Senior Project Process Book

Table of Contents

Table of Contents

Introduction

For my senior project, I chose to design an attachment for a smarphone to take really decent images of astronomical events, such as meteor showers, passing comets, star constellations, lunar eclipses, and specifically solar eclipses.

In this book, you will be seeing the processes I went through for creating the Nebulens.

◄ Table of Contents ►

Introduction

How is this relatable?

I am intrigued by astronomical events, especially solar and lunar eclipses. Since I don't have a fancy camera or accessories that can enable me to get clear images of these events, I wanted to solve that issue. One experience where I had to improvise on other methods was the solar eclipse of summer 2017 that went across the U.S. It was a partial eclipse where I saw it, but still cool. since I only had my phone, I used two tactics.

Using the pin-hole camera tactic, using the glare from attempting to take a photo with my phone, or evne using my eclipse glasses over my phone lens. Out of all of them, covering the lens with the eclipse glasses worked like a charm, for the most part. It was still not clear and was difficult to focus on it.

Table of Contents

Research

What is already out there for photographing a solar eclipse?

As of now there are expensive cameras that are used to take spectacular images. The 3 most well known cameras are DSLR, COOLpix, and Nikon 1 cameras. The main deal with these cameras it the focal length of the lens, meaning the longer the focal length of the lens is, the
larger images of the sun you will be able to make. Film cameras can also work aswell to photograph eclipses.

Necessary equipment

You will need an ND/solar filter to prevent damage to the gear and also, especially to the person's eyes (for solar eclipses specifically). A super Telephoto lens is needed to get close-up pictures of the sun. For stability, a tripod
is needed.

The most important item is the type of lens, as lenses come in all different types of sizes. the best and most recommended size lens should be between 800mm and 1200mm for the focal length.

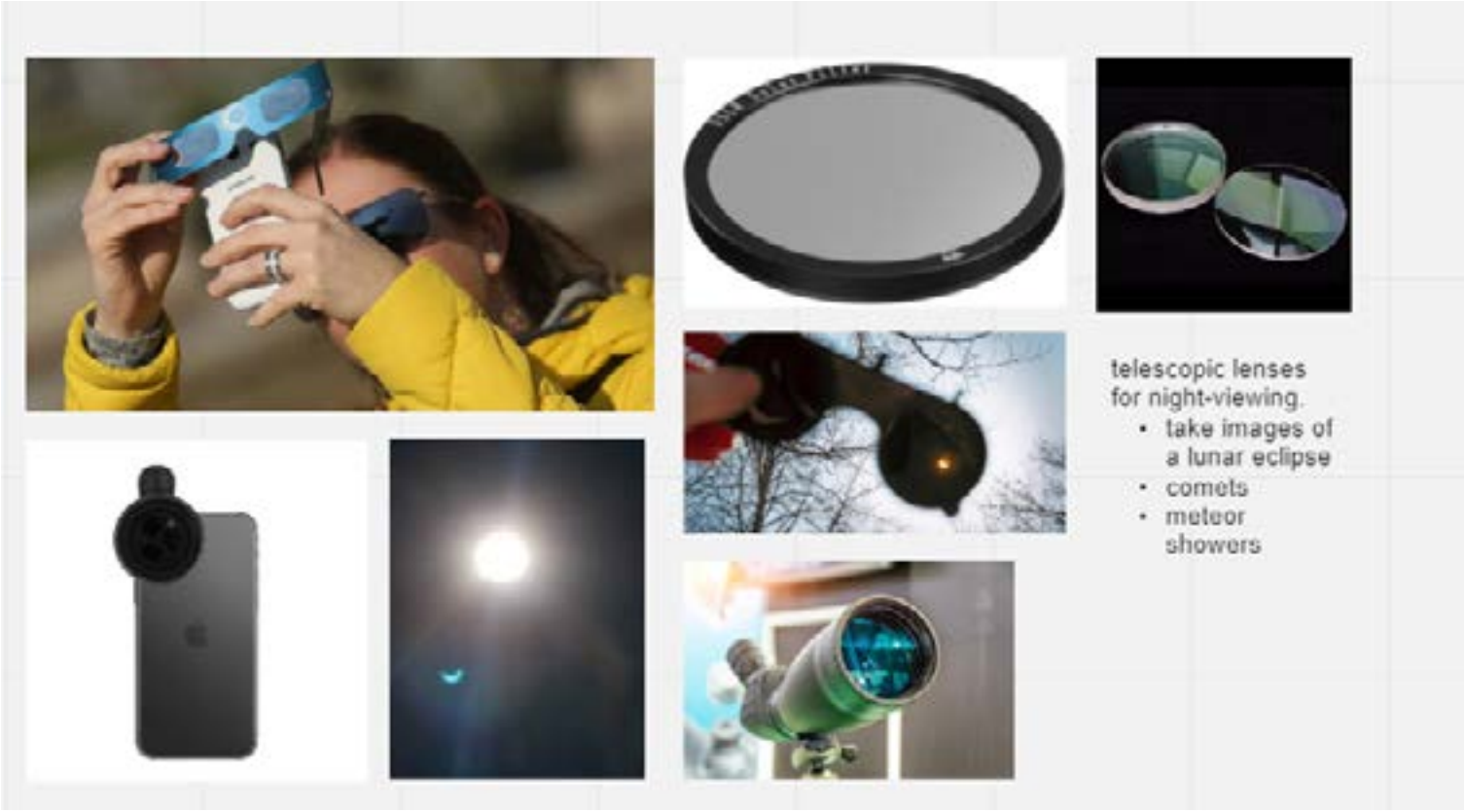
Other methods for viewing a solar eclipse

There are, of course other methods for safely fiewing and photographin a solar eclipse. Using a pinhole camera is one way, which you use a sheet of paper, poke a small hole in the paper, and place it above a surface so the light from the sun shines through, and then you can see the shape of the sun as the moon blocks it.

