Engineering Notebook

Mechatronics Engineering 2022-2023

<Kevin Han>

Instructions:
For each day you enter data into your Engineering Notebook, Copy this template text and table for each project entry. The difference between a Physical Engineering Notebook and this Notebook will be that your most current entry (i.e. Your newest entry) will be at the "top" like a blog… Check here for a Rubric

<copy text between these lines>

5-22-2023

Lap sec	VC
22.71	1
29.38	2
45.56	3
37.4	3.5
1:05.30	4
3:34.15	4.5

4-24-2023

I read the article ChatGPT, coming to a government near you about how the japanese government is using ai to help with administrative functions, with the goal to help lighten the workload on public servants "in tasks like summarization, copy ideation for marketing and communications, drafting the basis for administrative documents and perfecting easy-to-understand language."

3-29-2023

Read artemis
Ended on pg 36, just got some exposition. Learning about the main character, Jazz. And her smuggling job.

3-24-2023

Mac address: b8:27:eb: 4c:f2:e3
Ip address:10.178.203.133

3-24-2023

artemis = new book

https://www.amazon.com/Artemis-Novel-Andy-Weir/dp/0553448145

3-22-2023

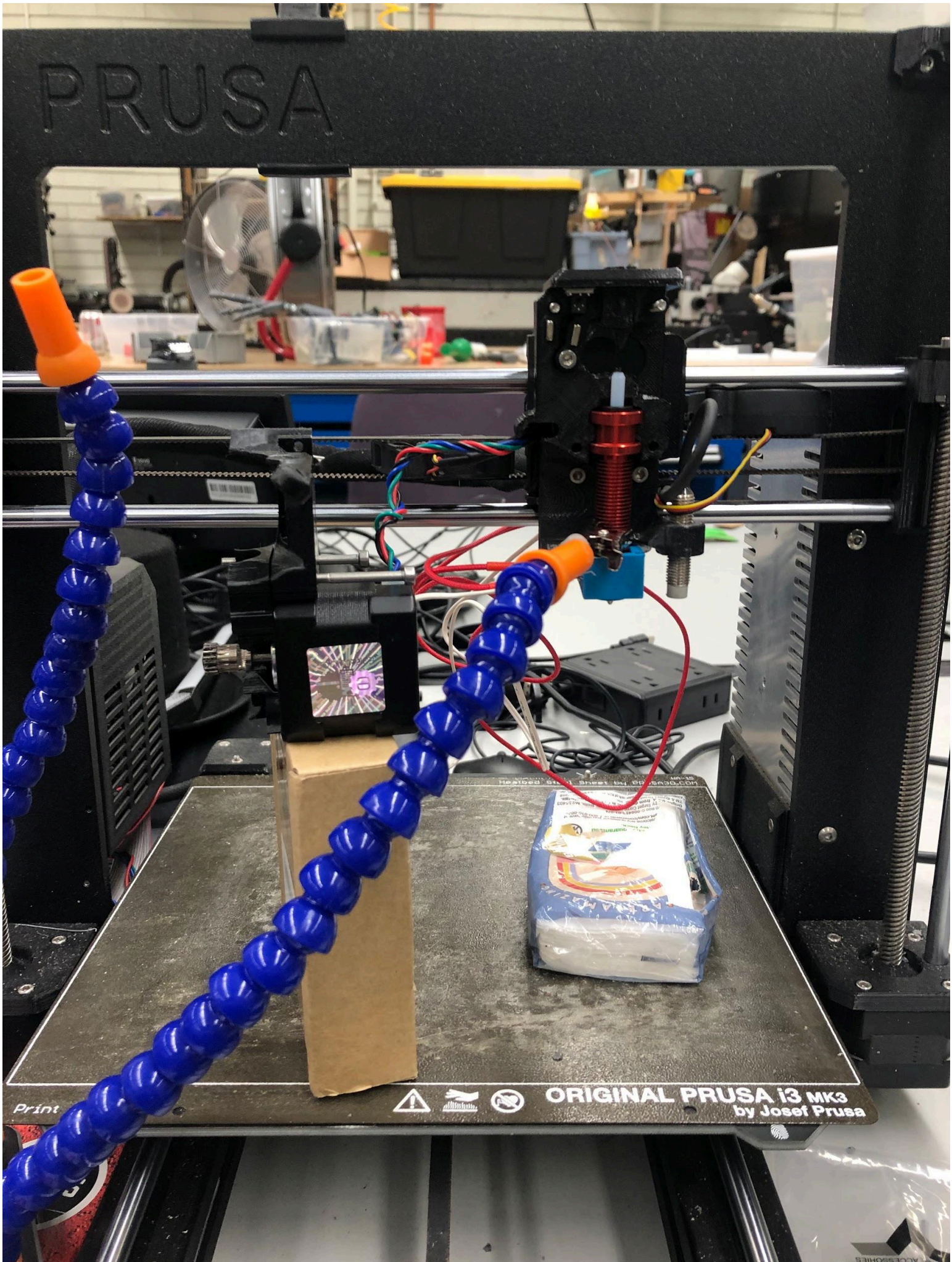
Read to page 229 of hail mary. Main character meets alien. Alien is big spider dog thing and has super strong xenonite. THey learn each other's language. And about each other. Confirm there for the same reason.

