Engineering Notebook

Mechatronics Engineering 2023-2024

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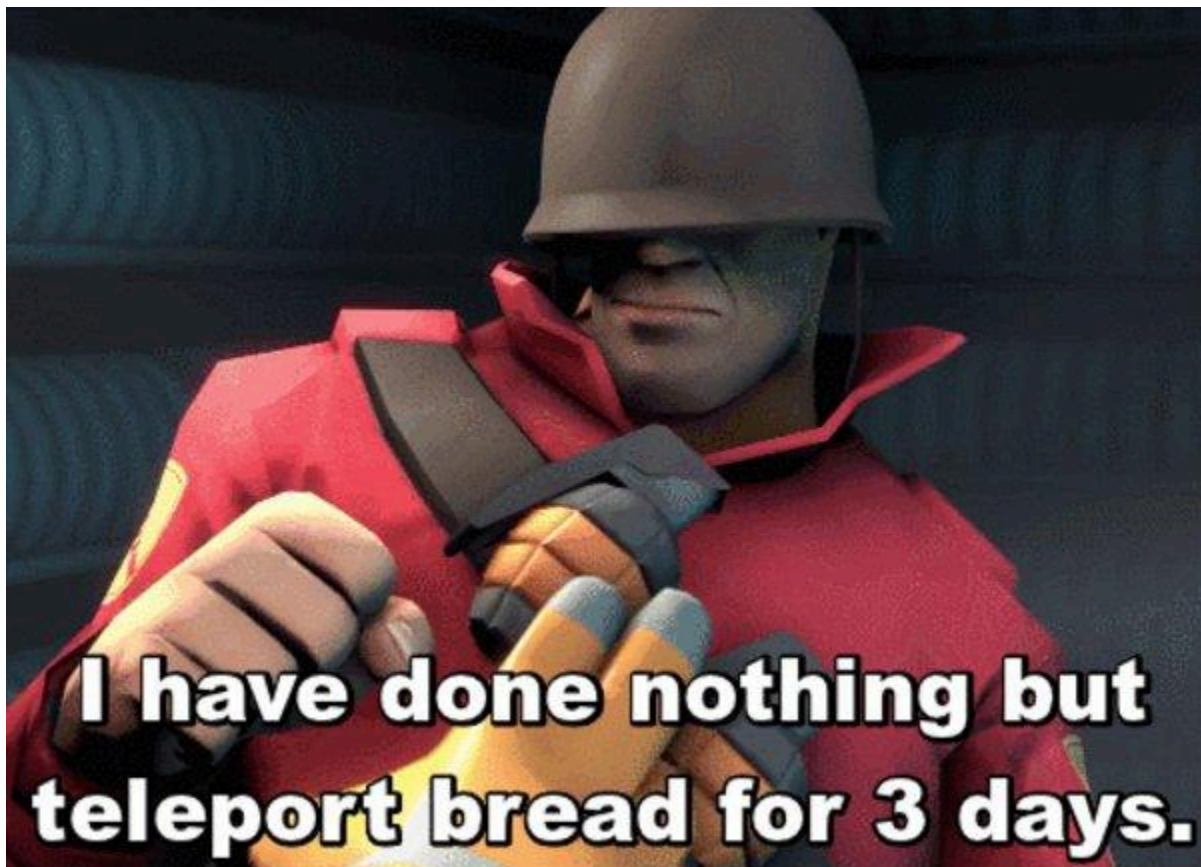
Instructions:
For each day that you enter data into your Engineering Notebook, Copy this template text and table for each project entry. The difference between a Physical Engineering Notebook and this Notebook will be that your most current entry (i.e. Your newest entry) will be at the "top" like a blog…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

Sometimes you will see a comment from your teacher. Please read, and if it's a question, answer it.

Comment or Question from Mr. Burnham:

<copy text between these lines>

<Date> <Title - Daily/Weekly "Blog" Project Title - compelling, descriptive title>

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
-

Today's Class Notes: <enter class lecture notes here>

What Did I Working On Today (Labs, Robot Club, Other Projects):
Describe the steps/challenges you are working on. Make sure you describe how you set up the experiment, how you executed it, and all the materials you needed to do it. Spend time writing your "reflections". Sometimes more important than the actual results, are your thoughts on "why" and "how". Here is where you accurately describe both the success and failures.

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.