Then there is also the small front lens of a point-and-shoot camera which is made out of the same material as the eclipse glasses have.

Moodboards

Product Moodboard



Looking at the current products and equipment necessary for photographing a solar eclipse.

◄ Table of Contents ►

Logo Moodboard 1

Logos that are used in science and space themesd companies

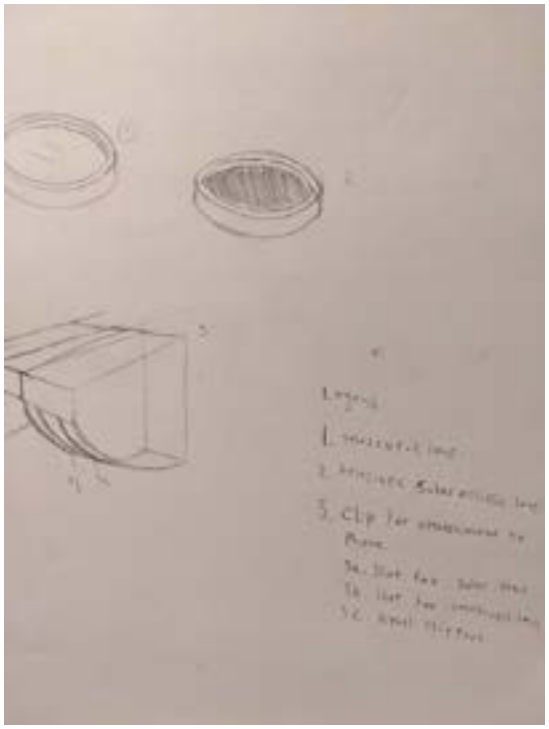
◄ Table of Contents ►

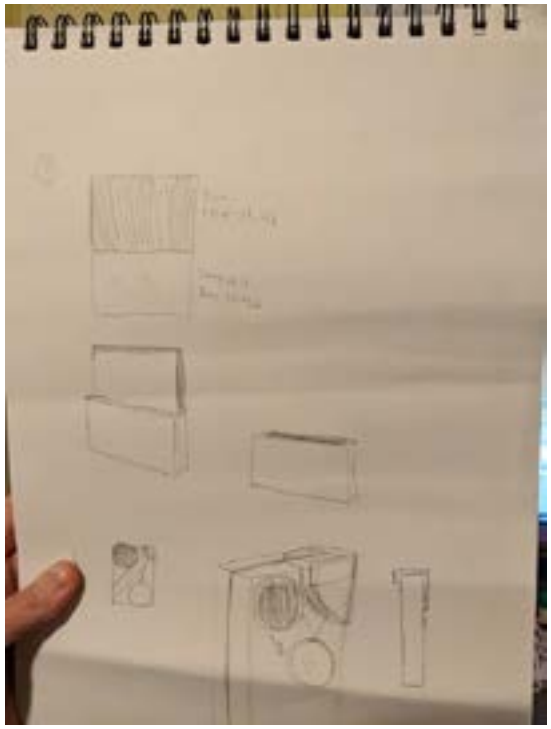
Logo Moodboard 2

Looking at logos for technology for color inspirations

Table of Contents

Sketches





Initial sketches before going into 3D modeling software

Table of Contents

Physical Mockups

In order to visualize my design in 3 dimensions, I made a 3D mockup of my product to see how it would fit on a phone. I used a piece of foam core and I purchased online some small acrylic disks to resemble the lenses. I shaded in the area that I wanted to cut out to get the shape first. Then I drew a line that shows where the two pieces will be cut. After cutting and gluing the pieces togeter, I placed the mockup on my phone to make sure the camera was not covered so I can take photoes with it still on.

For me, it helps to physically make a model to visualize the 3D product and to study the properties on where the grip will be and how it will attach. Something that is far beneficial, in this case, rather than starting off with sketches, but before getting into the 3D modeling software.