Open lab

Robohand. Modeling sliding clip for control hand. 9.2mm across on top digit of fingers

Reassmled prusa hot end but heat sick to small, wiggles around

Need to use old heatsick and heatsick to nozzle tube. Need to leave old nozzle tube in acetone


PRUSA
Print
ORIGINAL PRUSA i3 MK3
by Josef Prusa

Old heatsink (red)
Held up by claw arm thing

3-8-2023

Read project hail mary, ended on page 94. Guy remember he figured out how to breed astrophage. Gets flown cross planet to chinese carrier to meet with people incharge of project hail mary.

3-1-2023

Project hail mary: character remembers his name and him being a teacher. Figures out hes in another solar system, remembers when the un brought him in. Ended on page 66

Open lab:
Middle finger value stuck at 900-990 problem with wiring?

Need to soder index finger

All other fingers maybe increase sensitivity from

200,900 to 0,900


X0022KDQP3
Thin Film Pressure Sensor Fl...
MADE IN CHINA

2-16-2023

Printed pinky

To measure size needed for slicer scale, measure widest point of figure

Measure in slicer with measuring tool, the diameter of finger print

Plug into https://percentagecalculator.net/

Put find what percentage the widest point of finger is of the diameter of finger joint

2-15-2023

Love of reading: read “hai mary” by whoever wrote the martian. Little existential, uncomfortably realistic. Pretty cool tho. Book is about guy who wakes o on a space ship to solve world ending sun sucking problem

Glove all soldered, need to relabel sensor cables

Not enough soder put on initially but soldering more fixed

2-9-2023

Wind tech challenge
Soldering circuits for robotarm

2-8-2023

I picked “The Tao of Pooh” by Benjamin Hoff. Its about taoism explained through the characters of winnie the pooh. It writes about enjoying the uncarved block and enjoying simplicity and being spontaneous resulting in things working out.

2-7-2023

Projects

- Robot arm(need to print out thumb and 2 fingers, then tune hands)
- Iron man helmet(try servo code with new system, bring helmet??)

2-6-2023

Understand arduino helmet_servo code.

Try and except code

Figured out button circuit only needs 2 wires, red(voltage wire) to input and negative black to gnd

1-24-2023

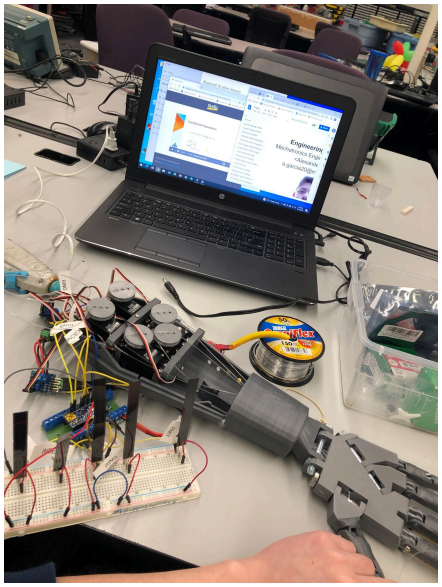
Printed out index finger at 86% scale
Helped Alex slice print

