

Samuel Ellis Portfolio



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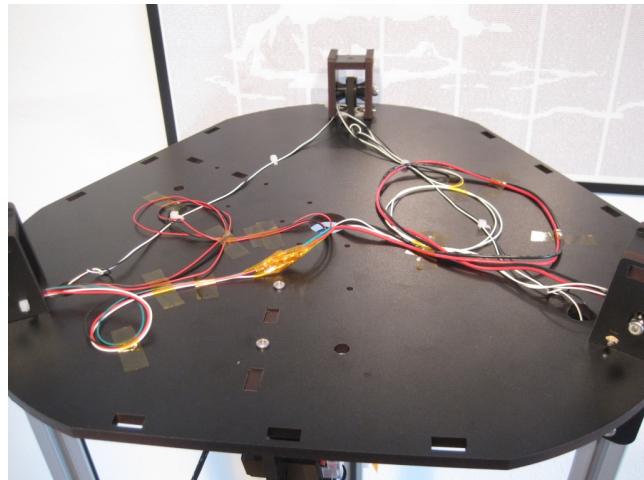
3D Printer Build

Personal Project

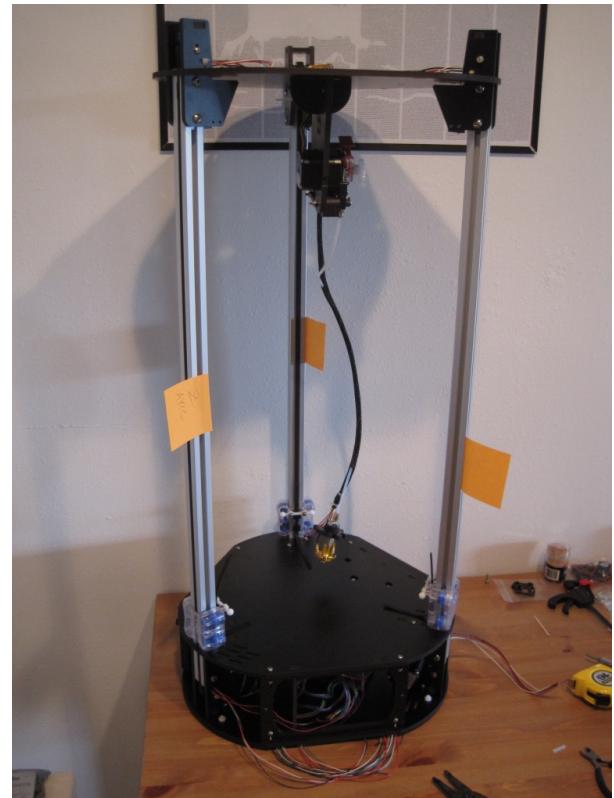
Mechanical Engineering

May 2016

Description: I assembled and calibrated the Rostock Max v2 3D printer kit from SeeMeCNC. The entire build took approximately 20 hours, involving soldering, wiring, and calibration. It has a 10.5" diameter by 14" built height, with a heated borosilicate glass bed. The Rostock Max v2 is a delta machine with hot-end and layer cooling fans.



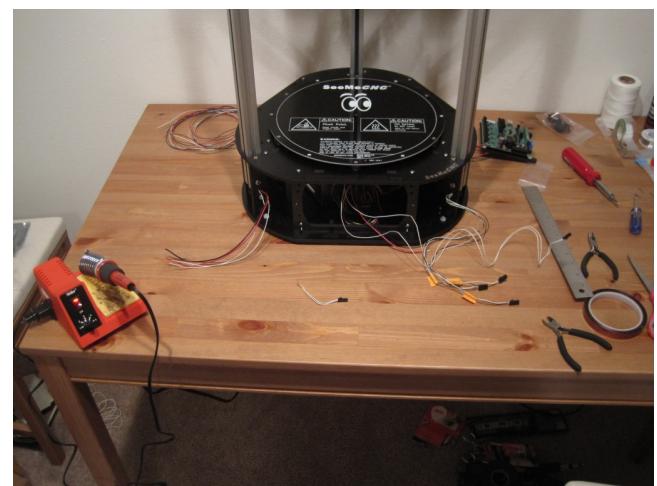
Wiring the end-stops and hot end



Organizing wires at the base



Securing the hot end



Preparing for the motherboard

Ellisongs Website

Personal Project

Web Design / Development

February 2016

Description: I designed and coded a small music playing website. The idea was to add 10 new songs every 10 days to share with family and friends. The website pulls music files and song data from the JSON file stored on the server.