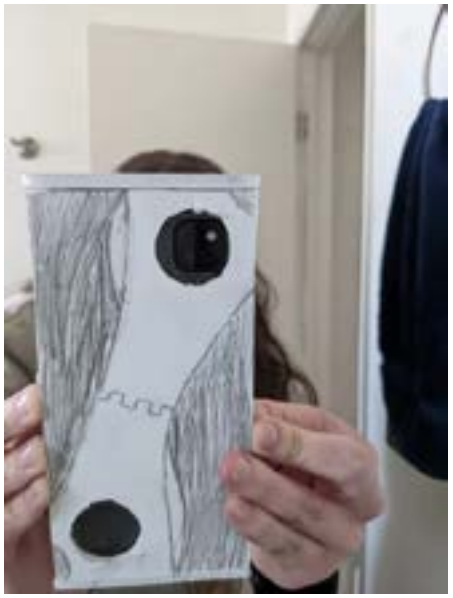
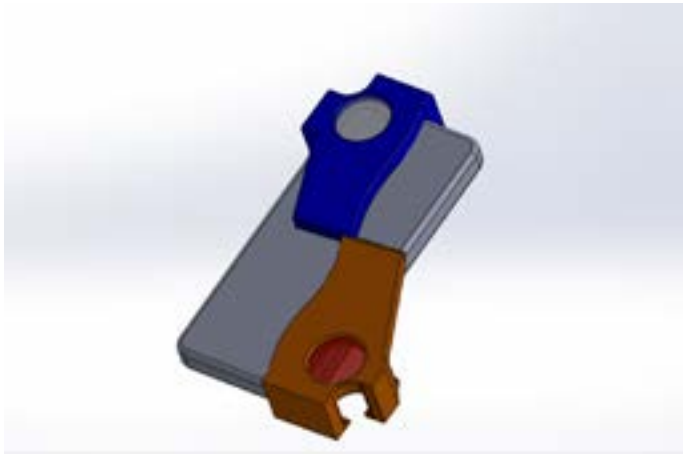


Table of Contents

Digital 3D Models

Using SolidWorks, I made a few virtual mockups, then I used Keyshot to render it. I made sure to have a sliding mechanism so the product can attach and detach from the phone without obsuring the screen.



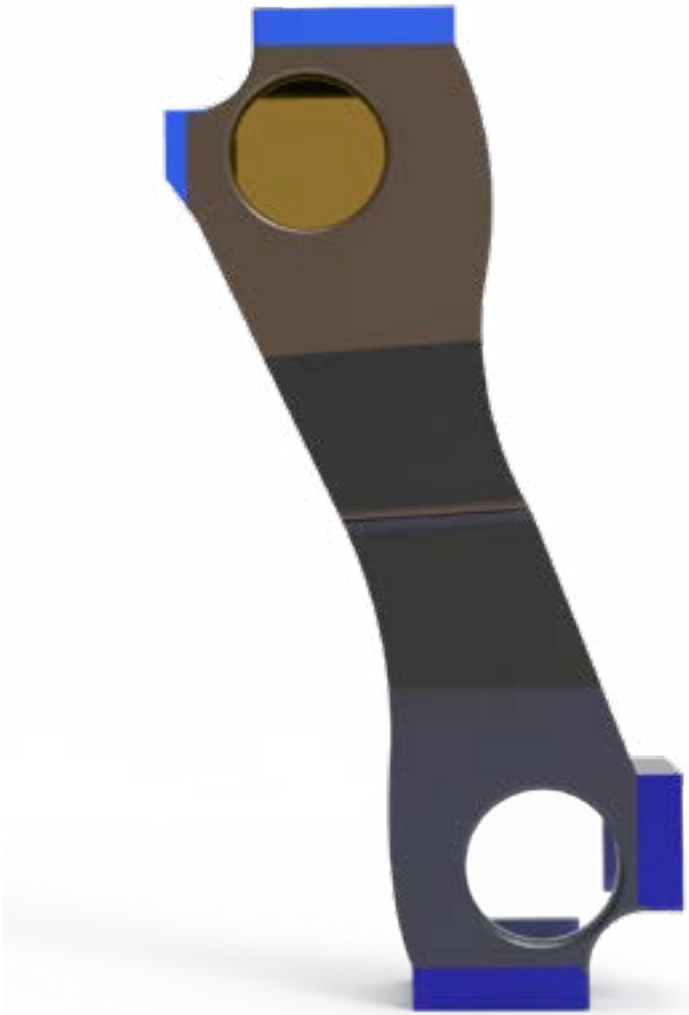
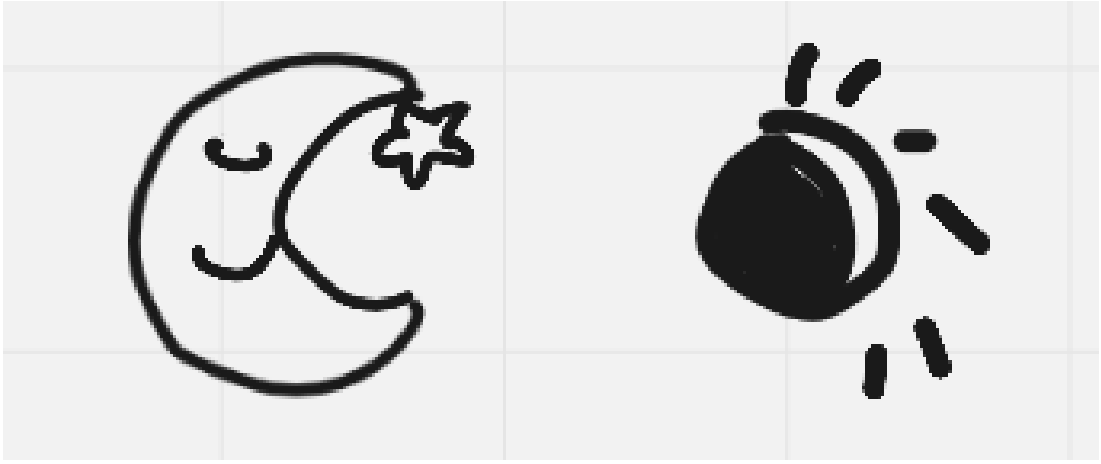