1-20-2023 SkillsUSA Cam

FingerPrint was undersized compared to the palm. Don't know why

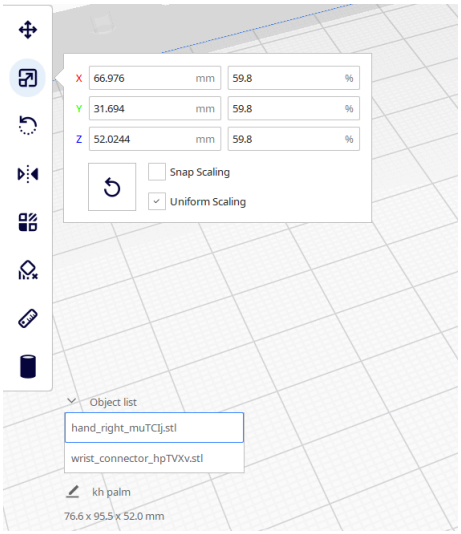
1-18-19-2023 SkillsUSA Cam

Love of reading: Humble pie, humans brain aren't adapted for large numbers, cant comprehend a trillion. Year and Day are the only units of measurement the universe has given us. Rest are human made measurements



Redoing thumb strings because to right before
Tying string from tip side is not possible,tie from gear side
Replace index finger string tmrw

1-12-2023 Rube Gberg old

Printing palm 

Modeling camera housing for alex and mia skillsusa bot

All in Robo Hand Check ListRo

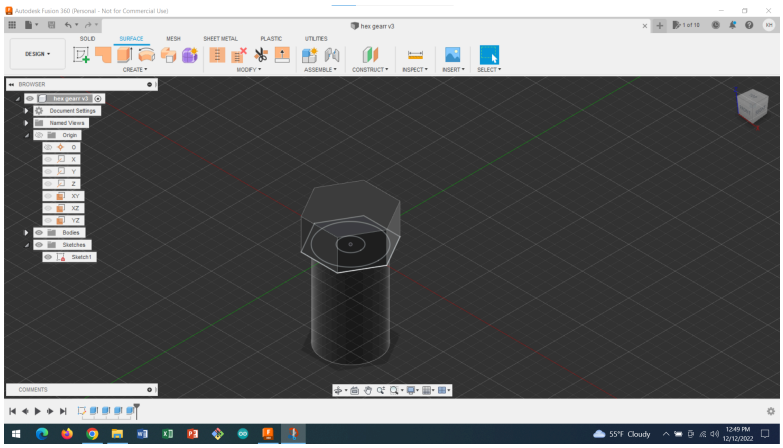
1-11-2023 Rube Goldberg

Read about air current to jump and aerodynamics

12-9-2022 Rube Goldberg

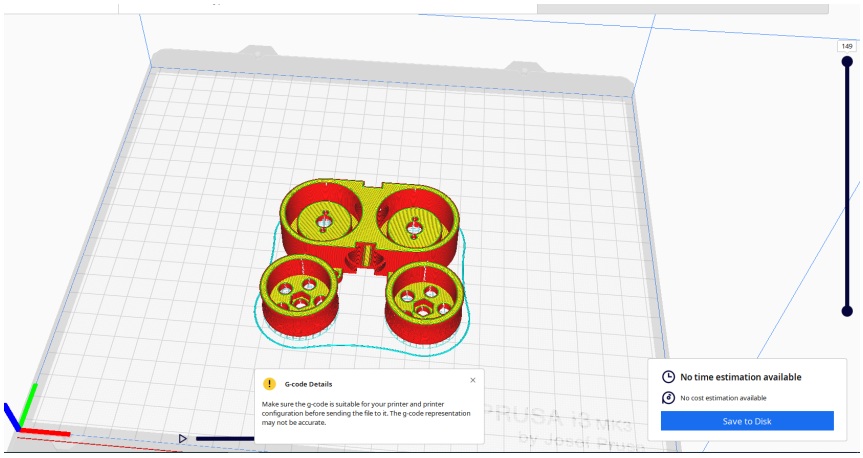
I think that gpt has alot of potential to help people practically in so many ways that I can't even imagine right now. but there definitely needs to be some foolproof way to make sure an ai isn't writing essays for people. The ai could help people do but it could help people deceive too

my Rube Goldberg project
Modeled part to allow motors to spin flywheels
Used tools to measure dimensions of flywheels and motor
Exported and sliced
Printed



12-6 to 8-2022 Rube Goldberg

Love of reading: chapter 12 of Into The Wild Mccandless relationship with his parents and growing resentment towards the world.



