ORIGAMI

Folding Light - Projected Play

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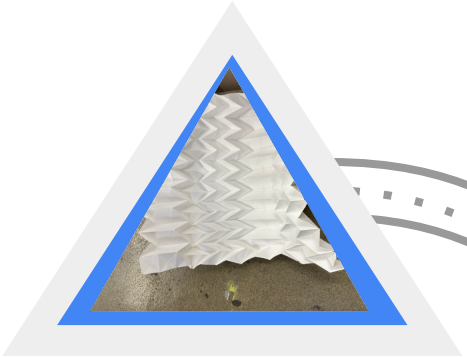
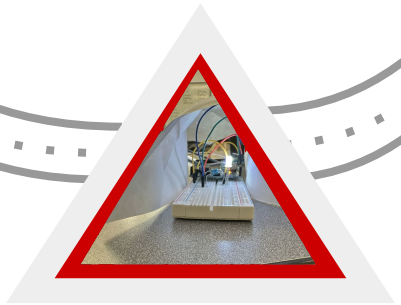
Dr. Behnaz Farahi | Design 586 - Embodied Interactions | Spring 2024 | X5 Cohort

PROJECT TIMELINE

March
Origami experimentation



April
Arduino & P5*jS
experimentation



May
Final Delivery

Mini Project I

DISCOVERY & EXPLORATION

What is ORIGAMI?

Traditional Japanese art of paper folding.

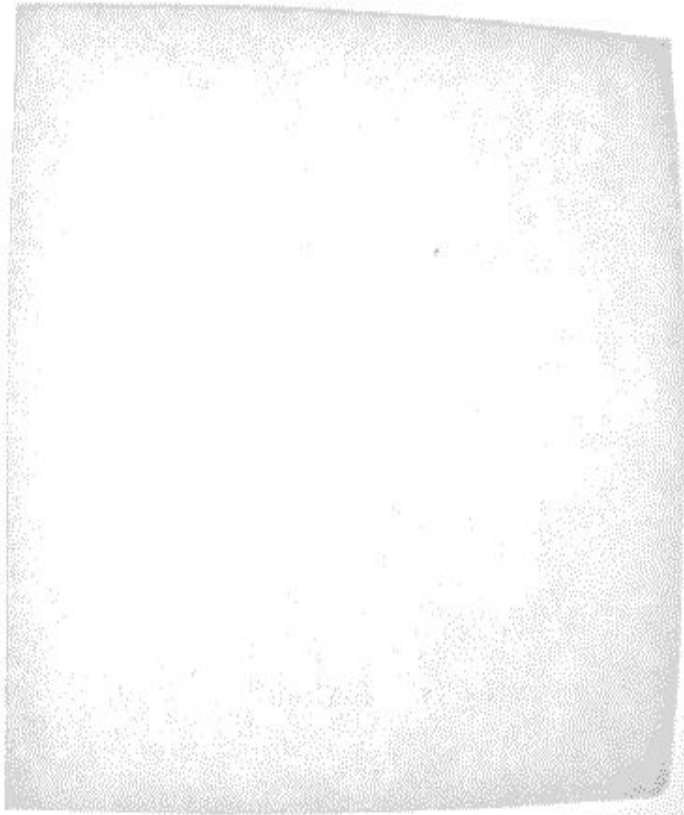
"*Ori*" means folding, "*kami*" means paper.

Involves transforming flat paper into sculptures through folding.

Ranges from simple designs to intricate sculptures.

Requires precision, patience, and creativity.

