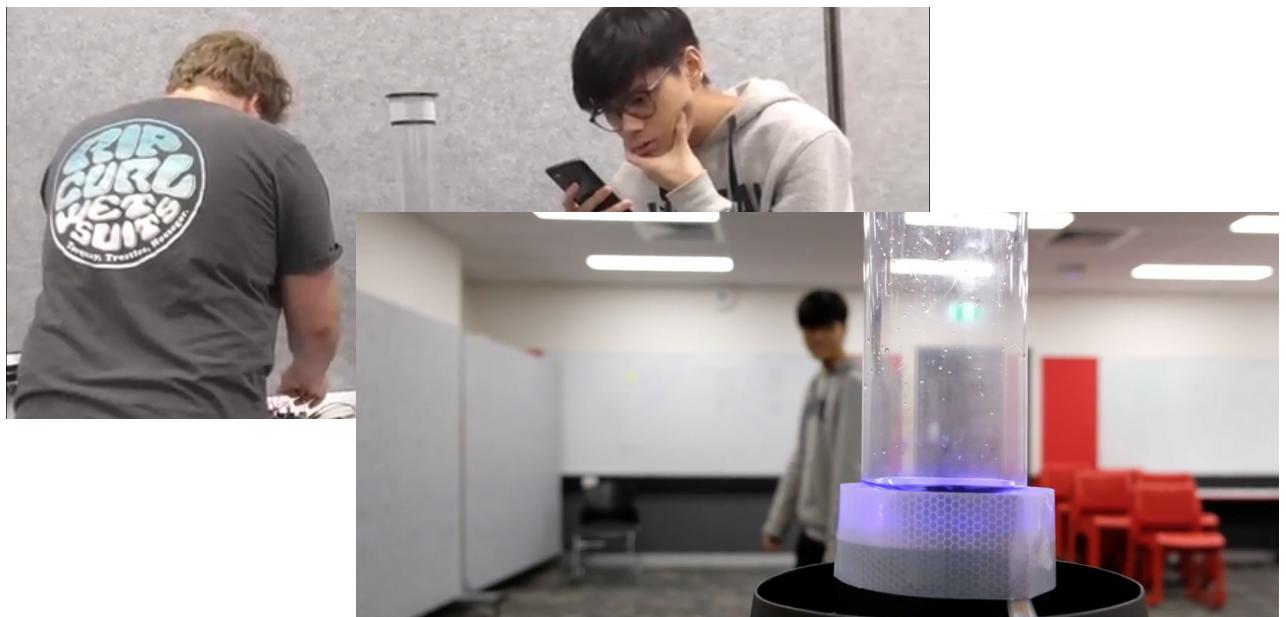
Building the Skeleton

Building the skeleton was the first step in testing if this idea would work. It acted as our low fidelity prototype, with minimal coding or aesthetic value. The main purpose of this was to test if the concept would work but also to see what we could add, improve upon and where our skills lied in regards to what our next steps would be. Essentially this was testing.



Directing the Original Video

I created storyboards and directed the original video. This video was never finished but was used as a basis for the final video. The original video was more serious in tone and had more of a corporate feel to it but Josh felt as though it should be more light-hearted and comical. I agreed as this was our last assessment and we wanted to enjoy it. I was also in charge of acquiring camera equipment.



Testing and Analyzing User Data

The two concepts chosen in assessment 2 that would decide our last concept were Peng Gate and a combination of Josh and Victoria's concept. This resulted in Josh testing the later concept while I tested Peng Gate. These tests were conducted on high school students in P.C.Y.C. This allowed us to gain insight on what people were looking for in regards to a final concept.

TITLE		PENGATE CROSSING									
Overarching Theme		Interactivity					Communication			Obstruction	
Overarching Need	Simplified Version of Improvement Needed	"it was fun and engaging"		"It's noticeable but not so much that its no longer simple"		"I didn't know what to do or when it would end"		Confusing		Lack of Feedback	Add some sort of light that reflects the light so we know when its gonna let us cross
Child User Needs	Adult User Needs	Enjoyed being creative	Good distraction	Simplicity	Ability to grab attention	I'd feel confused because why is it even there	It was confusing	Felt good using a creative mindset	The creativity is what I enjoyed the most	Instead of being on my phone, something for something else is fun	Its good because its basic and simple and doesn't have too much complex things near schools
		The interactivity was engaging	It's pretty effective for people who'd like to draw	Doing something while waiting is entertaining	I said it's basic, but I like basic	I would use it for fun if I just see it	It captures my attention because its something different				Would like to see a TV at a traffic crossing

CHALLENGES (PRODUCT)

Problem

There were various problems with the product that we encountered while we were building it. The main problems that I encountered were physical problems but I know that there were also coding problems. The physical problems that I encountered include:

- Arduino placement
- Concealment of the bucket
- Waterproofing
- An alternative for the original clear tube, which was originally a clear container
- Motion sensor placement

