

**julian  
marmier**

# Shortened Portfolio

For more details about each project, visit [↪ julianmarmier.com](https://julianmarmier.com).

## Sections

FEATURE	<a href="#">Market 2day →</a>	3
ONE	<a href="#">High School Robotics →</a>	4
TWO	<a href="#">Web Design &amp; Development →</a>	10
THREE	<a href="#">Mit Museum Studio &amp; Compton Gallery →</a>	15



MARKET 2DAY

COMPANY  
INFO

Market 2day  
[market2dayapp.com](https://market2dayapp.com)

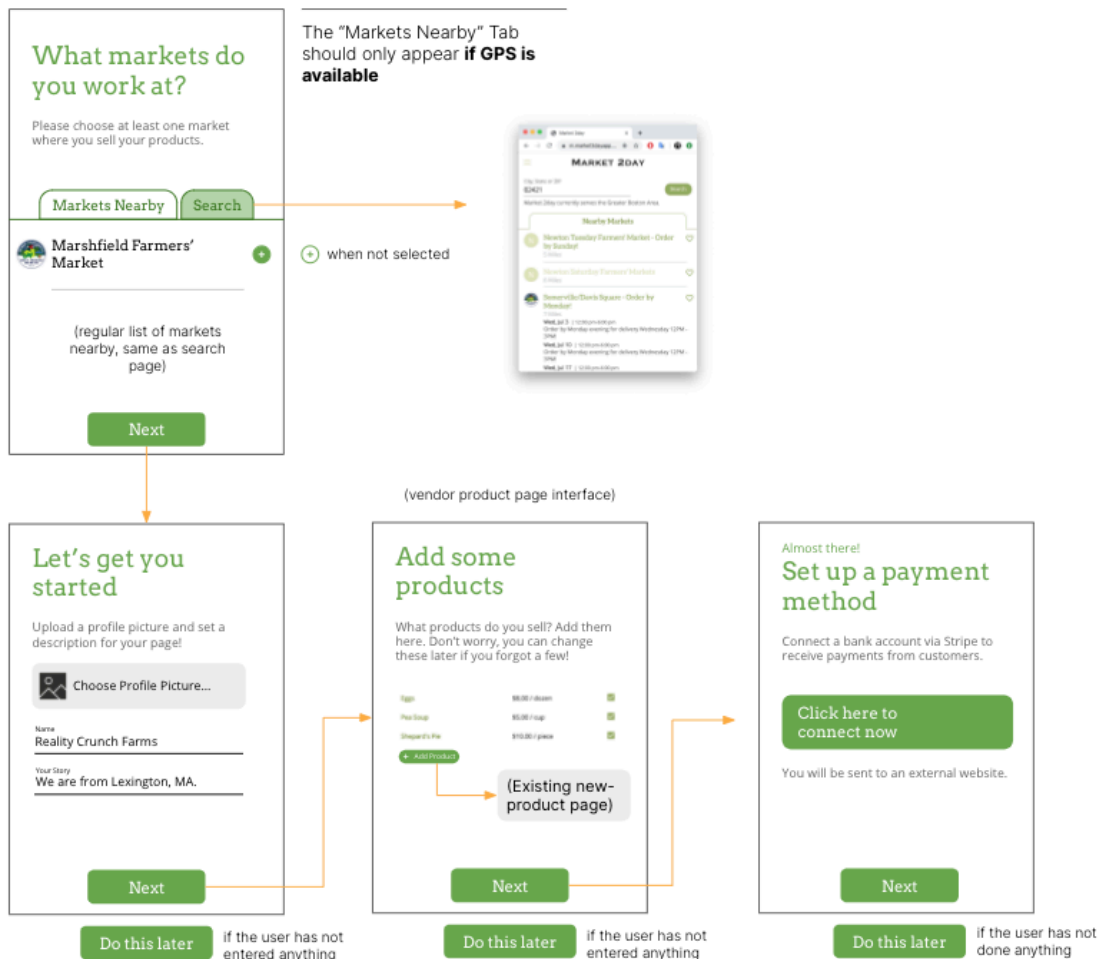
Among the many projects I've helped this startup with, the biggest one so far is to redesign their application to make it more accessible for customers of all technological backgrounds.