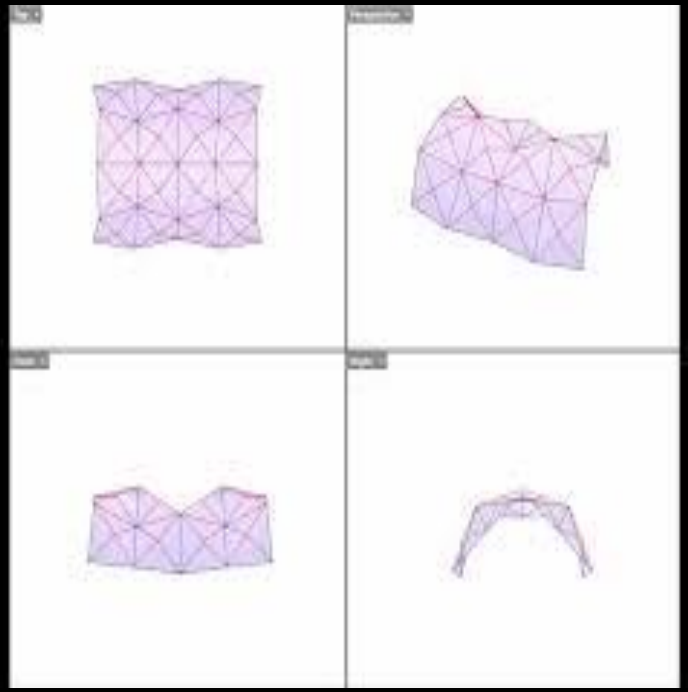
Popular worldwide as both an art form and recreational activity.