Fully Custom Nerf Rival Blaster

TO get list

- Gloves
- Rubber bands, hair tie

12-5-2022 Rube Goldberg

Rube was an engineer from berkeley for 6 months then switched to become a cartoonist

Goldberg project
Input: motion sensor to detect previous motion

Output: flywheel motor, launching a dart

8-22-2022 DMM resistance measurement lab

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- Resistance Lab
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

- (fill this out at the end of class/open lab activity time)
- List your next 2-5 steps or activities.
- This is key!!!
- You need to be thinking about this project as a whole, and break it down into
- small tasks you can complete in 30-60 min

Class Notes:

Resistor #	Colored value	Measured value	voltage	measured	Calc current	Measured current
1	1k Ω	993Ω	5.16	1.810	5.16ma	5.11 ma
2	220Ω	218.8Ω	5,11	1.971	23.22 ma	22.58 ma
3	220Ω	217.3Ω	5,12	1.972	23.27ma	22.58 ma
4	1.06kΩ	469Ω	5,16	1.88	4.86ma	10.69 ma

Airplane launcher

- Paper clip down middle of plane for balance
- Dual rubber band launcher
- Initial design worlds previous longest flying paper plaine
- No clearance with lego launcher
- Increase height
- Plane 1 too wide
- New design
- Dual rubber band impractical
- Single band
- New plane too front heavy, popsicle stick at back, hot glue on back
- Back to heavy, shave hot glue
- Take out stick
- Add hot glue to front, to heavy

What Did I Working On Today:

Measure resistance with dmm/ used color codes
Airplane launcher

Date: 8-17-2022	Signature: Kevin H
Project:	Witness (optional):

<copy text between these lines>

8-23-2022 learning how to soder

Today we're learning how to soder
Cut off excess wire wire wire wire wire wire wire wire
Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- Pm Ethan Bahool
- a0271e51

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Class Notes: <enter class lecture notes here>

What Did I Working On Today:
Soldering and robot assembly, little bit of messing with the robot
If you make mistakes in the data collected, document the mistake and highlight it with a comment, so you don't lose the work. Don't just delete it. Where did you get stuck? A detailed description of issues you got stuck on or did not understand.

Include pictures, Code or links to Code, and links to reference material.

Date: 8/23/2022	Signature:Kevin Han
Project: soldering and robot lab	Witness (optional):

8-25-2022 Series circuit lab

Write a short paragraph of today's Project Goals…25 words

Planned Task List:
- List each
- Task you are trying
- To accomplish today

Useful Reference Links:
- List any links related to today's work
-

Circuit	Measured	Measured	Calc r1 r2	Measured	Measured	Measured	Measured

	R1	R2		vt	v1	v2	current
1	220Ω	220Ω	440Ω	5	2.6	2.6v	11.87
2	352Ω	470Ω	820Ω	5	1.67	3.5	3.54
3							
4							

-

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Class Notes: <enter class lecture notes here>

What Did I Working On Today:

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Date:	Signature:
Project:	Witness (optional):

8-29-2022 series circuit lab

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

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Class Notes: - resistance circuit, more ohms less resistance in voltage because voltage needs to put more work in to get through ohms

What Did I Working On Today:

.024mv
10k 5mv
10m 5v

Date:	Signature:
Project:	Witness (optional):

8–31-2022 Smd Soldering

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- List each

- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

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Class Notes: <enter class lecture notes here>

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Date:	Signature:
Project:	Witness (optional):

9-1-2022

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

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Class Notes: <enter class lecture notes here>

What Did I Working On Today:

Date:	Signature:
Project:	Witness (optional):

<copy text between these lines>

9-8-2022 potentiometer lab

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

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- List your next 2-5 steps or activities.
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- small tasks you can complete in 30-60 min

Class Notes: <enter class lecture notes here>

Circuit	Measurved v1	Measured v2	Measured vt	Calculated R1	Calculated R2
1	0v	4.7v	4.7v	0Ω	10kΩ
2	.7 v	4v	4.7v	1.5kΩ	8.5kΩ
3	1.8v	2.9 v	4.7v	3.8kΩ	6.2kΩ
4	4.3	.4 v	4.7v	9.1kΩ	.9kΩ

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Date:	Signature:

Project:	Witness (optional):

<copy text between these lines>

<copy text between these lines>

9-9-2022 Arduino coding

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

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Class Notes: <enter class lecture notes here>

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Include pictures, Code or links to Code, and links to reference material.

Date:	Signature:
Project:	Witness (optional):

<copy text between these lines>

9/12/2022 photoreistor lab

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

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Class Notes: <enter class lecture notes here>

What Did I Working On Today:

Circuit	Brightness	Measured V2	Measured Vt	Derived VP	Calculated I	Calculated RP
1	**Covered**	0.02v	4.7	4.68v	4.25a	0.085a
2	**Some Light**	0.6v	4.7	4.1	127.65a	76.59a
3	**Room**	1.1	4.7	3.6	234.04a	257.44a
4	**Brighter**	**1.4v**	4.7	**3.3**	**297.9a**	**417.06a**
5	**Full Bright**	**1.7v**	4.7	**3**	**361.7a**	**613.7a**

Date:	Signature:
Project:	Witness (optional):

9-15-2022 Robot club and random number led blinking

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- Setup 3d print for robot hands
- Make random number led blink

Useful Reference Links:

- List any links related to today's work
-

What Will I Work On Next Time?