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
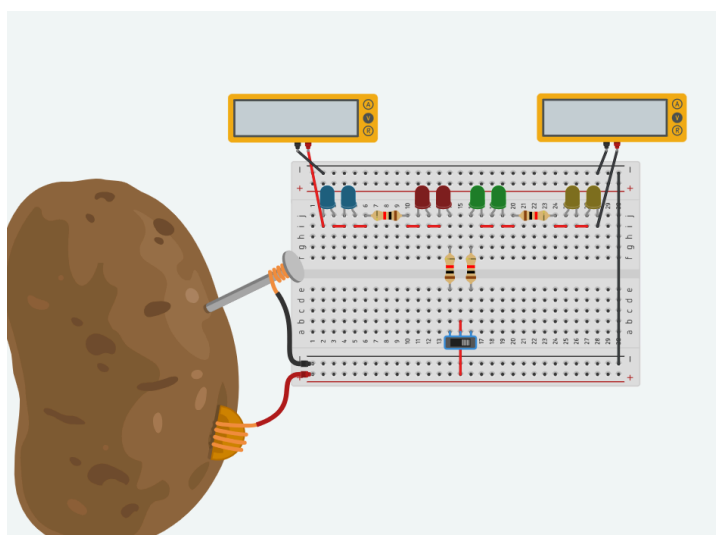- small tasks you can complete in 30-60 min

<copy text between these lines>

Resistor #	Resistor Value (from color code)	Measured Ω	Measured Volts	Measured I	Calculated I
Resistor #1	100, %5	1.003 Ω	4.5 v	5.09 mA	222.88889 X 10^-3
Resistor #2	220 %5	217.5 Ω	4.5 v	22.96 mA	48.3333333
Resistor #3	116 %5	4.29 Ω	4.5 v	1.19 mA	953.33333 X 10^-3
Resistor #4	100 2%	270.7 Ω	4.5 v	18.55 mA	60.155

BEFORE

(toast mrk3)
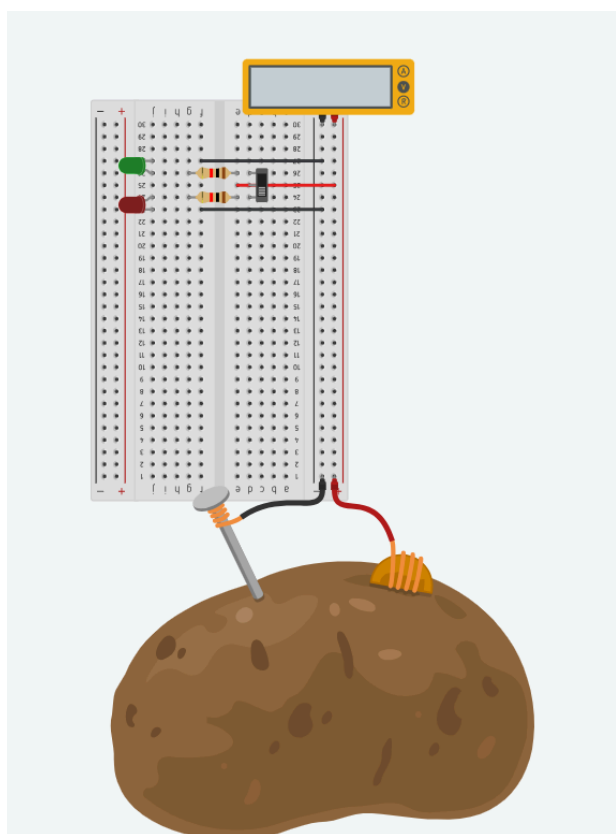
After

(toast Mrk4)

<copy text between these lines>

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- small tasks you can complete in 30-60 min

8/24/23

Did some soldering and cried a little because my little weenio is sick.

8/25/23

My Weenio is fixed! Yayy! Making a paper air plane launcher! Ft. sebastian and Duncan
We made the bace out of a plastic skull we found.

8/27/23-8/30/23

I finally finished the soldering project. The skull airplane launcher was a total bust a huge no-go. So i took the skull home to not put it to waste. I am going to come up with a new launcher design today and save my team!

8/31/23

Ok so the scull launcher was a total bust. I came up with a new blueprint that can save my team. I also am going to try a experiment and use a paper clip as sodder. I will give an update on the success on this experiment in the next log. Also work on toast mrk 5 has hit a couple of roadblocks. Weenio was accepting the code however i could not figure out how to wire it properly. I hope to amend that today.

9/1/23

I am going to recreate what i did in tinker cad in real life! My weenio shall rise the TOAST MRK 6!!!

9/5/23

The new airplane design was bupkis. It worked just barley though and the wind screwed us in the end.
Toast mrk 6 continues to hit road bumps but it will hopefully be ironed in the end. Also it turns out that if i could solder with a paper clip it would release toxic gas when it heats up. So i am glad i didn't try it.