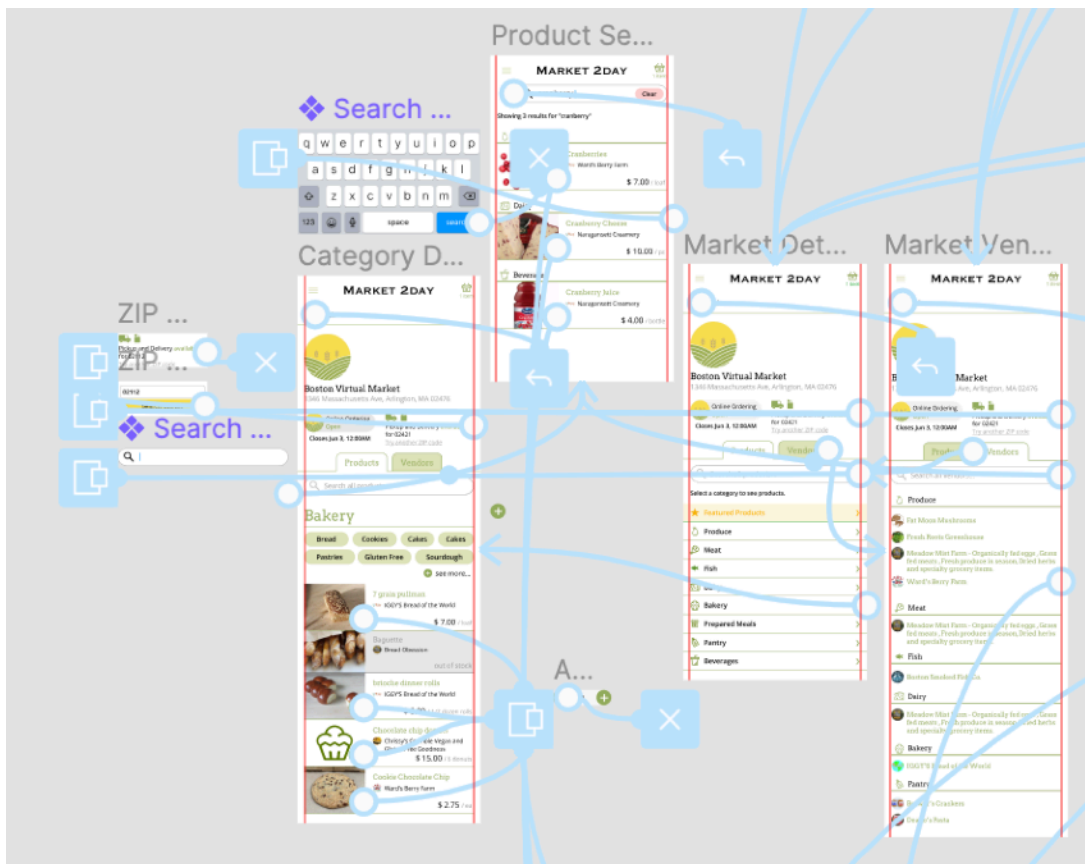
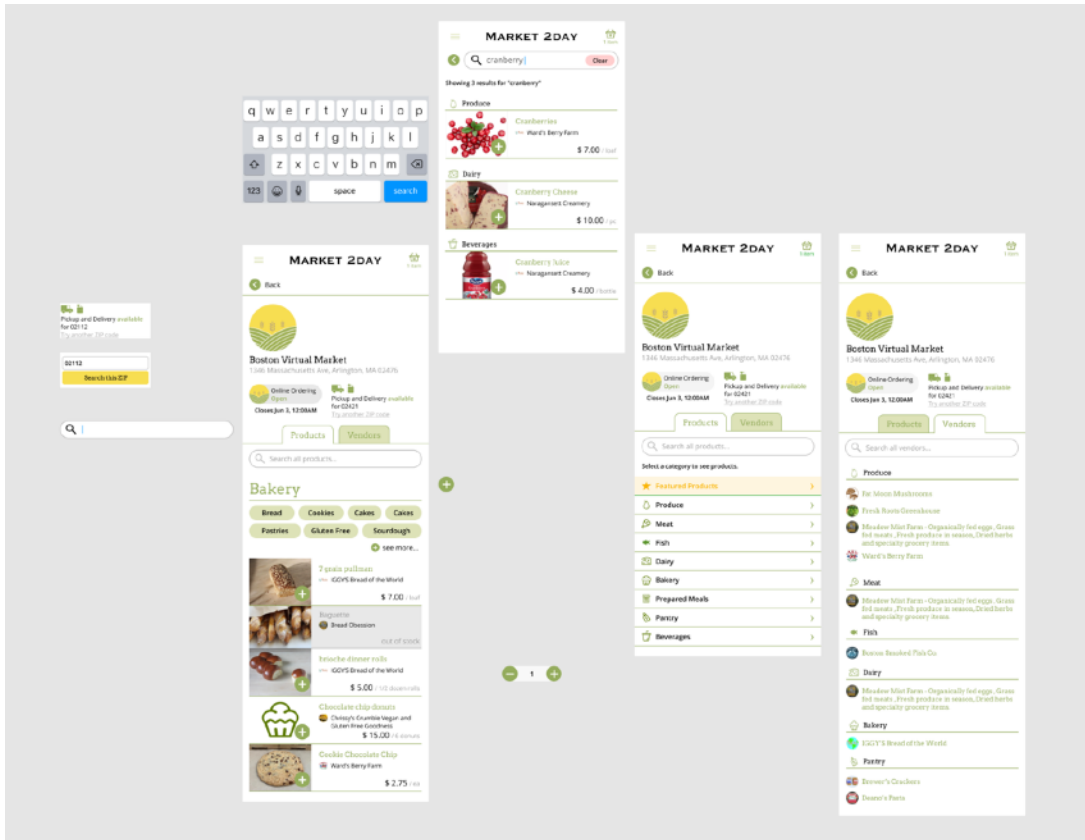
View the latest revision here: <https://www.figma.com/proto/dEzRAIo81oVQucqMJHzYQ0/App-Redesign-for-Market-2day?scaling=scale-down&node-id=247%3A410>

Improved Onboarding

Vendor

Sign Up/Create a  
Vendor Account





# Lexington Legoheads

Lexington Legoheads

[legoheads.weebly.com](http://legoheads.weebly.com)

*My robotics team.*

Part of the [FIRST Tech Challenge](#) and qualified for the FIRST World Championships in Detroit via the Vermont Inspire Award.