Table of Contents

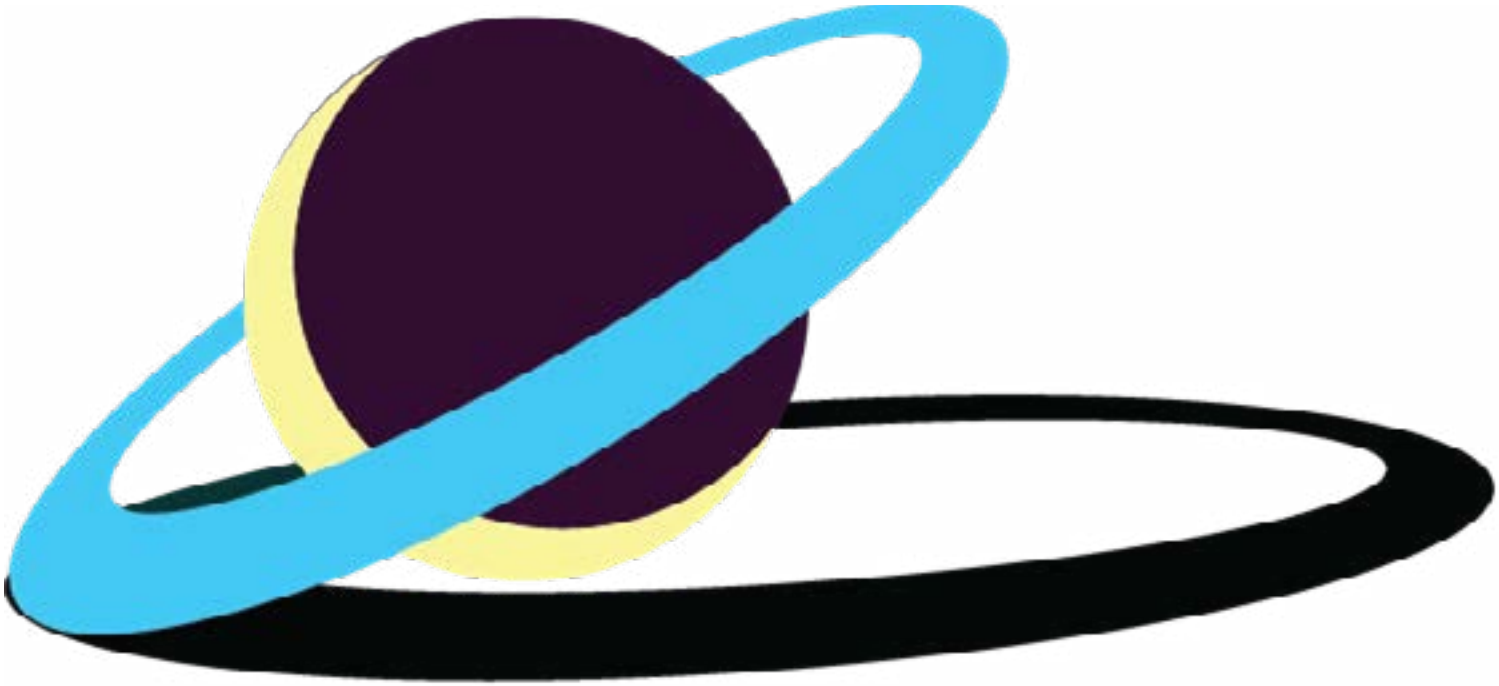
Logo Process



As a class, we did a couple of exercises in miro to explore different options for our logos and branding. The first activity, we chose 3 emotional and 3 value words that relate to our project. we then drew what we individually think relates to the specific word and after we drew on our own boards, we got a few rounds after to draw an other classmates' boards.