9/6/23

Goning to 3d print a figure for dnd Here is the proof i did the lessons.
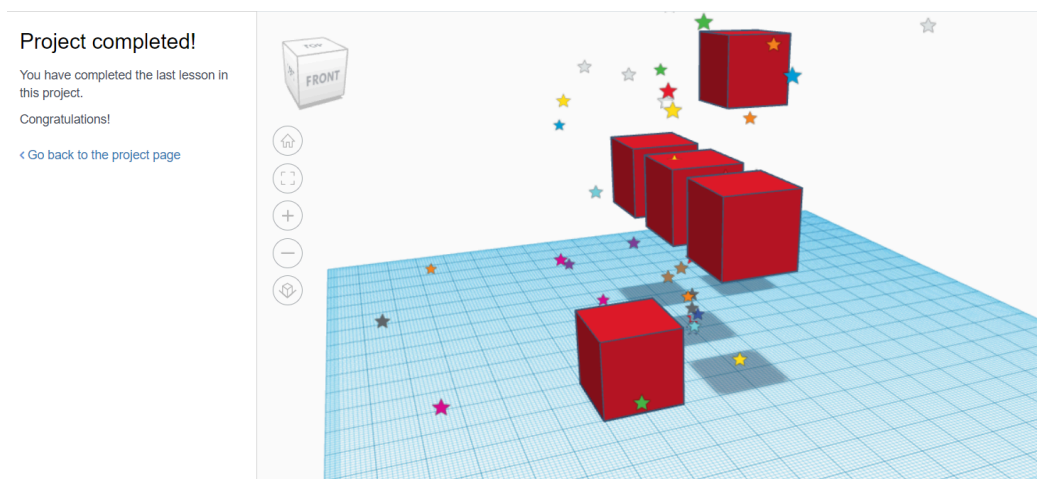
Accuracy requires smaller plane, and for distance a bigger plane is needed.

9/7/23

The work and projects due seems to be piling up and piling up. I constantly feel i am falling behind. I had a ton of missing work luckily i could complete most of them. I barley have enough time to work on what i want to work on.

Update: feel better now got some confirmation a little less stressed now.
Update 2: mr burnem just executed order 66 distroy all PRINTERS!!! HAHAHAHA!!! Time to operate!

9/8/23

Circuit	R1	R2	Calc R_1+R_2	Given V_T	Calculated I_T	Calculated V_1	Calculated V_2
1	330Ω	680Ω	1010Ω	5v	4.95ma	1.6335v	**3.366 v**
2	1kΩ	2kΩ	3kΩ	5v	1.66ma	1.66v	**3.320 v**
3	680Ω	1kΩ	1.680kΩ	5v	2.97ma	2.02	**2.020v**
4				5v			

9/11/23

Circuit	Measured R1	Measured R2	Calc R1+R2	Measured Vt	Measured V1	Picked V2	Measured Current
1			1KΩ	5.2	3	1.67v	

How to Hammer.

1. How it works: nail rest,slam hammer on nail, nail fixed.

2. The hammer we have is a ball Pein hammer. It has a round end good for making dents in things. The other end is good for flattening things.
3. SAFETY: Hammer nail,not hand. Hammer metal, not friend. Bonk mellon,not teacher.
4. Picture:

5. [Safety issues and procedures link](#)
6. [Tutorial Video](#)

9/14/23

```
int my_analog_value= 0;
int analog_sensor = A0;
void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
pinMode(analog_sensor, INPUT);
}

void loop() {
  // put your main code here, to run repeatedly:
my_analog_value = analogRead(analog_sensor);
Serial.println(my_analog_value);
delay(200);
}
```

Had to copy all line for line out of fear of failure.

9/18/23

```
int var;
int led = 5;
void setup() {
```

```
pinMode(led,OUTPUT);
  // put your setup code here, to run once:
Serial.begin(9600);
}


void loop() {
  // put your main code here, to run repeatedly:
var = 0;
while (var < 1000)
{
  var = var + 1;
  if (var == 500){
    digitalWrite(led,HIGH);
  }
}
digitalWrite(led,LOW);
}
```

Code works however not in the way i would like.

9/21/23

This is the project me and conner did.

Name Your Tool: power drill

Name Your Partner:

Introduction: Welcome to the "Power Drill Basics Lab." In this short lab, you will learn the fundamental skills of using a power drill safely and effectively. Let's get started!

Materials Needed:

- Power drill
- Safety goggles
- Wooden board or scrap wood
- Pencil
- Drill bit (appropriate for wood)
- Screws
- Screwdriver bit

Lab Activities:

1. Safety First:

- Put on your safety goggles before starting any activity involving the power drill.
- Ensure the drill is in the OFF position until instructed otherwise.