## Subsections

<sup>A</sup>	<b>Engineering Notebook</b>	5
<sup>B</sup>	<b>CAD Render</b>	9

## SECTION TWO

## Engineering Section

<b>Z</b> END OF BINDER	<b>Engineering Daily Journal</b>	<b>SEE LAST CHAPTER</b>
<b>C</b>	<b>Strategy, Scouting, Statistics &amp; Science</b>	
	14. Game Strategy and Planning	13.1
	15. Scouting & Statistics	14.1
	16. Material Science (Friction)	15.1
<b>D</b>	<b>Robot Design Evolution, Innovation &amp; CAD</b>	
	17. Design Principles	16.1
	18. Evolution of Our Design	17.1
	19. Drawings & Animations of the Robot Modules	18.1
	20. PTC Creo CAD	19.1
<b>E</b>	<b>Robot Engineering Hardware, Electronics &amp; Mfg</b>	
	21. Hardware Modules	23.1
	22. Engineering Innovations	24.1
	23. Electronics, Wires & Sensors	25.1
	24. Manufacturing	23.1
<b>F</b>	<b>Robot Software Computer Vision &amp; Navigation</b>	
	25. Code Development Process	24.1
	26. Software Modules	25.1
	27. Autonomous Software Programs	26.1
	28. Teleop Software Programs	27.1
	29. <i>Control</i> : Sensors & Algorithms	28.1
	30. Odometry & IMU	29.1
	31. Computer Vision	30.1
<b>G</b>	<b>Testing &amp; Quality</b>	
	32. Failure Mode and Effects Analysis (FMEA)	31.1
	33. <i>Hardware Testing</i> : Visual & Testbed Program	32.1
	34. <i>Software Testing</i> : Verification & Maintenance	33.1

# Summary

11251  
 Founded 2010

Lexington  **Legoheads**

## Suggested Pages

- 1

**PAGE**  
**4.1**

Meet our team members!
  - 2

**PAGE**  
**9.2**

Learn about the modular exhibit we take on the road.
  - 3

**PAGE**  
**12.6**

Read about a successful event with a sponsor,
  - 4

**PAGE**  
**13.2**

Find out how we discover our alliance picks.
  - 5

**PAGE**  
**18.1**

Discover our hardware and software innovations.
  - 6

**PAGE**  
**25.2**

Take a peek at what and how we manufacture.
  - 7

**PAGE**  
**30.1**

*Sense* the sensors and algorithms we implement.
  - 8

**PAGE**  
**35.1**

*Test* the writing of our pre-match testbed program
  - 9

**PAGE**  
**41.1**

See how we raise money through sponsorships
  - 10

**PAGE**  
**Z.17.7**

Step into the world of the Legoheads for a day.
- END OF BINDER**

## Team 11251

We are the Lexington Legoheads, an independent robotics team from Lexington, Massachusetts. Made of eight seniors and one sophomore, our team is a very diverse group, passionate not just about competitive robotics, but excited to **share our knowledge** and **make a difference** as we move on into our fourth year of the *FIRST* Tech Challenge.

We started when we were as little as 7 years of age, and continue to chase a dream of one day going to the World Championships. Even if we never achieve that goal, we want to inspire others to learn what we did.

## Our Backstory

*“Never Quit”*

The Legoheads were formed by **Rohan** in 2010 as a *FIRST* Lego League team when he saw the Pickle Jarheads, a local town team, demo their robot in the town library. He pulled in a small group of friends. After initial success, when things didn't go as planned in the second year, everyone **quit** except **Rohan**. He found similar passionate people who had experienced frustrations elsewhere but had **refused to quit**. **Andrew** joined in 2012, **Samedh** in 2013, & **Sameer** in 2016. We have stayed together through success and failure. **Amolak, Julian, and Joris** joined in 2018, and **Sydney** joined us this year. Each of us has something special to contribute without whom we would not be complete. We have gotten to know and trust each other really well.

## Legoheads by the Numbers



**8** team members  
 SECTION 4



**18** teams collaborated or mentored  
 SECTION 8



specialists with whom we connected  
 SECTION 7

SECTIONS 11 & 38 raised for charity  
**\$1,226**



**300** children exposed to **FIRST**  
 SECTION 9



Awards and recognition over nine years  
 SECTION 6



**4** outreach events organized or planned  
 SECTION 10



**1** product invented  
 SECTION 11

**15,000+**

messages sent on Slack

**10**



years dreaming of going to Worlds

A  
Our Team

Lexington  Legoheads


# Julian

Favorite Color  
**Gray**

 Favorite Movie  
**Amélie**

 Favorite TV Show  
**The Office**


 Favorite Book  
**Fantasy Life**

 Favorite Car  
**Tesla Model X**



 Birthday  
**December 17<sup>th</sup>**

 Zodiac  
**Sagittarius**

 Grade  
**Senior**

 Favorite Sportsperson  
**Kilian Jornet**

 Favorite Activity  
**Going Downtown**


Favorite Food  
**Swiss Rösti with Bacon**



Least Favorite Food  
**Very Dry Chicken**



 Most Memorable Vacation  
**Trip to Laos**

 Favorite Phrase Coach Says  
**“What a Country”**

What the team depends on me for

**Logo and Brand Identity**

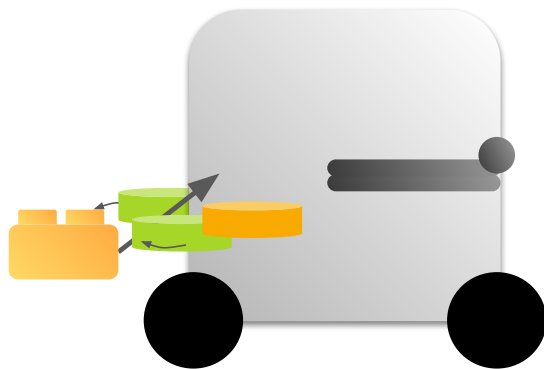
**Engineering Notebook**

**AR**

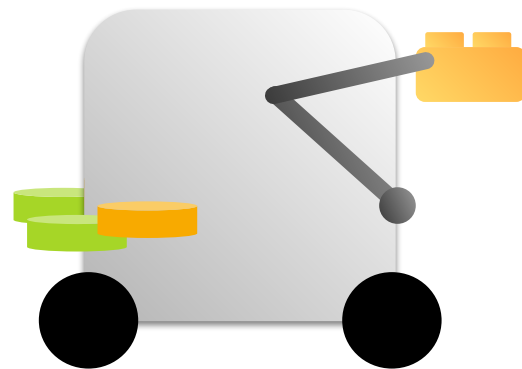
PAGE #

## 2D Animation

To complement the evolution of our design, we created 2D animations of the robot chassis for each version using Adobe Animate. Below is part of the chassis we made using Animate, which shows the *Stone* being intaked and then stacked with the cantilever.