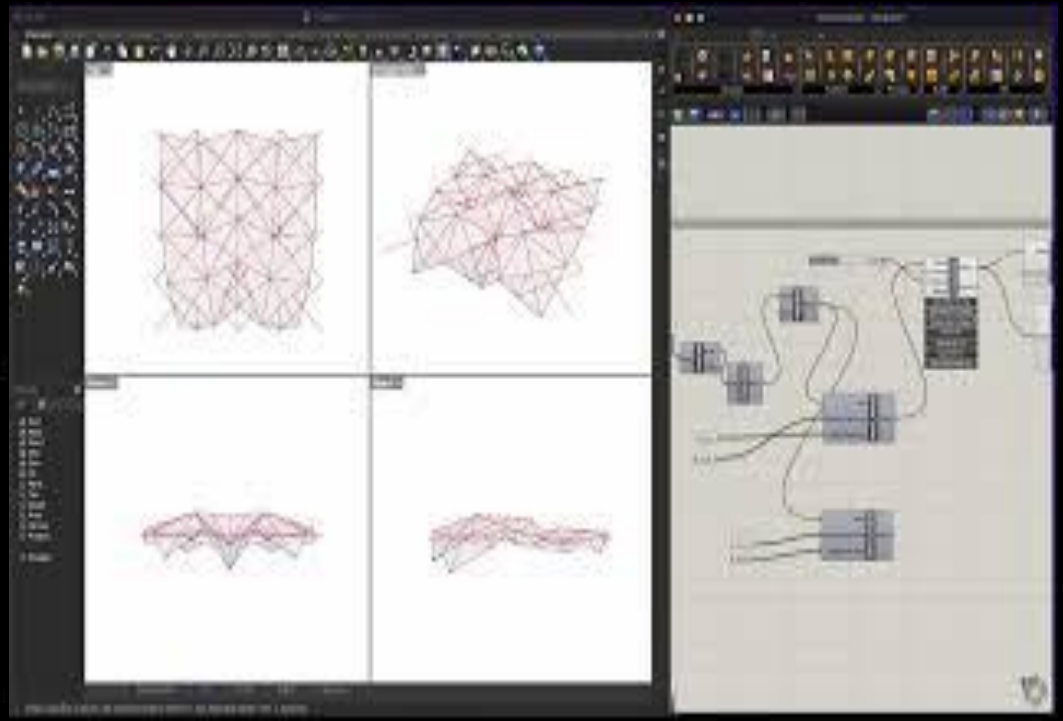


Credit *TraceLoops* Matthias brown

MINI PROJECT ONE | Experimentation

MINI PROJECT ONE | Rhino Model





CASE STUDY

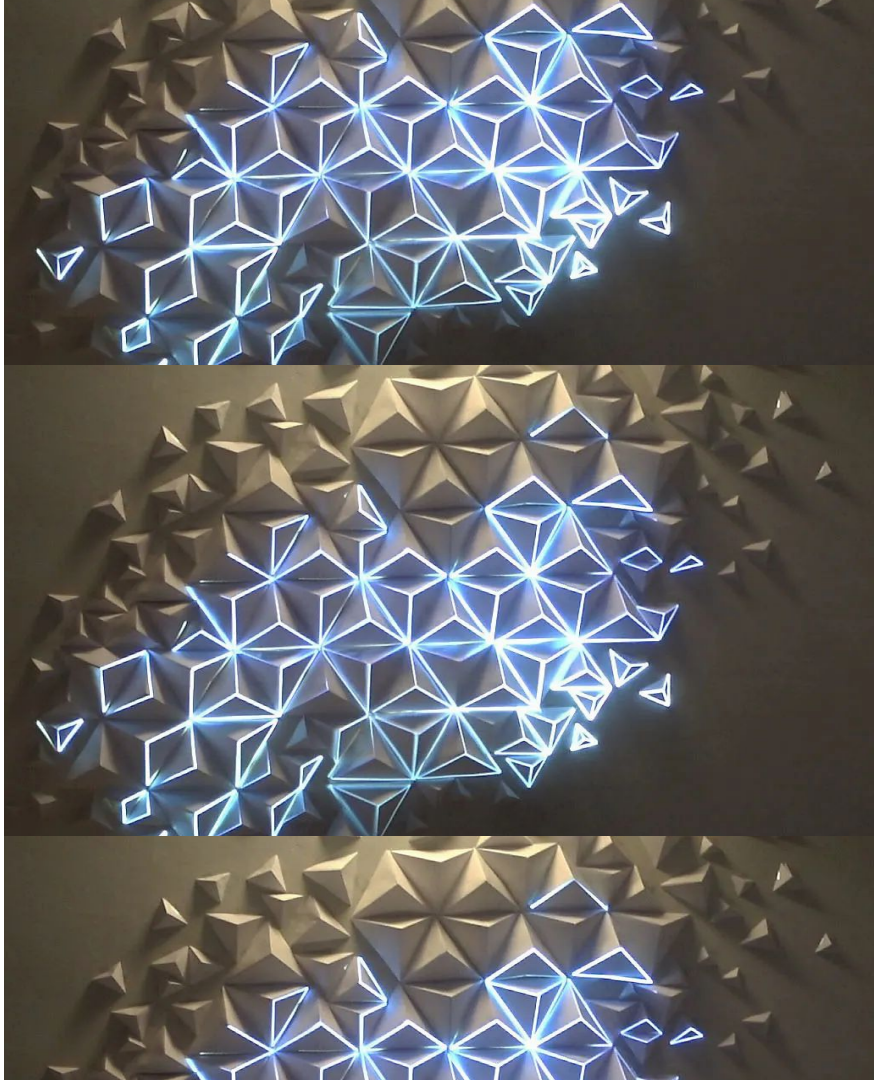
Ghostkubes

Erik Åberg, creator of "Ghostkubes," has developed a series of connected cube structures linked by hinges that can be easily manipulated into various curvilinear and exotic shapes. These origami building blocks, celebrated for their shape-shifting capabilities, play a significant role in public arts by captivating audiences with their fluid movements and intricate designs. By incorporating elements of juggling and performance, they enhance public engagement, inviting viewers to participate and explore these dynamic artistic expressions.

CASE STUDY

Origami Projection Mapping

For Studio Joanie Lemercier origami not only became a 3D art form but way to develop and change the surrounding environment during the Covid-19 pandemic. This process involves holding multiple sizes of the same modular triangle form, and then mounting them onto a wall and taking a projection mapping program to draw lines of light as outlines on the triangle bases with the ability to then alter, the projection ability, light movement or color.