Solution

- One of the biggest challenges was where the Arduino would be placed as working with water could damage the Arduinos yet it still needed to be hidden enough to allow for the various features to be connected. To solve this issue I rolled sheet metal around the bucket at a larger length than the bucket so the bucket of water could sit above the Arduino, suspended by the sheet metal itself. There was enough space left of sheet metal to allow the Arduinos to sit beneath the bucket. Josh also added a wooden cylinder at the bottom of the sheet metal for added support.
- The sheet metal used for the Arduino placement was also used to conceal the bucket, ultimately solving the problems with aesthetics too. It was also spray-painted over too adding to the aesthetics.
- Waterproofing was one of the most difficult challenges of the actual product. Originally we tried hot glue but that failed pretty badly. After various attempts in waterproofing, we ended up finding out that using silicon and plumbing tape was really effective for waterproofing. Originally we used a clear acrylic jar for the container that the whirlpool would be created in. This product, however, was unappealing and not long enough. As a result, I suggested to use a beer tower which would be more aesthetically pleasing yet would require more work. Victoria decided that it would be worth it and as a result, we ended up using the beer tower.
- The motion sensor was originally going to have a spot cut out for it to sit in nicely but we found that we could just let it hang under a sawed in half-pot plant container which was also used for aesthetic purposes

CHALLENGES (TEAM)

Problem

- The team, in general, suffered from main problems, mainly from a lack of communication. This problem could've been solved with more group collaboration meetings and better communication. Admittedly these problems were derived by both me and Han's lack of communication as well as the language barrier between the group and Jayce. These problems were only really evident in assessment 2 however. It resulted in a lot of work having to be taken up by Victoria and Josh.
- Another problem was the prioritisation of opinions. Out of everyone in the group, Josh and Victoria were the closest friends. Victoria was introduced into the group quite late yet she was such an important member of the group as she worked really well on her individual tasks. However, given the group's dynamic and the dynamic between her and Josh, there were multiple minor problems that occurred that eventually added up. There was a lack of communication at points between those two and the rest of the group. Multiple times there were changes or additions added without the group knowing. Josh was a good leader but he often would prioritize Victoria's opinion on matters to the point of not really asking the group as much, rather telling them. This was really evident in Assessment 2 where Josh chose to use Victoria and his idea for the next two concepts to be analysed, even though they were extremely similar, rendering that option quite redundant. This issue was also carried out in Assessment 3 where multiple features were added and changes were made to the product without consulting the group at all. I.e. the audio feature was only mentioned to me a day or two before we submitted. Although it worked out, it would have felt better if Josh asked for our ideas as well and took them into consideration.



Solution

- Collectively these problems were solved with an increase in communication and more collaborative group meetings. The problem regarding favouritism in the group was first resolved at the start of assessment 2 as I had a lot of free time during the start, prior to any personal problems. As a result, I constantly met up with Josh and used those times with me and him as a way to put forward my opinions and ideas. This resulted in Han's concept to be included in the analysis of assessment 2 rather than just Josh and Victorias. This problem, however, was not fully solved in assessment 2 as my personal problems intervened and as a result became more detached to the assessment, allowing Josh and Victoria to do as they please. The problem was resolved a bit further in Assessment 3 as I began communicating to Victoria a bit more effectively. The two also listened a bit more but I feel as though this was only a product of my physical building experience resulting in an imperatively increasing reliance on me and my abilities.

CHALLENGES (SELF)

Problem

Some of the problems that I personally faced outside of this project would usually be irrelevant, however, these problems were pretty serious and ended up taking me away from my uni work for a while. These problems mainly affected assessment 2 and were the main cause of the problems in teamwork on my part. I won't go into much detail about it but at points during the project, some of my closest friends were suffering from life-threatening problems, either related to mental illness or drug use. This resulted in me stepping away from my duties abruptly, which really affected the group.

Solution

- These problems obviously were solved outside of uni but solving how they affected the team involved better communication of when we were dealing with problems. By keeping Josh in the loop, who I was closest to allowed him to work around anything that happened to us outside of uni as well as allowing Josh to know if we needed more or less work, depending on the situation.

FINAL REFLECTION

How well did you work in your team?

I believe I worked well in most aspects as a group member for this project. I believe in regards to collaborations I worked extremely well as I not only gave ideas and critiqued other's ideas, I also challenged my group leader at points, revealing better solutions and method's around certain problems, mainly the problem of which concepts would be analysed in assessment 2. Challenging Josh made the process feel more like a group collaborating to work towards a good product together rather than a boss telling workers what to do and them following aimlessly. Each member of the group had different skill sets and strengths and we all worked towards our strengths. Tasks I assigned myself to were usually playing towards my strengths, such as the physical building and gathering users to test Han's concept. I believe that I worked really proficiently because of this, however, due to the problems that arose during the later part of assessment 2

What could you have done differently?

I think overall the main thing we would have done differently in regards to the product was probably adding a trap door to allow us access to the Arduinos as easily as possible. As for teamwork, there were definitely improvements that could be made.

Will your team continue to work on the prototype further?

I don't believe anyone else will be working on it further. I did want to do a second video on it with a more serious tone to allow me to show it off in my portfolio but I don't believe that's necessary.