**Intake**



**Cantilever**

PAGE #





▲ Render of our 2020 robot's fourth revision. Made using Blender.

For a short animation of this model, also made by me, see <https://youtu.be/o44oXrlgEQM>.

# Web Design & Development

In this section I've added some of the more recent notable projects I've worked on.

Other projects not shown include [julianmarmier.com](#), [foda.julianmarmier.com](#), [math.julianmarmier.com](#), and [lhsphotoclub.org](#).

Subsections	
<sup>A</sup> <a href="#">Masks for Hunger</a>	11
<sup>B</sup> <a href="#">Organize</a>	13

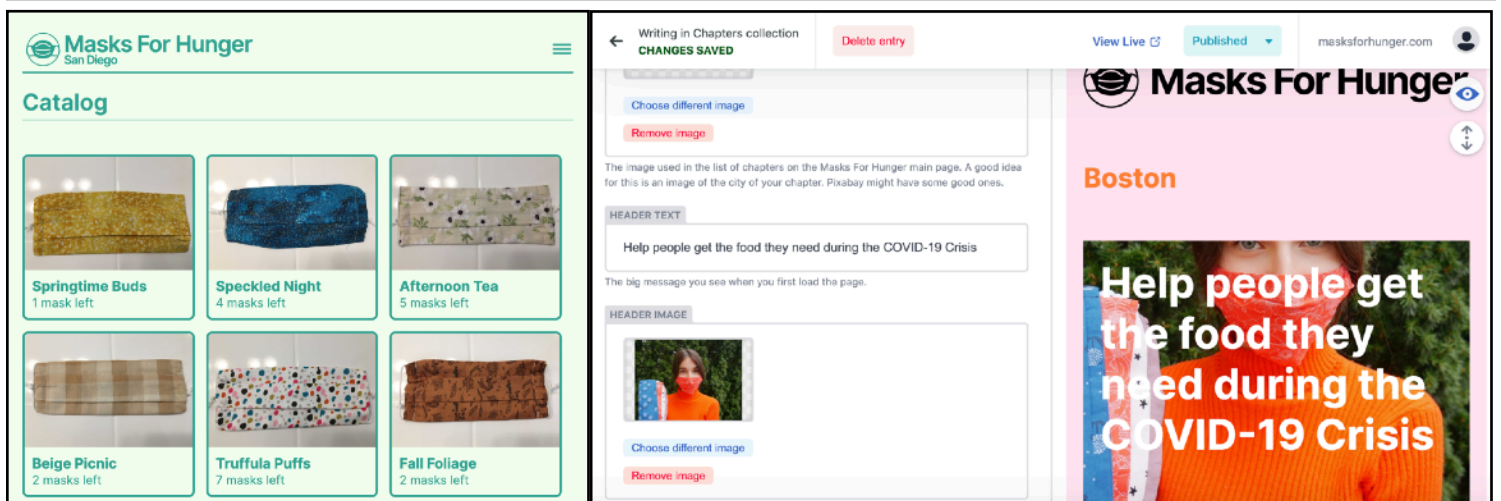
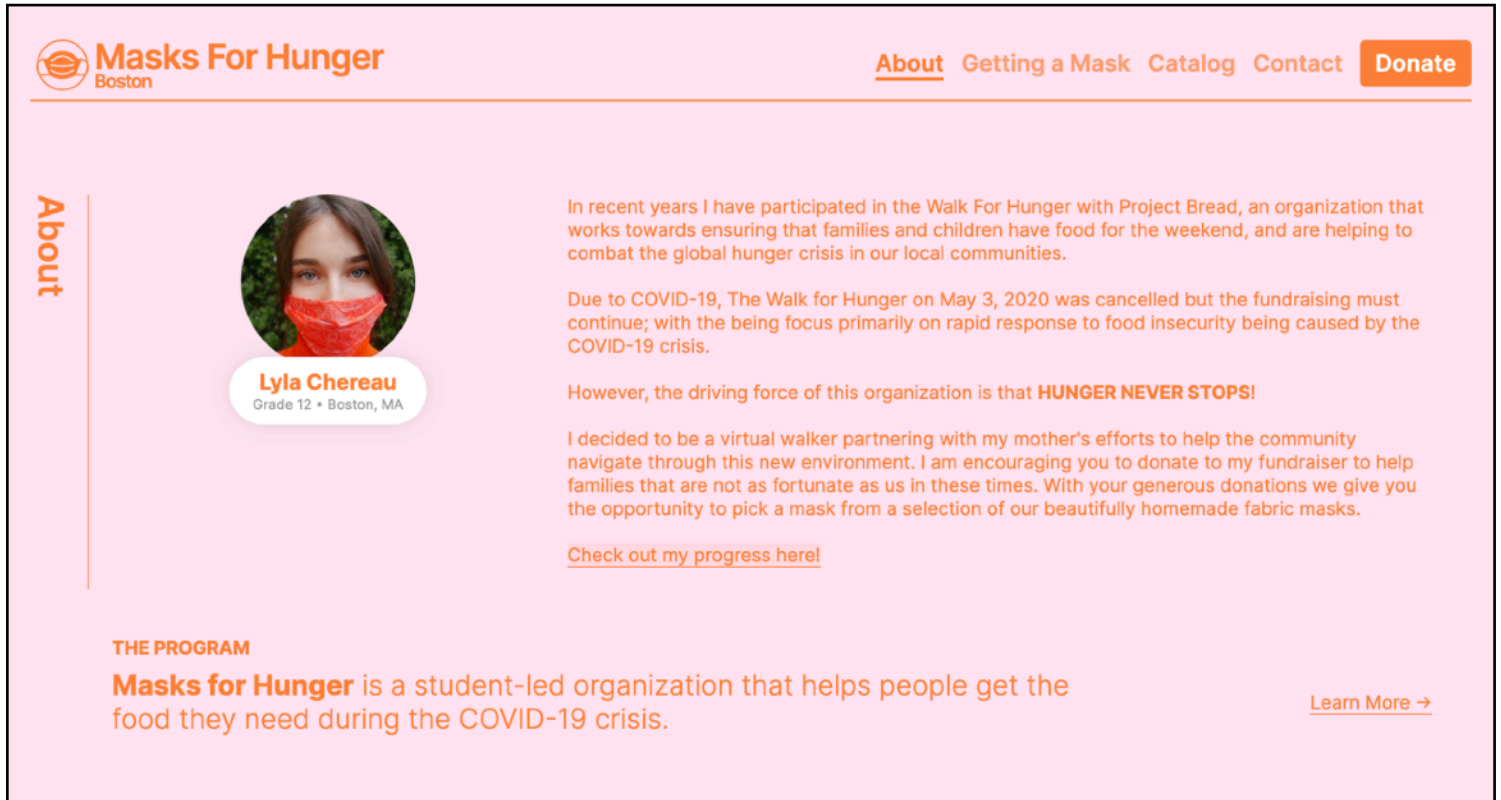