Mini Project II

P5*jS | ARDUINO | TEACHABLE MACHINE

P5*jS & teachable machine

File Edit Sketch Help English Log in or S

Auto-refresh ImageModel_TM by ml5

sketch.js

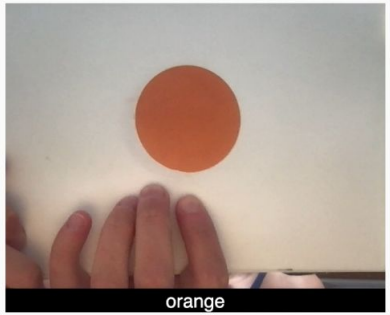
```
// Copyright (c) 2019 ml5
//
// This software is released under the MIT License.
// https://opensource.org/licenses/MIT

/* ===
ml5 Example
Webcam Image Classification using a pre-trained customized model and
p5.js
This example uses p5 preload function to create the classifier
=== */

// Classifier Variable
let classifier;
// Model URL
let imageModelURL =
'https://teachablemachine.withgoogle.com/models/vfPgzf2Vn/';

// Video
let video;
let flippedVideo;
```

Clear

Preview

Teachable Machine

This is a demonstration of image classification using a model trained with Google's Teachable Ma
project. If you cover the camera, this model will classify the image as "nighttime," otherwise will
anything else as "daytime."



P5*jS | Teachable Machine | Arduino

Project III

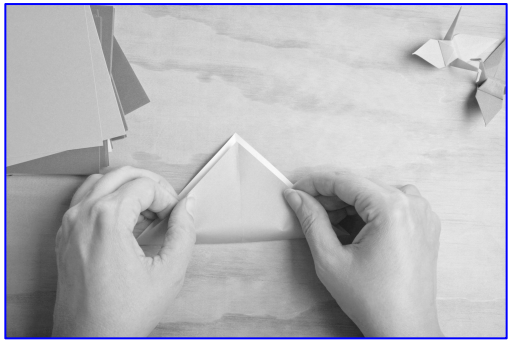
FINAL DELIVERY

PROJECT STATEMENT & GOAL

This project aims to transform origami, typically a solitary activity, into a collaborative experience by integrating P5.js to create a captivating and dynamically responsive user environment. The interactive origami installation incorporates gamification elements to foster interdisciplinary collaboration, engaging audiences in a shared experience and emphasizing the value of hands-on making and learning.

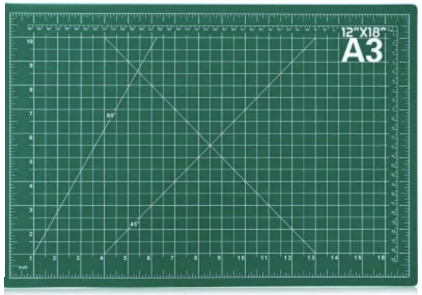
AUDIENCES & USERS

Our target audience encompasses children, students, teachers, educational museums and spaces, as well as individuals seeking a tangible break from the virtual realm to engage in hands-on creation