The same method was used in the second activity as well

Table of Contents



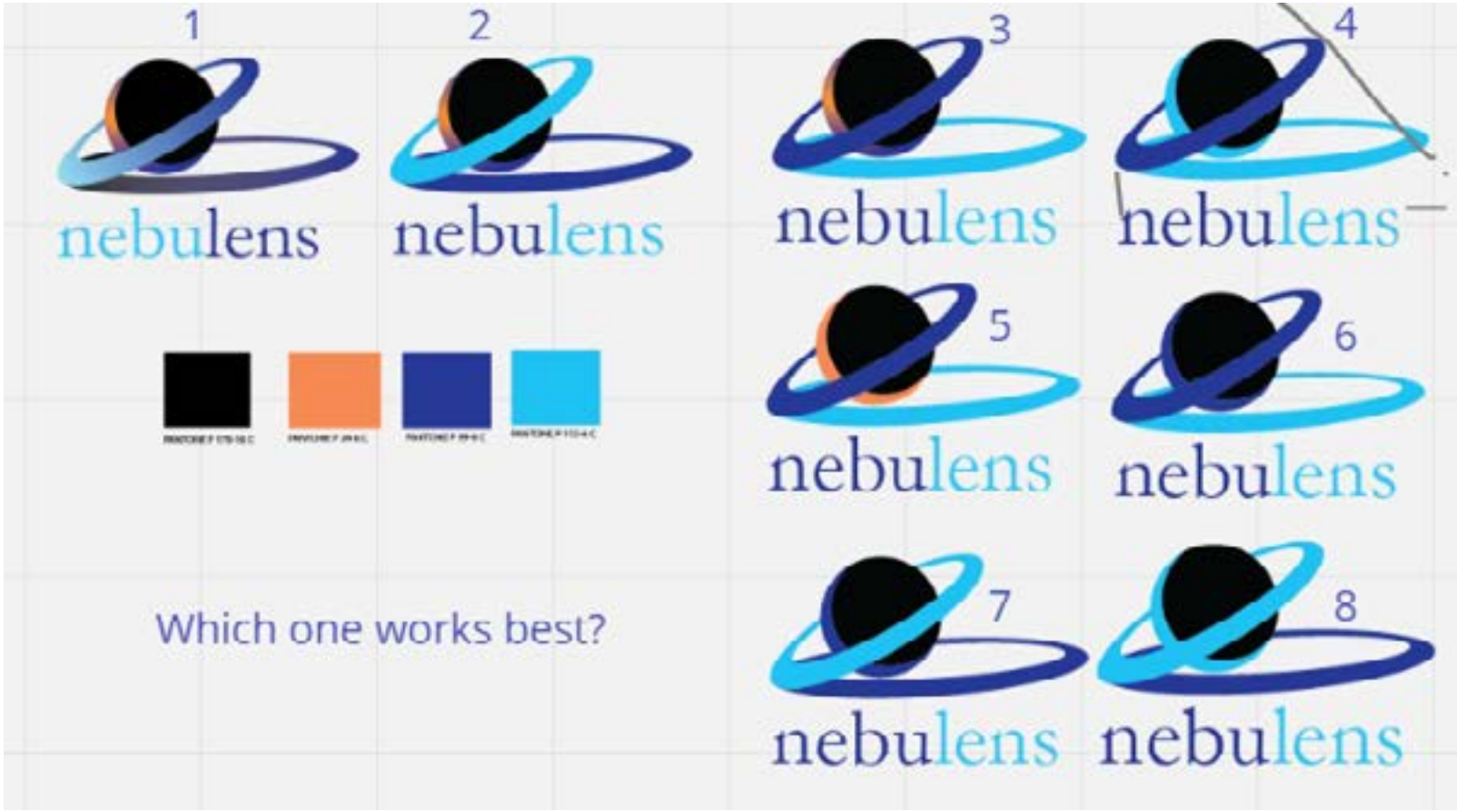
NebuLens

After the in class activities, I used Adobe Illustrator to create my logo and I came up with two logos, the one with the ring was the best out of the two.

I used this one for the Mid Review Presentation, which you will see later in this book.

Table of Contents

Color Variations



These are all of the color variations for the same logo. I used a combination of PANTONE colors on Adobe Illustrator to see what every single color combination that is possible. The favored color variation is the fourth logo.

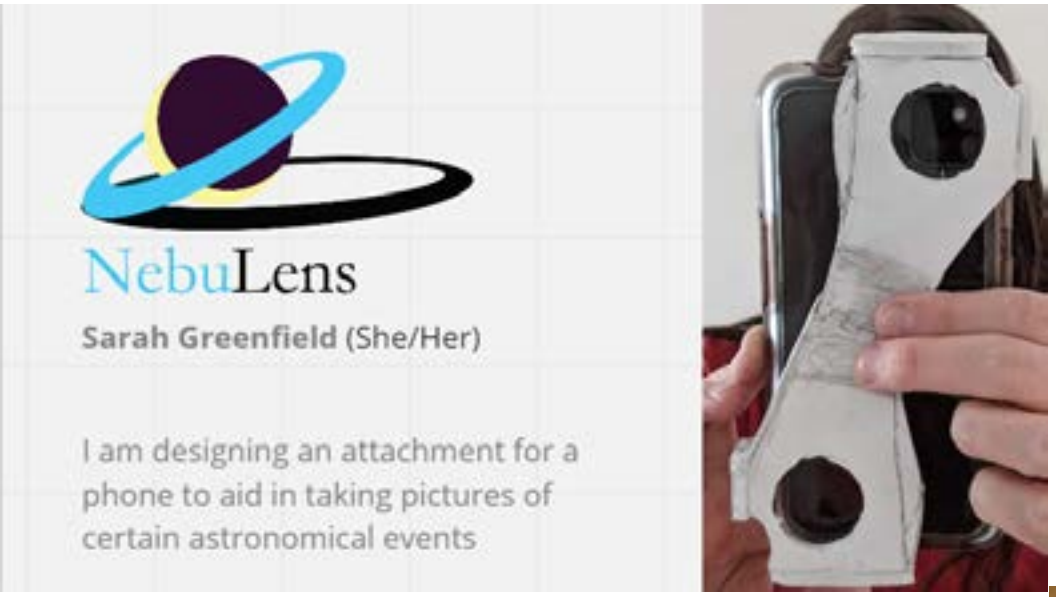
Table of Contents

Final Logo

After finding the favored logo and color variation, I finalized the variation of logos for multiple uses.

Table of Contents

Mid Review Presentation



Introductory Slide

Around the midpoint of this project, weall had to make a presentation for experts in the Design field.