# Masks For Hunger

Masks for Hunger

[masksforhunger.marmier.co](https://masksforhunger.marmier.co) (archived)

During quarantine, I made this website for a friend's organization, complete with a CMS backend using NetlifyCMS, GatsbyJS, and React.



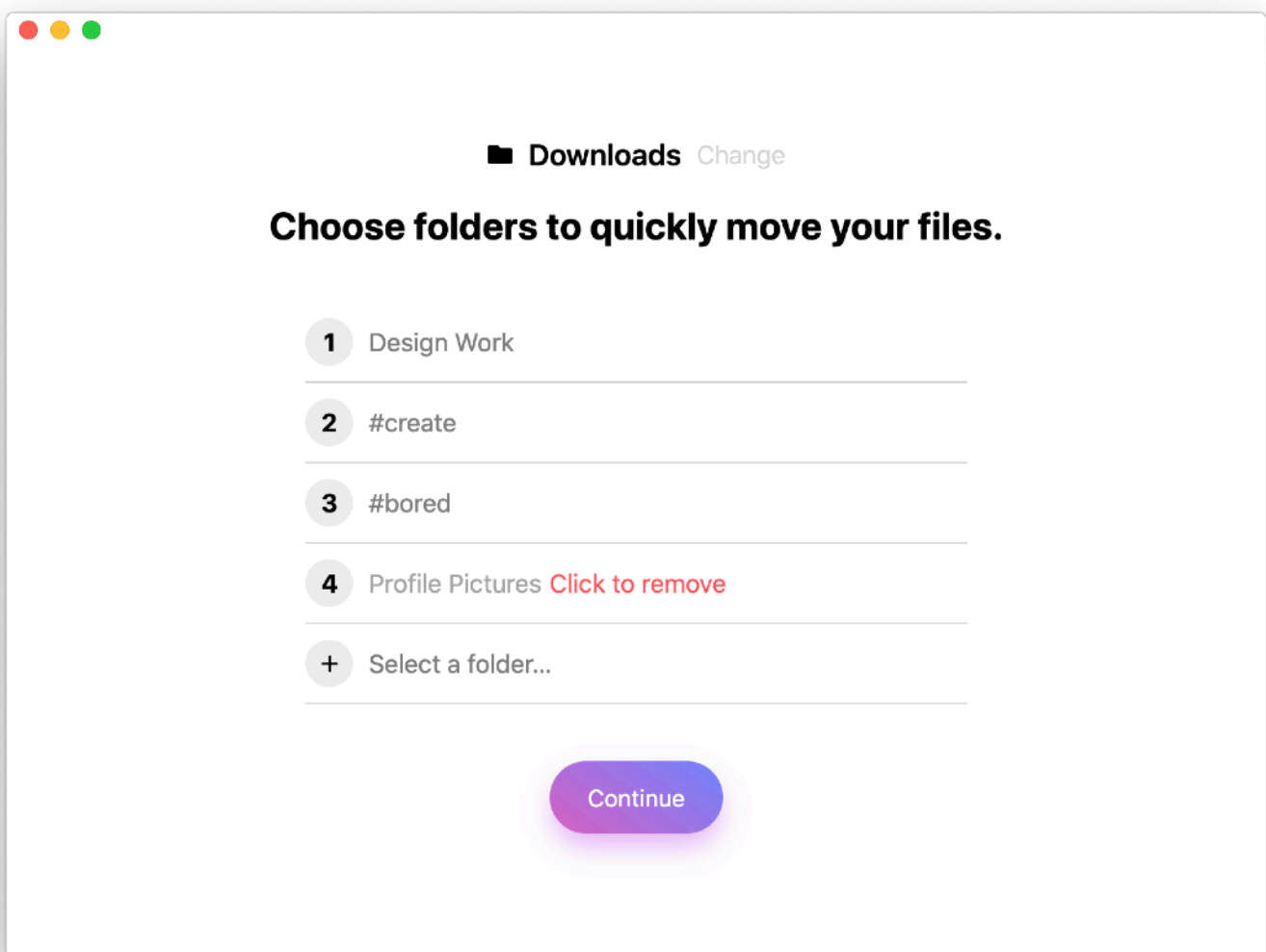


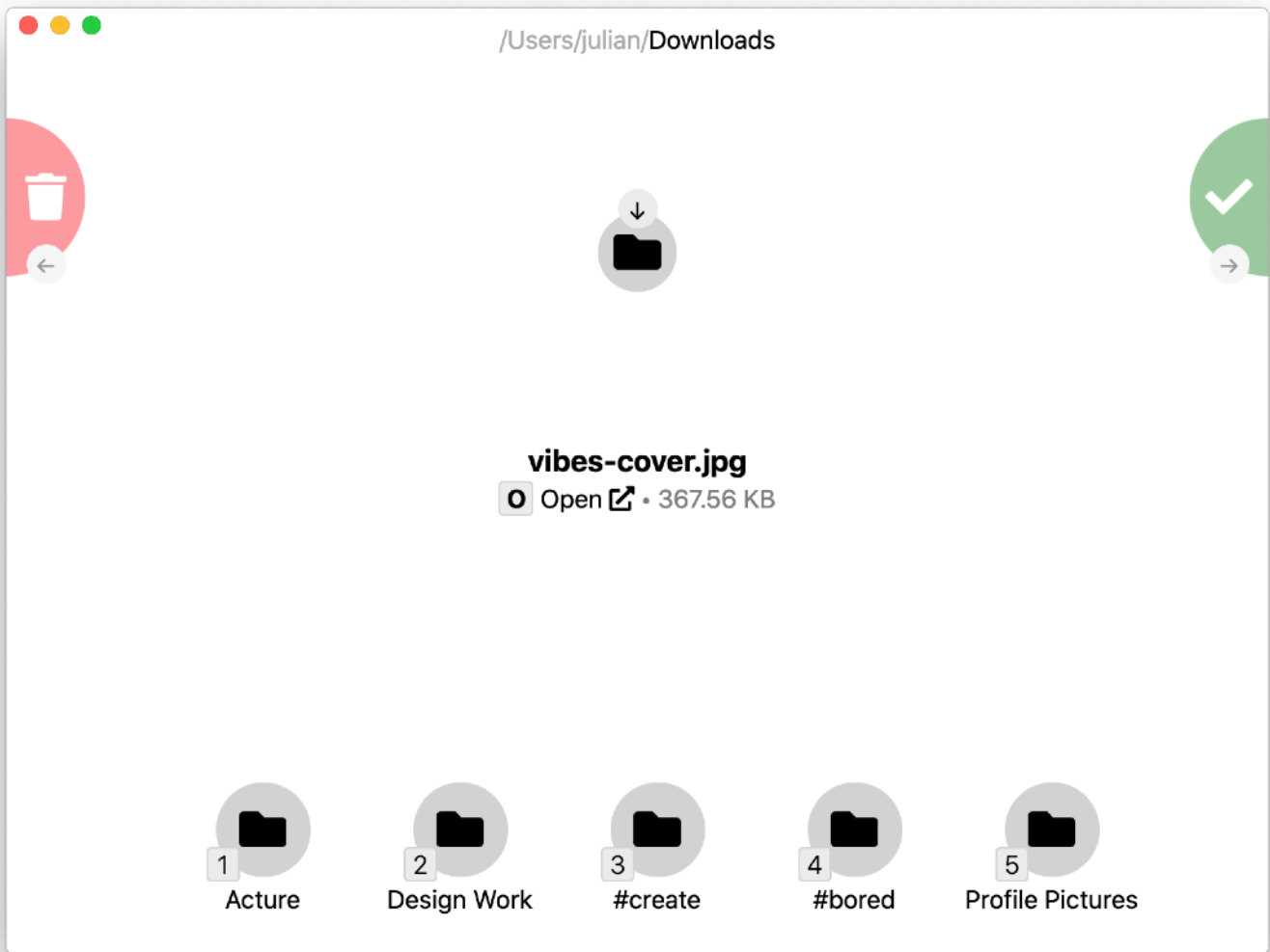
# Organize

[organize.julianmarmier.com](https://organize.julianmarmier.com)

A file management application I made while learning to build desktop apps with Electron. A minimalistic interface allows for files to be quickly kept, removed or transferred to a different folder. **This project is in development** and still lacks many important features that I hope to add in the future.

Currently I'm working on a redesign that uses Tauri, which will greatly minimize space taken up and make development easier.