Resources: HTML, CSS, Javascript, JSON

The screenshot displays the Ellisongs website. At the top left, it says "ELLISongs · 10 songs every 10 days." with social sharing icons for GitHub, Twitter, and Email. Below this, the title "Breathing Underwater" is shown, followed by the artist "Metric" and album "Synthetica 2012". A set of navigation arrows (back, forward, play/pause) is present. On the right side, there's a sidebar titled "COLLECTION 19" which lists ten songs: "Breathing Underwater - Metric", "Santa Fe - Beirut", "Overdose - Little Daylight", "Day Dreams - Midi Matilda", "Get Gone - White Arrows", "Away Frm U - Oberhofer", "The Line - Phish", "Heartbeat - Kopecky", "All Those Friendly People - Funeral Suits", and "Last Forever - Fenech-Soler". Below this is another section titled "COLLECTION 18" with five more songs: "Stars - Future Generations", "Crystallize - Fire In The Hamptons", "Pastel Lights - Ishi", "XOXO - Cherub", and "While I'm Alive - STRFKR". At the bottom of the sidebar is an "@" symbol. The bottom of the main content area has a "SHOW SONGS" button. The entire interface is styled with a dark blue header and a white main content area.

The website is responsive and collapses for mobile viewing and listening. A menu appears on the bottom that brings up the list of collections to choose different songs.

3D Printing

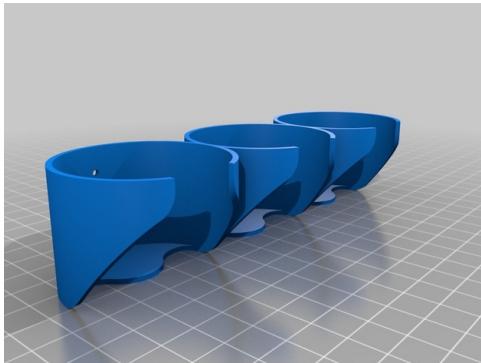
Personal Project

Product Design

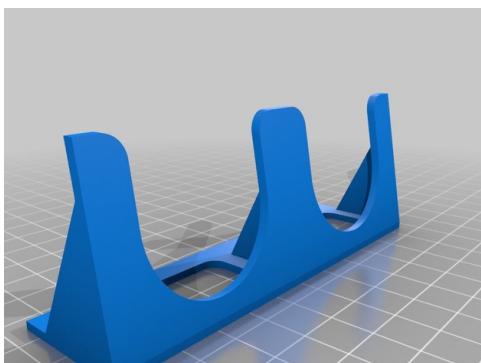
2016 - 2017

Description: I designed all the below objects to be easily 3D printed, without the need for supports or post processing. I share most of my successful designs on Thingiverse under the creative commons license.

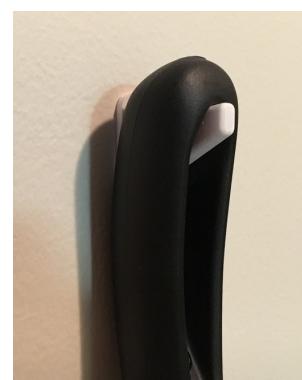
Resources: OnShape [CAD], Rostock Max v2



A small spice rack to be secured to the wall through two holes designed into the back wall. [ABS]



A larger spice rack designed to be mounted to the wall and suspend two bottles. [ABS]



A simple hook designed to hang pots and pans. [PLA]

A phone stand in the process of printing. There is a channel in the base for the charging cable and a hollowed out front to pipe sound from the speaker. [ABS]

EZCoaching Wearable Device

Contract

Web Design / Mechanical Engineering

2014

Description: I worked with a team of students to develop a minimum viable product for the startup company EZCoaching. We built a prototype wearable device that recorded swim lap times and sent them to a database. New practices could be created and old data viewed in the associated web app we developed.

Resources: HTML, CSS, Javascript, SolidWorks, 3D Printing

The image displays two screenshots of the EZCoaching web application. The top screenshot shows the main dashboard with a weekly calendar view from Monday 1/13 to Sunday 1/19. Each day has a grid of sessions. For example, Thursday 1/16 has three sessions labeled 'SESSION 1', 'SESSION 2', and '+ ADD PRACTICE'. Below the calendar is a button 'CLICK A SESSION ABOVE TO VIEW YOUR POOL'. The bottom screenshot shows a detailed view of a practice titled 'UNTITLED PRACTICE'. It includes summary statistics (93 min, 450 m), a notes section ('Add practice notes here...'), and a main set configuration. The main set is set for 3 x 100 meters on interval 1, freestyle, white lane, with notes. Below this is a stroke/intensity section for a rep, and a '+ ADD PIECE' button. At the bottom are buttons for '+ ADD SET' and 'SAVE PRACTICE'.