- Look at ordering parts from list
-

Class Notes: The project is an animatronic hand controlled by flex sensors on a glove.

My partner is Daniel Perez, has not submitted the project

https://www.instructables.com/DIY-Robotic-Hand-Controlled-by-a-Glove-and-Arduino/

Parts List

5x MG946R Servos (or equivalent - MG995 or MG996 should work too. I've had a bit of trouble with the range of motion, so servos that support a higher degree of rotation would be better) - I got mine from hobbyking.com, but for a less expensive option I'd go with eBay (they come directly from China, so shipping may take longer).

5x 4.5 inch flex sensors - I got mine here: http://microcontrollershop.com/product_info.php?products_id=3802

1x Arduino Uno or equivalent (they're also much cheaper on eBay)

5x 22k resistors

1x 6.0-7.2V battery (for the servos) - I used this:
http://www.all-battery.com/Tenergy7.2V3000mAhRCCarNiMHBatteryPackwithCharger-91103.aspx

1x small breadboard

1x Standard Tamiya battery connector - something like this:
http://www.batteryspace.com/Connector/Adaptor-Standard-Female-Tamiya-with-14-AWG-Silicon-wire.aspx

Breadboard jumpers/hookup wire

1x small blank PCB - I used something like this, only square (RadioShack has since removed the original product, but this should work as well):
http://www.radioshack.com/radioshack-printed-circuit-board/2760170.html

1x glove (I used a right-hand glove - should be sturdy and fit well)

1x 8mm diameter 55mm length bolt

1x 8mm diameter 60mm length bolt

1x 8mm diameter 80mm length bolt

14x 3mm diameter about 20mm length screws

20x 4mm diameter screws (any length between 7mm and 30mm is fine)

Approx. 5 meters of string (should have a high-ish breaking strength) - I used this:
http://www.amazon.com/gp/product/B004YWKPCS/ref=oh_details_o01_s00_i00?ie=UTF8&psc=1

Hot glue

Super glue (C.A. glue)

Sandpaper (I used ~220 grit) - a Dremel tool with a sanding head would also work

Needle and thread

A power drill

A soldering iron

Access to a 3D printer

What Did I Working On Today:
Downloaded slicer software
Sorting out files needed

Date:9-15-2022	Signature:kevinhan
Project:robo arm	Witness (optional):

10/4/2022 heartbeat/printing robohand

Write a short paragraph of today's Project Goals…25 words

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

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-

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Class Notes: <enter class lecture notes here>

What Did I Working On Today:

Auriculaire3
wristsmallV3
WristLargev4
Printing

Date:	Signature:
Project:	Witness (optional):

10-11-2022 relay-open lab

Write a short paragraph of today's Project Goals…25 words

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- To accomplish today

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Date:	Signature:
Project:	Witness (optional):

10-12-2022

Write a short paragraph of today's Project Goals…25 words Book atlked about how people would terrform and colonize mars, why people would colonize mars, asteroid mining and why. The main thing was how people would use mars resources to go back to earth

https://watchlearneat.com/gluten-free-vegan-buffalo-chickpea-meatballs/

Planned Task List:

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- To accomplish today

Useful Reference Links:

- List any links related to today's work
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Class Notes: I read “how we’ll live on mars” the book talks about the history of the idea of going to mars. The biggest revelation is we could have perm mars bases already if nixon didnt repurpose nasa from space exploration to military assets. But we had the tech to do it and a german scientist named Von Braun made calculations on it in a book.