The Physical Mock-up with descriptions on the physical properties

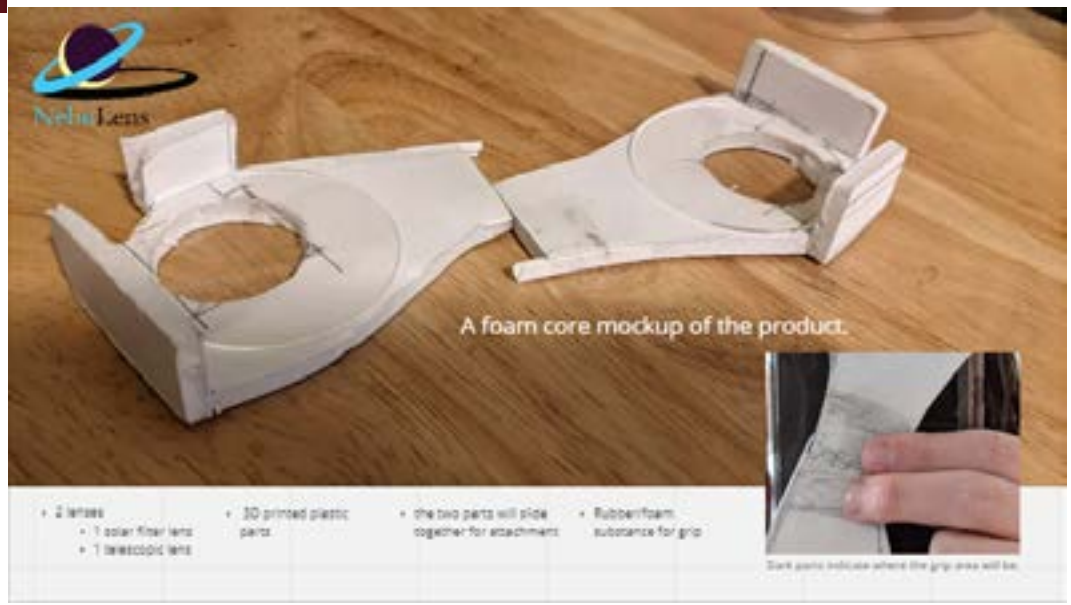
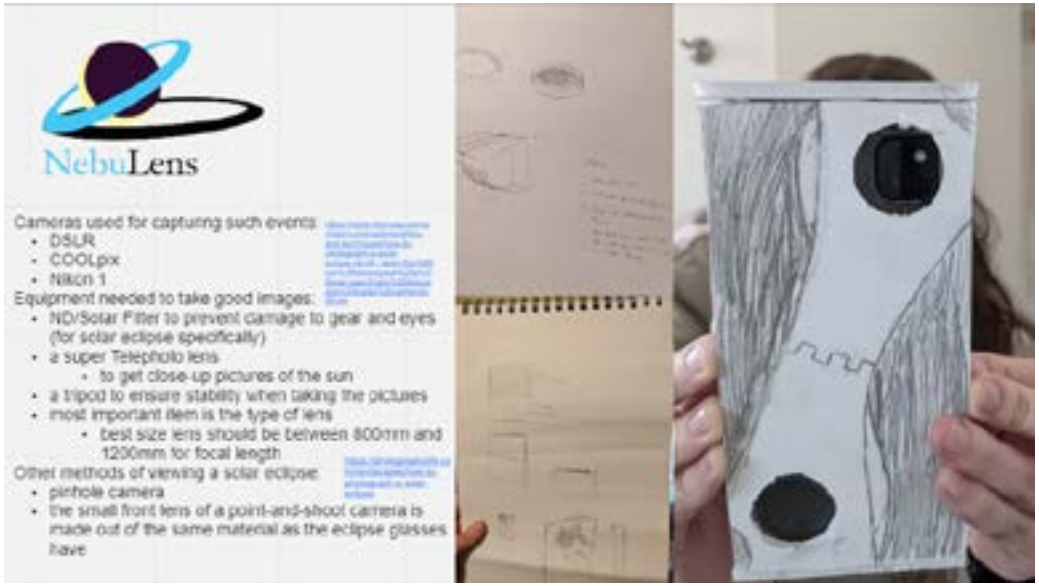


Table of Contents



Research Slide with the sketches and initial mock-up

Final 'Thank you' Slide

Table of Contents

Data Coding/Analysis & Feedback

Data Coding/Analysis

After the Mid Review Presentation, I received much helpful feedback from the experts. Using all the data that was collected by my peers, I organized the sticky notes with the comments into groups that shared similarities with each other. I combined some of them to form solutions.