I designed and implemented the front end of the web app, while my friend created the database and back end functionality. A swimming coach would sign in to the website and create practices for the athletes. Practices are synced to the wearable device which records the splits and sends the information back to the database.

EZCoaching Wearable Device (cont)

Contract

Web Design / Mechanical Engineering

2014

EZCOACHING

Home Settings Log Out

SESSION 1 RESULTS: STANFORD SPRINT SET

Kyle Williams

SPRINT FREESTYLE

WARM UP

1	1 X 500 ON 7:00	FREESTYLE	WHITE	<i>Every fourth lap drill</i>
2	2 X 200 ON 3:30	FREESTYLE	WHITE	IM
4	4 X 50 ON 1:00	FREESTYLE	WHITE	Build

PRE SET

1	4 X 50 ON 1:00	FREESTYLE		▼
1	1 X 100 ON 1:20	FREESTYLE		▼

MAIN SET

1	16 X 50 ON :45	FREESTYLE		▼
1	12 X 50 ON :50	FREESTYLE		▼
1	8 X 50 ON :55	FREESTYLE		▼
1	4 X 50 ON :60	FREESTYLE		▼

COOL DOWN

1	1 X 100 ON 1:40	FREESTYLE DRILL	WHITE	▼
1	1 X 100 ON 1:40	FREESTYLE DRILL	WHITE	▼



I designed the casing for the prototype wearable device. I worked with the electrical engineer to determine the footprint of his test circuit and 3D printed 2 pieces. The pieces were screwed together, and we sealed the case with a rubber balloon and electrical tape. I swam with the prototype to collect data which the electrical engineer used to tweak the circuit to provide the most accurate information.

Grand Idea Challenge

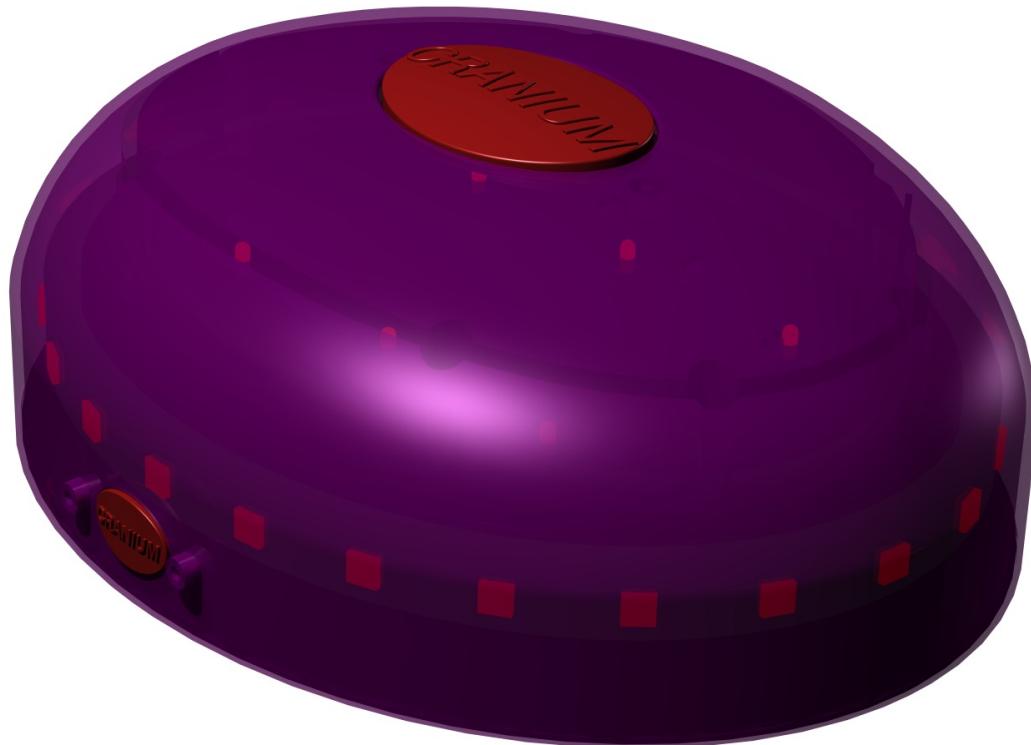
Hasbro

Mechanical Engineering / Product Design

2012

Description: I worked with a group of coops at Hasbro to fully design, prototype, and present a game for the Cranium line. We worked with cost engineers, manufacturers, and marketers to develop a full production plan.

Resources: SolidWorks, Excel



Pictured above is the initial CAD assembly for the final product. One of the main goals of the project was to make Cranium more interactive with the game itself. Basically, the 'brain' would control the flow of the game, letting players know what category to play next, and introducing an electronic category as well. The ring of LEDs around the base are controlled with two buttons on either side. The top button is used for selection purposes.