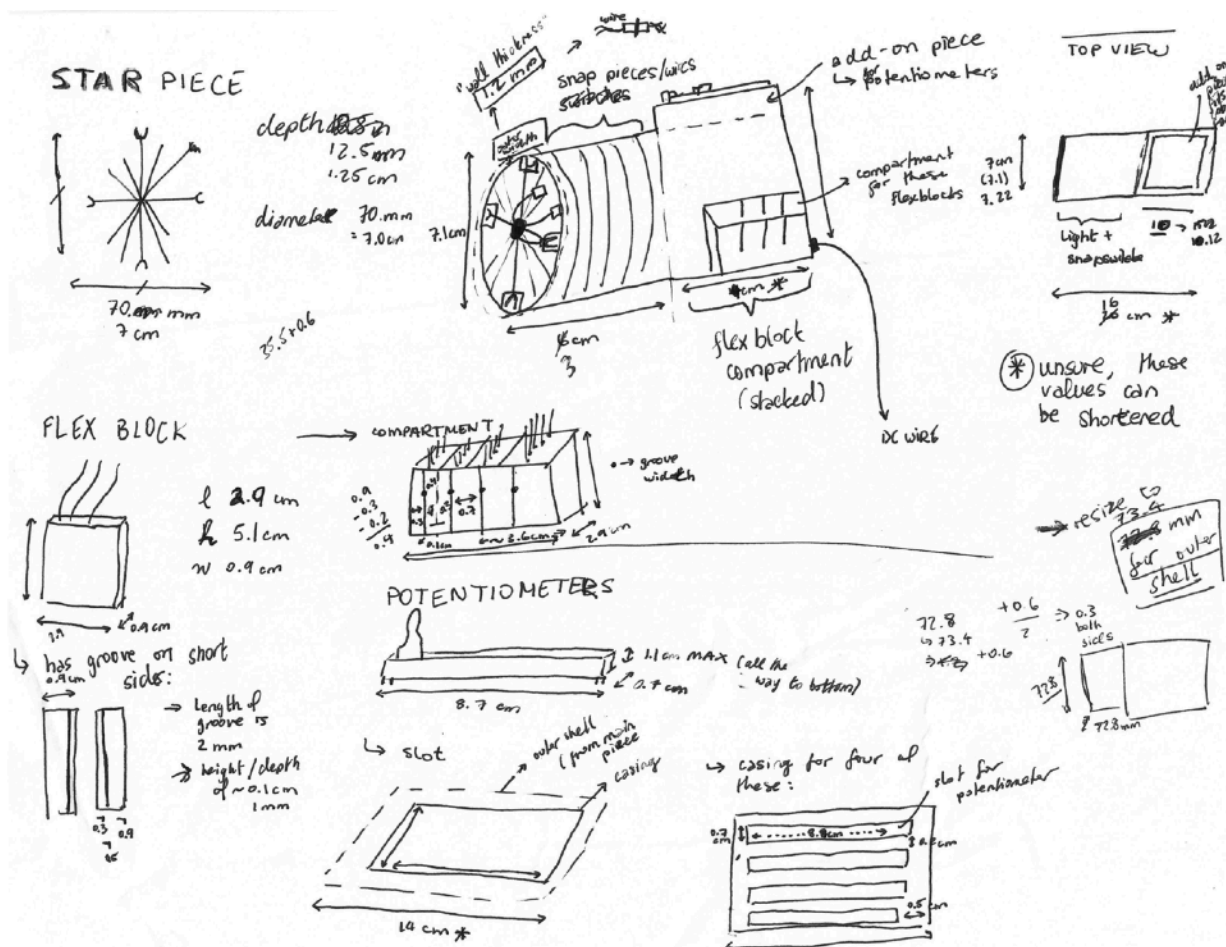
**STUDIO  
INFO**

MIT Museum Studio & Compton Gallery  
[mitmuseum.mit.edu/mit-community/mit-museum-studio-and-compton-gallery](http://mitmuseum.mit.edu/mit-community/mit-museum-studio-and-compton-gallery)

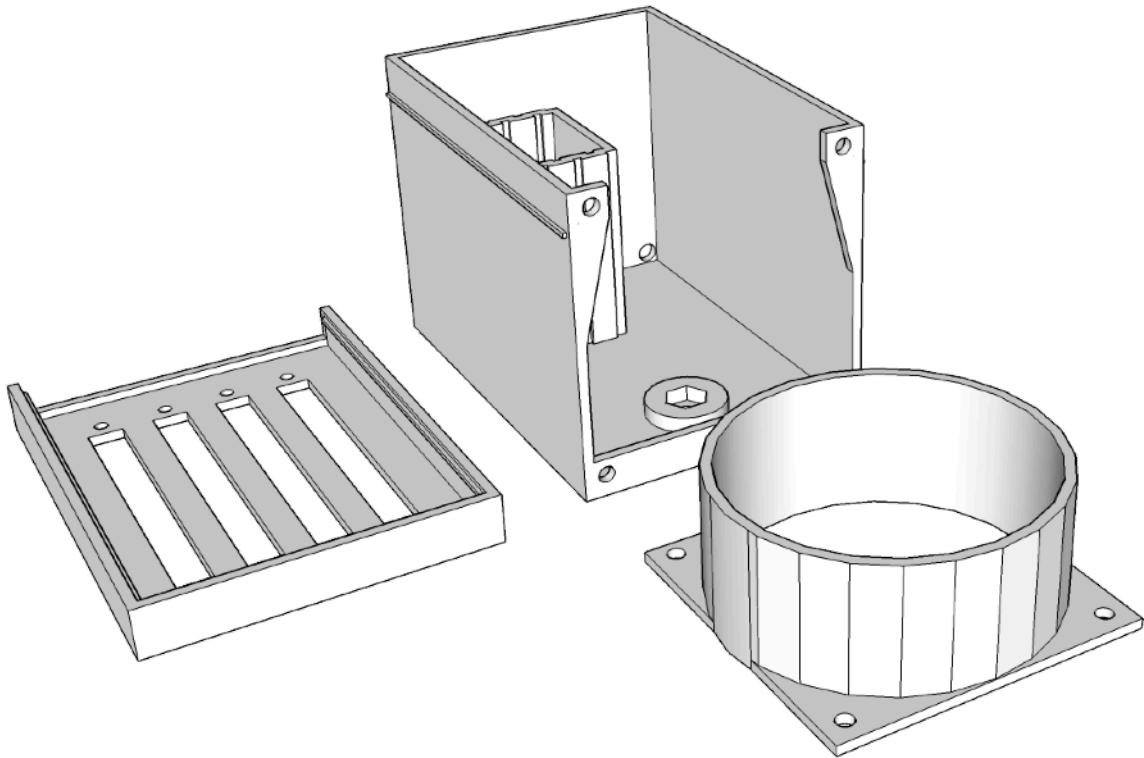
**Internship**

One of the projects I was tasked with was designing color-adjustable studio lights based off of a cardboard and foam model provided by the studio managers. The design eventually became two different final prototypes—initially we had planned to 3D print the frame, but that turned out to be too expensive, so instead we went for stacked precision-cut plexiglass plates, held together by threaded wire.