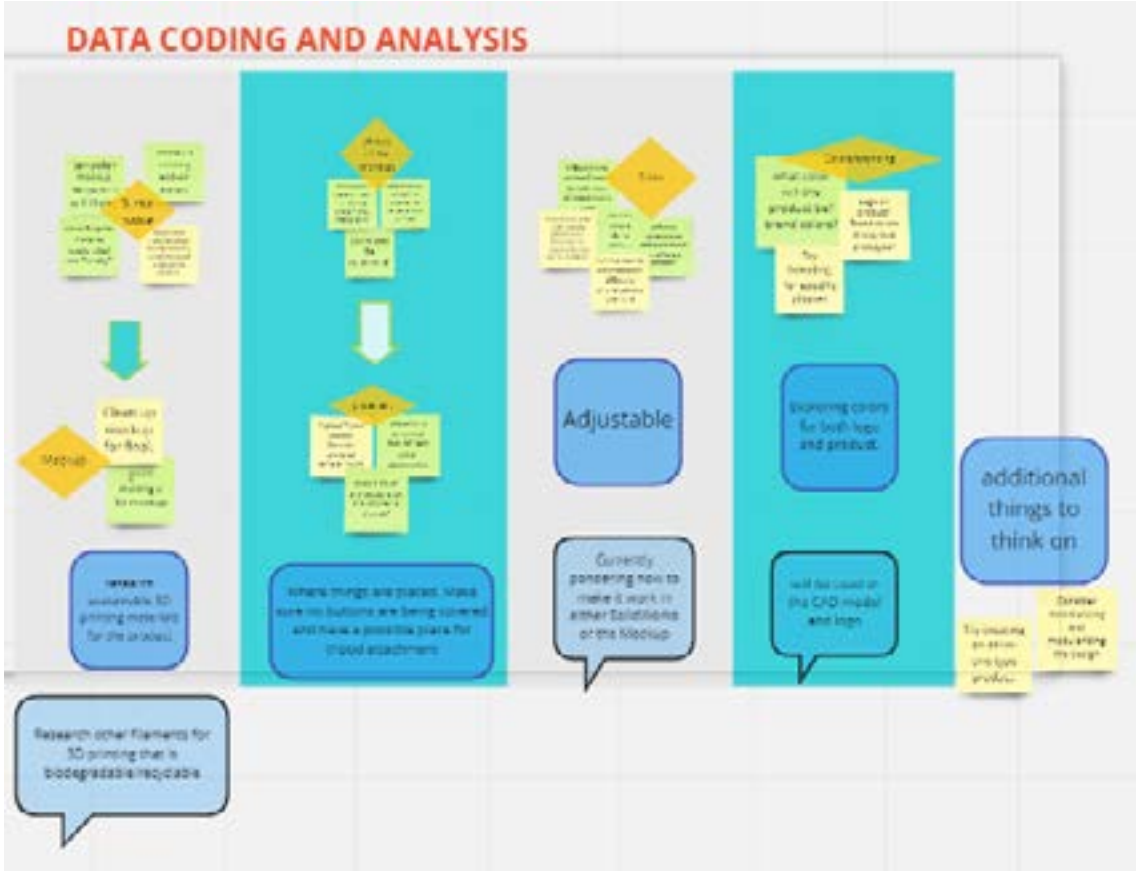


Table of Contents

Feedback Summary

Over here is the Feedback Summary. It was pretty much summarizing how the Mid Review went down, who I presented to and what revisions are needed.

Executive Summary of the Mid Review

On Tuesday, February 22nd, 2022, experts showed up to our zoom class meeting and we all presented our mid-fidelity projects. For my project that I presented, I designed an attachment for a phone for use in taking amazing images of certain astronomical events, one of them specifically is of a solar eclipse. The product is called nebulens. I made a mockup to show how the nebulens would fit on the phone and how they will be assembled in place. I also showed some of the research I did on the specific types of equipment is necessary for taking such images. I got the opportunity to present to three design experts. Jon Hill, Angel Sok, and Ruth Meghiddo. Jon Hill is an expert in shoe design who works with Nike. Angel Sok is a CSULB Design BA graduate who is currently a UX/UI designer for Monster Energy Drink. Ruth Meghiddo is an expert on agriculture and permaculture, as well as the principal of Meghiddo Architects. With the feedback I received from the three experts, I sorted out the feedback into segments to organize the data and came up with some solutions for said feedback. I was suggested to see about having the materials be biodegradable/recyclable, ensure that my mockup would be cleaned up for the final submission. Other pieces of advice were to think about the sizing and make it adjustable or have multiple sizing options based on the most common phone size. The experts also asked about the colors and branding, specifically what colors would be added to it.

Positive features:

- MUST haves:
  - Two lenses, one that is a solar filter, and the other is a telescopic lens
  - Different sizing options for the biggest, medium, and smallest phone sizes
- WILL haves:
  - Some form of adjustment sliding feature
- SHOULD have:
  - Sustainable materials
- MIGHT have:
  - Tripod mount attachment

WON'T have:

- Heavy materials
- Brittle materials
- Expensive pricing

Modifications/additions

- Adjustable sliding mechanism to expand or contract using the largest and smallest phone sizes out there right now
- Redo the mockup for any adjustments and clean it up
- Add some color to the product.