Because I was part of the board game division when I worked at Hasbro, I knew most of the requirements for creating a game. I worked on developing country forecast, weekly capacity, viable selling price, and maximum manufacturing cost per unit. I was able to estimate most of the numbers based off of similar products I previously worked with. Additionally, I designed and created the main game assembly as well as the player pieces.

Computer Aided Design

Hasbro

Mechanical Engineering / Product Design

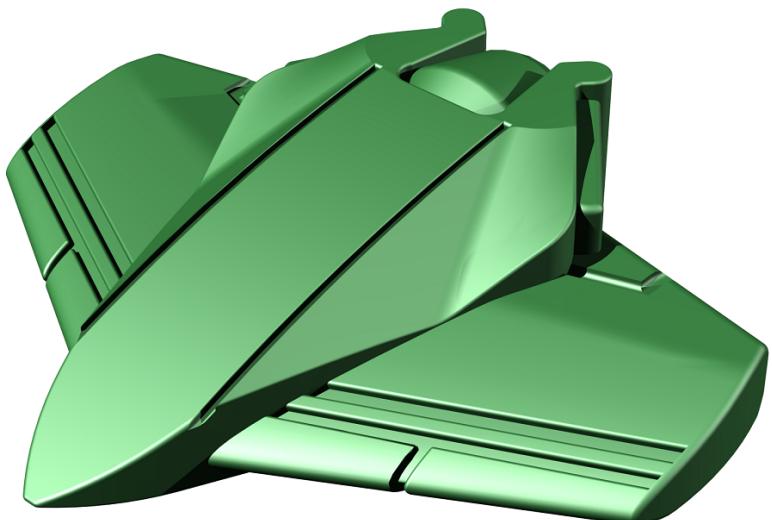
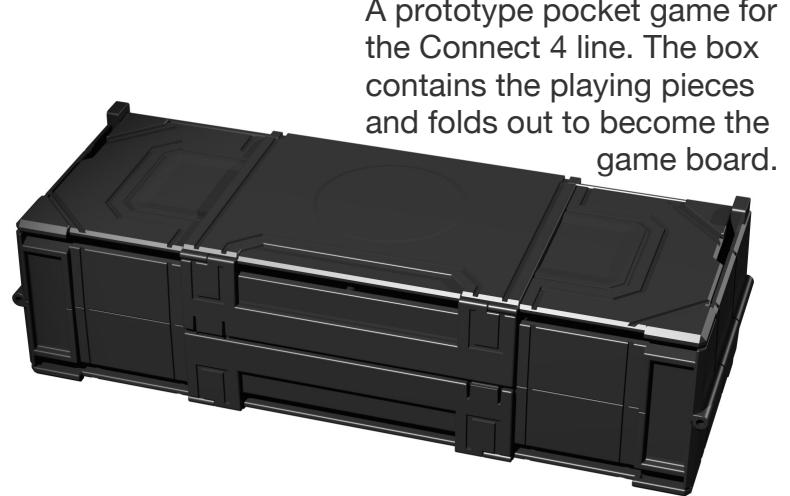
2012

Description: During my time as a coop at Hasbro, I worked with brands such as Battleship, Connect 4, Jenga, Operation, and many more. I teamed up with designers to build their ideas in CAD, 3D print models, and test games. I designed every model to be plastic injection molded.

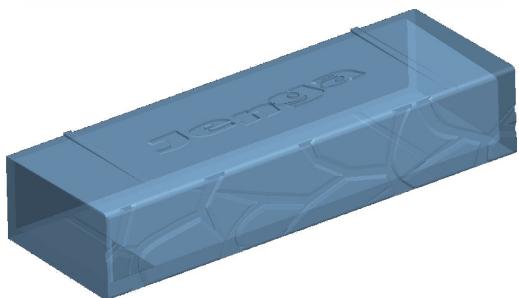
Resources: SolidWorks, ProEngineer Wildfire



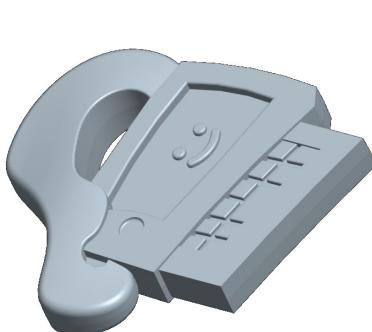
Another engineer and I worked together to create snap on pieces to a standard Connect 4 grid to create this game.



A '1-peg' ship for a redesigned Battleship game



I designed the ice block for one of the games in the Star Wars Angry Birds Jenga line.



Potential Operation pieces. Designed with holes so they can be picked up with the game's tweezers.