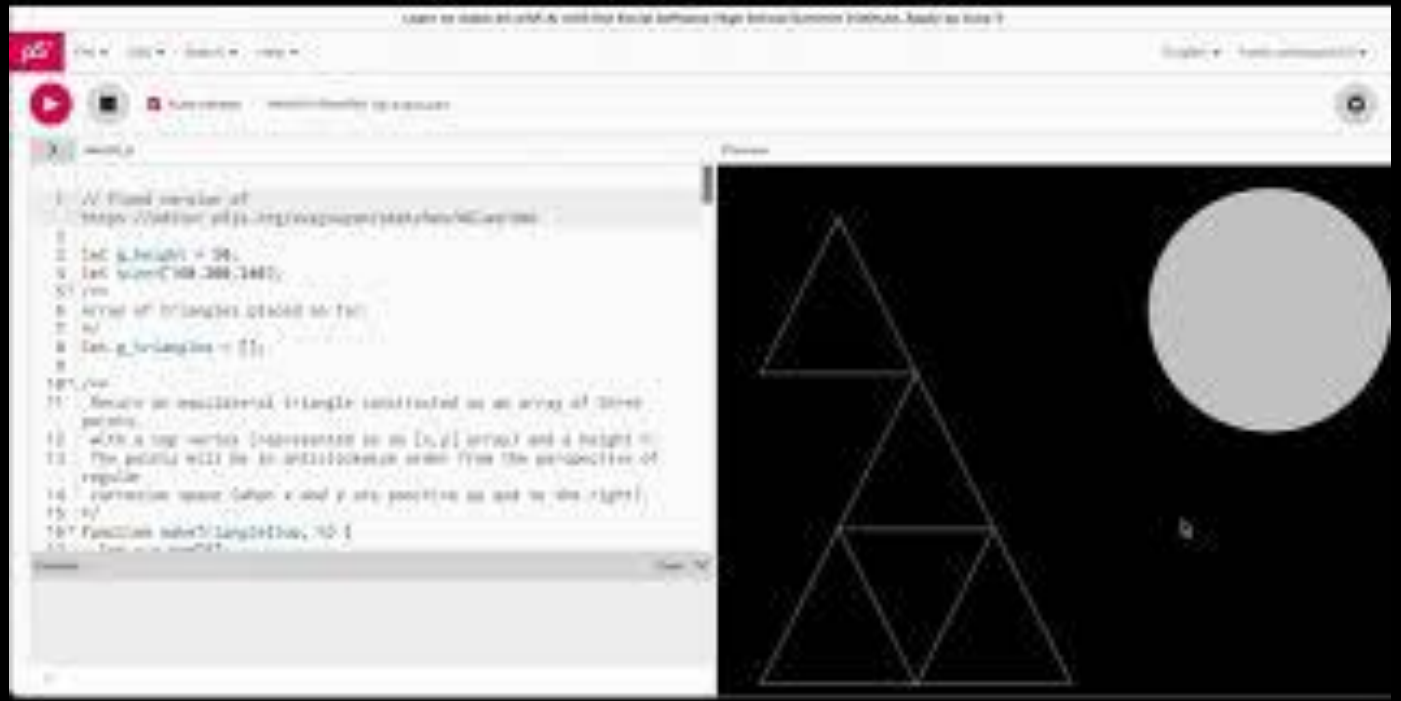


SUPPLIES AND TOOLS

p5.js

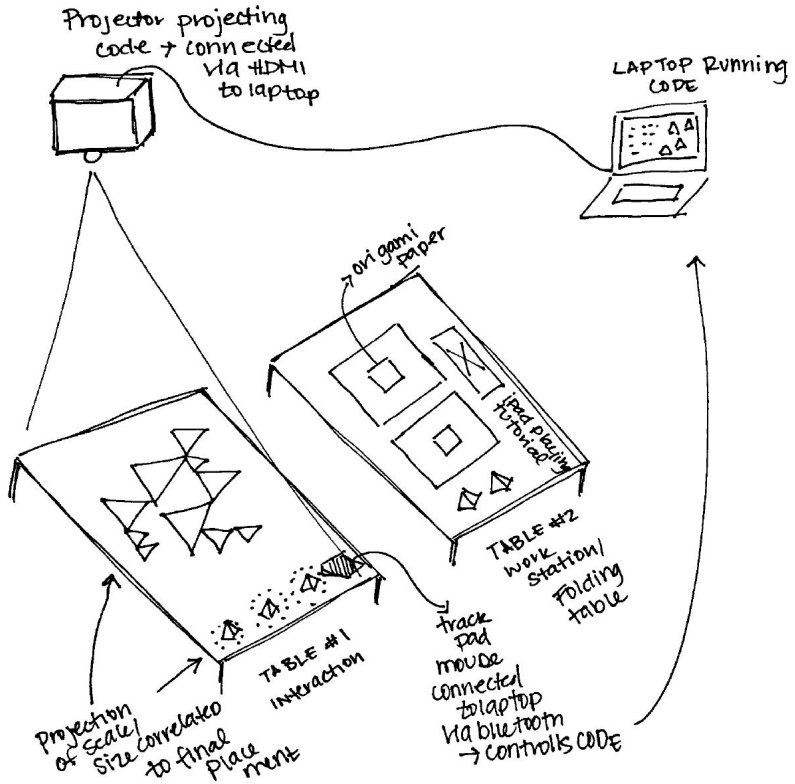


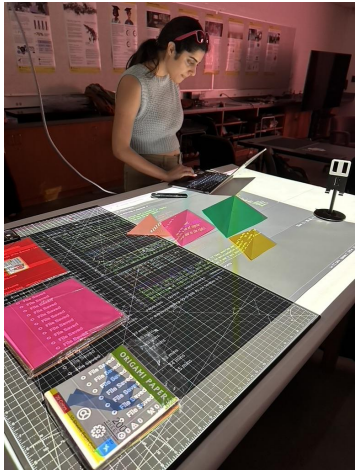
P5*jS code - *Merciful Silverfish*

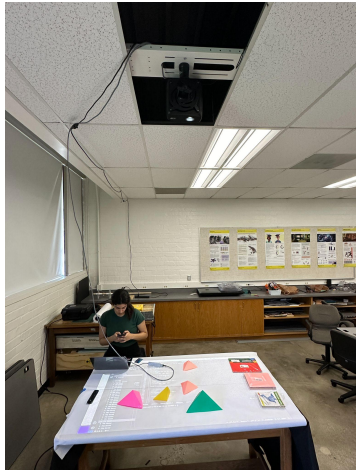


HOW TO FOLD?

PROJECT Set Up & Interaction







FUTURE ITERATION

For future iterations, we envision an increased projection area scale and exploration using magnetic surfaces on the folding materials and placement areas. Additionally, we would like to explore the use of magnetic surfaces.