2. Get to Know Your Drill:

- Familiarize yourself with the key components of the power drill, including the on/off switch and the chuck (where the drill bit is inserted).

3. Drilling Practice:

- Place the wooden board on a stable surface.
- Use a pencil to mark a point where you want to drill a hole.
- Insert an appropriate wood drill bit into the chuck.
- Hold the drill with both hands, positioning it perpendicular to the wooden board.
- Activate the drill, starting at a slow speed.
- Gently apply pressure to the drill, allowing it to penetrate the wood.
- Once the hole is drilled, turn off the drill and wait for it to stop completely before removing it from the wood.

4. Screw Driving:

- Swap the wood drill bit for a screwdriver bit in the chuck.
- Mark two points on the wooden board where you want to join two pieces of wood.
- Drill pilot holes at the marked points.
- Insert screws into the pilot holes and use the drill to drive them into the wood.

5. Conclusion:

- Turn off the drill and return it to the OFF position.
- Remove your safety goggles.
- Discuss the importance of safety when using power drills and how these basic skills can be applied to DIY projects.

Safety Tips:

- Always wear safety goggles when using power tools.
- Keep your hands away from the drill bit and moving parts.
- Ensure the workpiece is securely clamped or held in place to prevent movement while drilling.
- Start at a slow speed and gradually increase it as needed.
- Be aware of your surroundings and keep the work area clean and organized.

Conclusion: This short lab has introduced you to the basics of using a power drill. Remember to prioritize safety at all times and practice these skills on various DIY projects to become more proficient. The power drill is a versatile tool that can help you tackle a wide range of tasks with confidence.

9/28/23

I burned my finger trying to be productive by soldering the sodder just would not stick to the wire.

9/29/2023

```cpp
int boardLED=5;
byte motorSpeed=0;  // change this (0-255) to control the speed

  const int leftDirControl1 = 2;
  const int leftDirControl2 = 3;
  const int leftSpeedControlPin = 4;

void setup() {


  // put your setup code here, to run once:
 Serial.begin(9600);



 pinMode(leftDirControl1,OUTPUT);
  pinMode(leftDirControl2,OUTPUT);
  pinMode(leftSpeedControlPin,OUTPUT);

 motorSpeed = 0;
  analogWrite(leftSpeedControlPin, motorSpeed);  //Sets speed via PWM
  digitalWrite(leftDirControl1, LOW);
  digitalWrite(leftDirControl2, LOW);
  delay(1000);

}

void loop() {
  // put your main code here, to run repeatedly:

}
```

IIIITTTT totally works!!! Trust me.
Worked on the sick as heck projector head that i am going to be putting on one of the zombies. The cuts where perfect.

10/11/23

I am reading a graphic novel called the Imitation game. It is really interesting so far. The main guy had a really good point about something on one of the pages. I also got better at coding on weenio.

10/13/23

Goober gave me a heart attack but luckly he was just mis-alined. I worked a lot on the projector plan to work on it a bit more today. Goober is my child and i am a proud father.

10/16/23

Turns out some people are trying to water mark Ai artwork…yeah that isn't going out to well. It is going to be hard to keep tabs on that stuff.

I helped come up with solutions as well as came up with the Abstract. Anything i did on that doc is in comic sans.

10/23/23

What is a Piezo Electric Device?

Here is what i got. So this takes electricity and turn it into physical or mechanical electricity. Like a hamster wheel or piston. Thats at least what I am getting from this. There could be more complicated things going on but i don't know how to describe it at this time.

Ok update it is a speaker… a very wiggly speaker.

Speaking of speakers my computer seems to not be excepting my headphones.

We started on the info graphic

11/1/23

K so turns out my boi has invented binary, i think.

Inventory manger i can start with a small shed and work my way up from there. I work best with parts and metals and things.

Talk about
Experces
Jobs you did.
Skills.
<mark>Problem solving scenarios.</mark>

11/2/23

I couldn't go to bots and beverages because i had a to do baby sitting gig. >_<

I would say the most challenging engineering project is when i tryed to code the song "peppermen strikes" on i piezo electric speaker. however the massive sang was not actually the coding but rather the fact that i can't actually read music. luckily i thanks to my amazing people skills i found someone in my group that could.

<mark>i attamed to make make a paper airplane launcher with my team using a plastic scull. the skull was not at the right angle to launch the plane. however with the help of my team i came up with a new plan using the remaining parts to make it hand held insted.</mark>

i see myself as a youtuber 5 years from now. however youtube would not be my main thing. i hope by doing a job on the side i could slowly transition to do you tube full time.