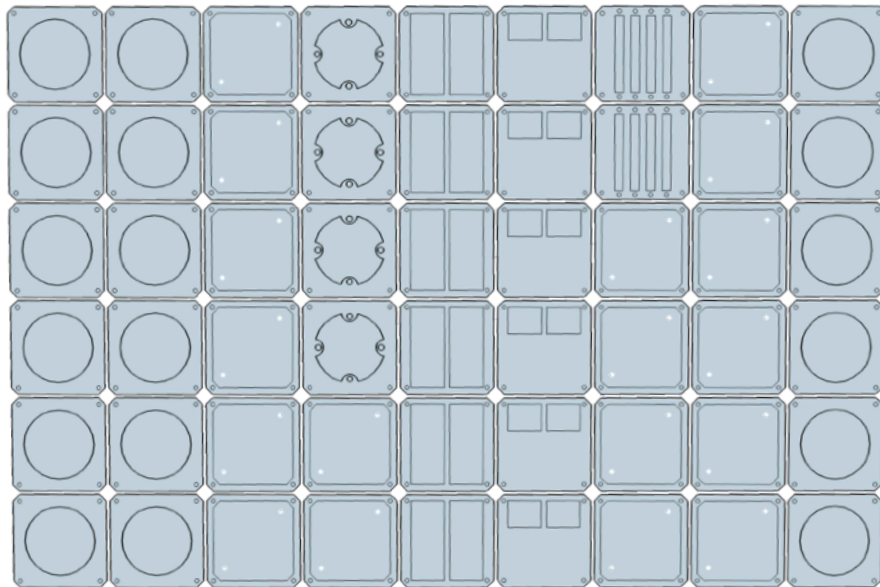
From this project I learned how to design and build something from start to finish, which inspired me to want to pursue a future in product design and design engineering.



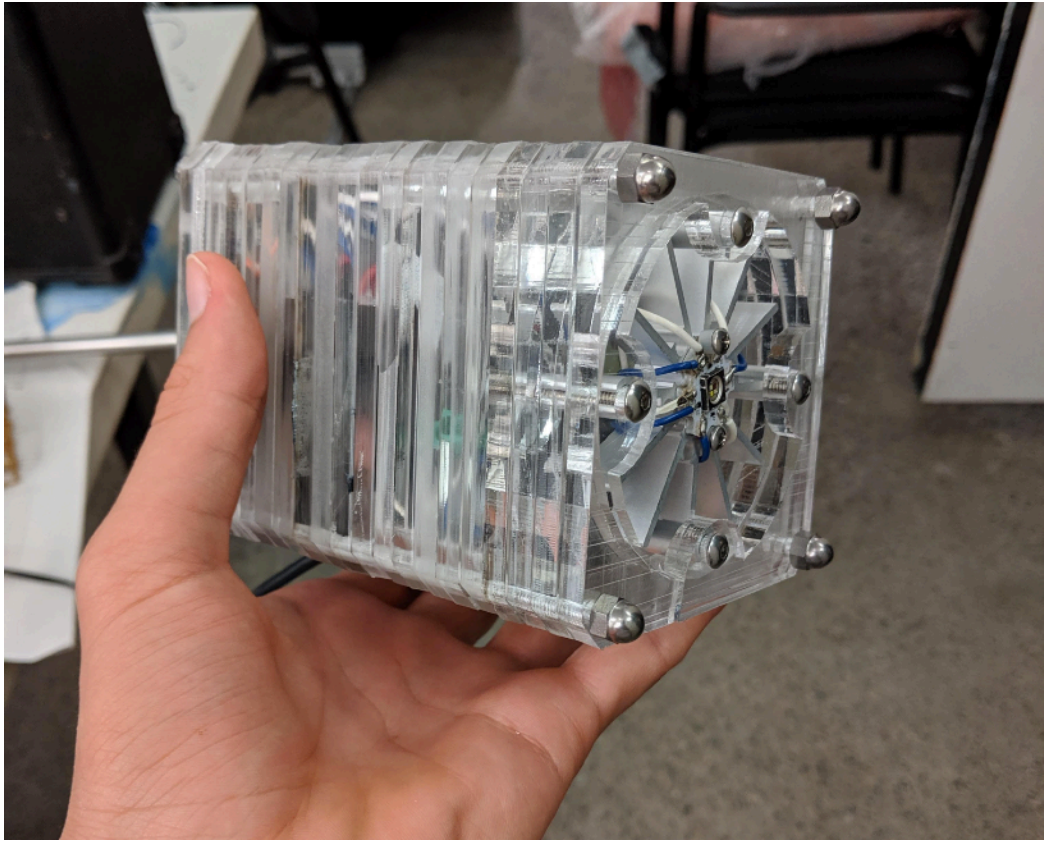
▲ Design Phase — gathering information about electrical components and the dimensions of the case.



▲ The final 3D model to be printed. However this would have cost around \$90 in printing per model!



▲ Instead we went with a plate system...



▲ The final product!