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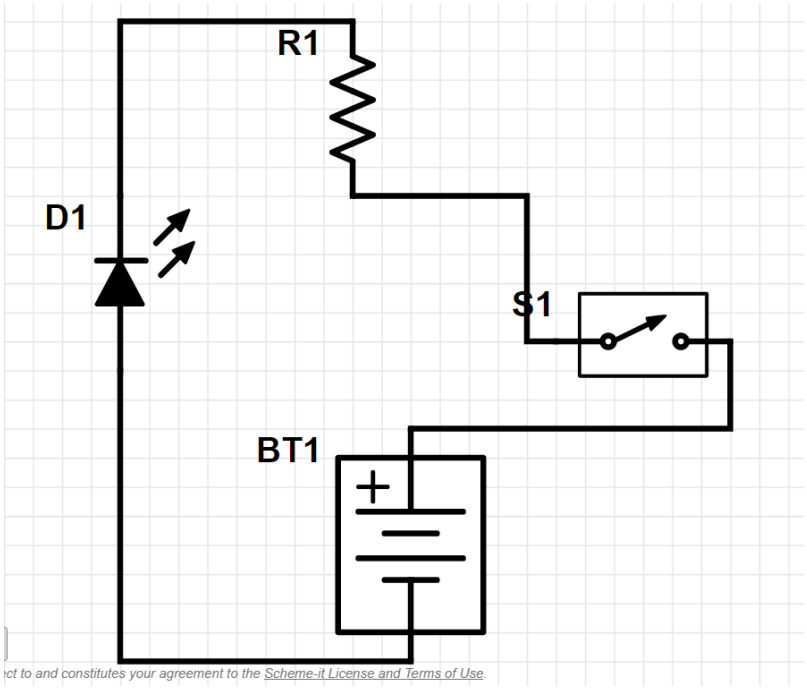
Date:	Signature:
Project:	Witness (optional):

11-15-2022

Brainstorm exploravision



11-16-2022

Read Into the wild it was interesting in the “what if someone abandoned ones life” food for thought

11-17-2022

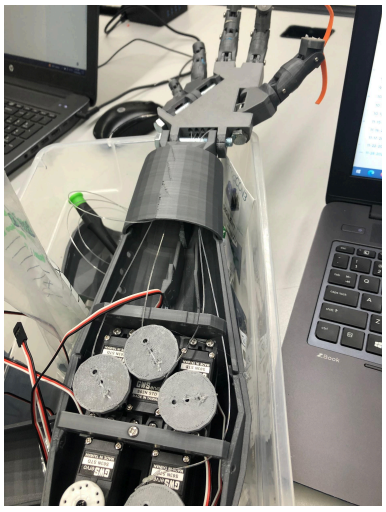
ExploraVision Team #10 - Dale Cherne, Noah Jung, Kevin Han, Daniel Perez

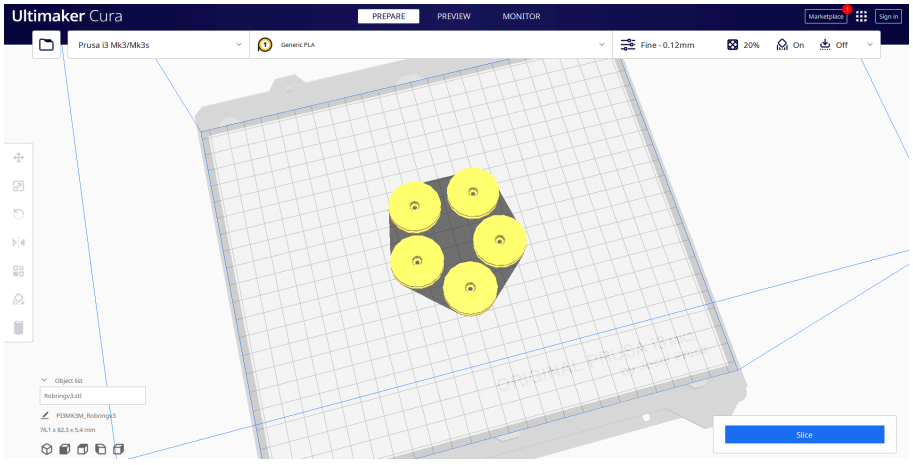
11-22-2022

Robot hand: attached rubber bands to fingers to allow “relax” motion

11-28-2022

Attached all strings through fingers except the pinky
Need to print 1 robot ring for pinky
, rubber bands popped off





11-29-2022

Ran string through guide part, used 3 tie knot with alex/jade to extend string and then hotglued the connection

Wal lasted 2:24

11-30-2022

Love of reading: I read into the wild. A father figure to the main character, Mccandles, contacts a

News publisher about what he knew of Mccandles before he passed. Including that he wanted mccandles to Be his adopted grandson.

12-1-2022

Virtual particles: particles that can theoretically pop into existence if imbued with enough energy
Event horizons: the “edge of black holes” or mouths

I. spaghettified means to get pulled apart in every direction
II. Hawking radiation is the radiation at the edge of black holes that produce a faint glow. It results from virtual particles annihilating each other