INSTRUCTABLES

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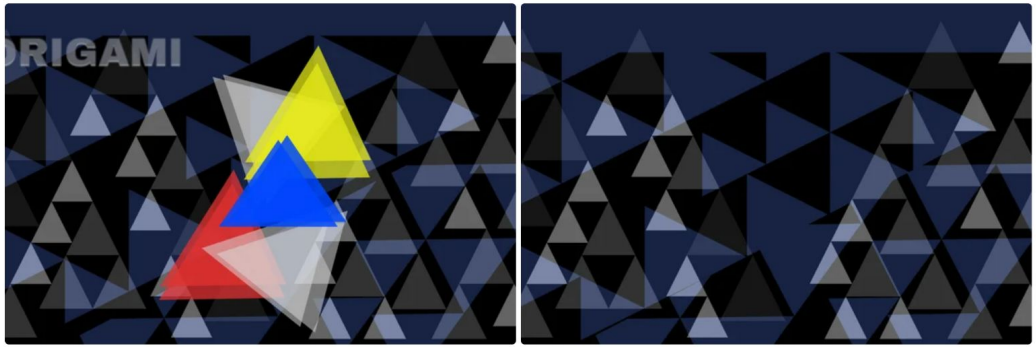

This project is created as a course assignment at the California State

LINK

DEMO TIME!

SOURCES

P5*jS, Teachable Machine, Arduino, Figma, Google Slide, LIGHT FORUUM Projection mapping tool

Thanks to Julian Ceipek for code assistance, Denny for installation, and Behnaz for project guidance

Video Playlist