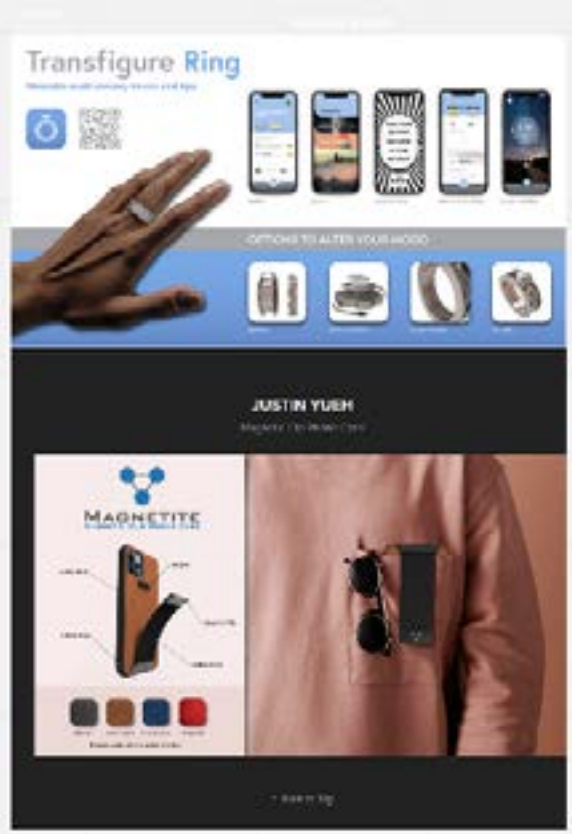
Table of Contents

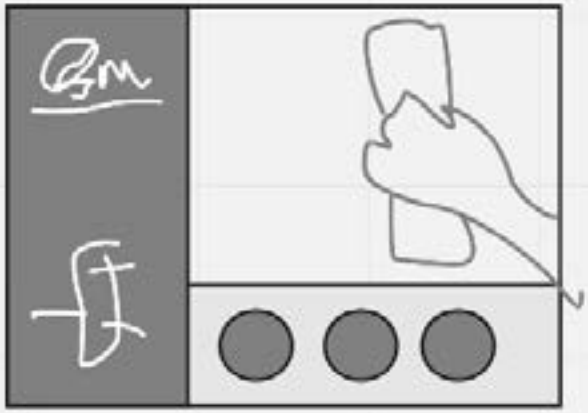
Revisions

For some of the revisions, I revised the look of the product to a more sophisticated color combination. Other recommendations were about having multiple sizes or even having it adjustable. The adjustable feature will be a future revision.

Table of Contents

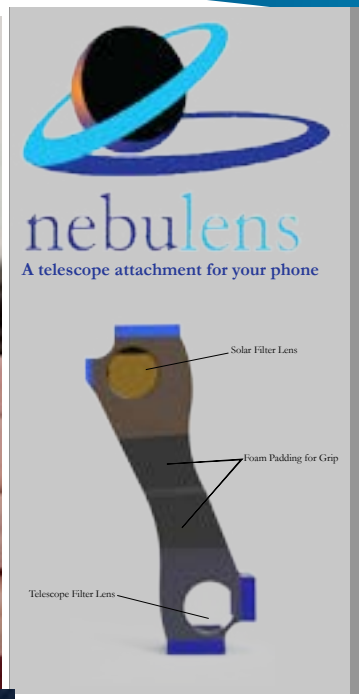
Poster Drafts

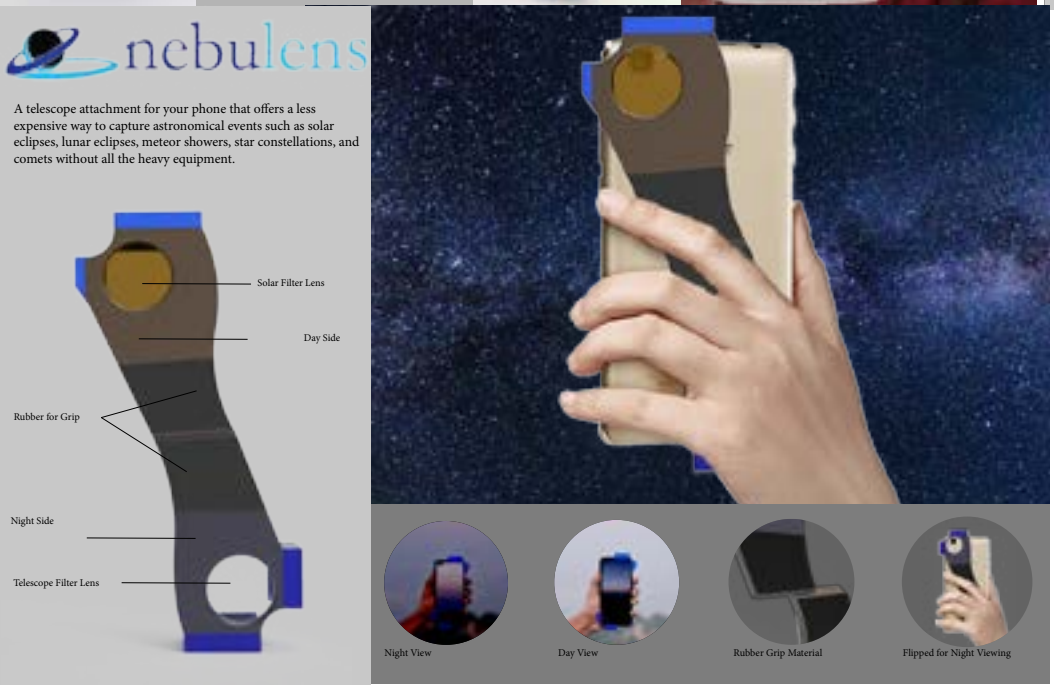




For making the poster, I took inspiration from previous CSULB Design students' posters, Justin Yueh and Nichole Macoy. Using their posters as inspiration, I created a template to use for my poster.

Table of Contents





These are the drafts I did before I did my final Poster.

Table of Contents

Final Poster

Table of Contents

Sources

https://www.nikonusa.com/en/learn-and-explore/a/tips-and-techniques/how-to-photograph-a-solar-eclipse.html#:~:text=You%20can%20photograph%20a%20solar,specifically%20discusses%20digital%20camera%20use

https://photographylife.com/landscapes/how-to-photograph-a-solar-eclipse

Back Cover

Table of Contents