11/3/23

The reading: ok so biden wants to put Guardrails in learning AI to make them Less racist. That is a nutty sentence to write not going to lie. Welcome to the future I guess.

11/6/23

GOD elon is stupid. I doubt his Ai is only going to lead to stupid problems.

11/7/23

Holy crap crap I CAN GET FORKLIFT CERTIFIED HERE! LIKE NO JOKE I WANT BE FORKLIFT CERTIFIED.

11/8/23

Turning is moving on to cracking the enigma now. Pretty confident he can.

11/9/23

https://youtu.be/zhzL5lPgTJw

This video confuses me. What exactly is going on here? I can't tell.

OH MY GOD I GOT AN OLD TV TO BOOT UP AND RUN A SEGA GENESIS!!!

11/13/23

Ok so here is what I could gather from the article. Actors are getting a pay bump, and the use of siad actors in AI must be tied to their brand. At least that is what I think it is saying. The article was kind of confusing to read. I don't know if that is because I am tired or if it really was just confusing. Hollywood drama am i right?

Going to hook up the antenna to the TV today WOOT WOOT!

11/14/23

Ok so the antenna works however, i think i can talk to the antenna on the tv if i can send the right signal, or i can try and modify the antenna to take digital signals/bluetooth connection them make it convert the digital to an analog signal that the tv can take.

I feel like i can genuinely do this!

11/15/23

 We shall use a motion sensor to make a hammer swing down bock the path of the marble then make a new marble go off somewhere else.

11/27/23

Heres what i can gather. This AI's code got leaked and some people are using it to make a better ai. This article got me a bit confused but i understand it. I am fairly easily confused about some of this stuff.

I took the original program and put in some premade responses to certain phrases.

11/28/23

Ok so FLYING TAXIS that is how you stomp uber! The next crazy taxi game is going to be insane!

12/1/23

Ok so the cybertruck seemed to be pretty neat… until elon broke his own car. Yeah everyone didn't like it after that.

12/4/23

OK so we are closer to 3d printing humans now… nifty.
I accidentally went down a rabbit hole and only read one article WOOPS.

12/5/23

K so google is attempting to block… AD BLOCKERS. I am not really surprized by this. It is about damn time google tones down the ads so we won't have to Block them. Idiots! Idiots all of them. Like come on man.

Going to try and 3d print a holder for our mallet today. I hope it works.

12/6/23

My boy Turing handled the extra wheel like CHAMP! Those Natzis don't stand a chance anymore!
HAHA!

Going to have to make the axol out of wood in order to make it work.

12/7/23

There is this glitch with chat gpt. apparently if you tell you to repeat a word forever it will eventually give you the creators contact info. Now they say that this is some sort of training data it was supposed to dispense. How i think it my be more of an error code so you can contact the dev and report the problem.

My shoe broke so i am going to fix it with hot glue later.

GAHHHHH! AM KEEPS BREAKING THE 3D PRINTERS!!!

12/11/23

I read an article about something I read about previously. Turns out the company ETH Zurich can 3d print a hand in one go thanks to a laser scanner. Kinda cool. One step closer to 3D printing a human.

One of the websites doesn't work with an ad blocker so I am not going to be reading that article.
Apple sucks as a company.

12/12/23

Holy shit burnem is in the new startreck?

12/18/23

A company has invented a ai that can detect guns to prevent school shootings. Neat but i have a feeling it wont work as intended.

12/19/23

Ok i am good on my finals so i am just going to build Clarence a new arm because I am down right tired seeing him with only one arm.

1/9/24

Ok so open ai (people who made chat gpt) apparently say that the code that makes the ai spew info is a bug that they are trying to fix. That makes cents me.

1/11/24

So this shuttle was trying to land on the moon however it got a leak and was unable to make it.

1/19/24 the beginning of the end of the world?

They trained an Ai to be evil for fun… and for some reason now They can't reverse it. My only comment on this is **WELL SHIT**. Like why would you do that in the first place like come on man. It would cost you nothing to do that, but they did it anyway now we have at LEAST one part of the apocalypse. Fun. *REAAAAALLLLL* **FUN**…

1/22/24

The article i read combines my two favorite things Tennis, and 3d printing. It looks a bit wacky but I can get behind it. It is made of 3d printed metal which I think is pretty dope.

Todays goal:

  *Get Fat Ass forklift attachment up and running.
  *print gift for aunt
  *print rocks for dnd.
  * 3d print a lego piece?

1/23/24

I got none of my goals from yesterday done.

The article mostly is talking about making unmanned aerial drones with Ai for unmanned drones similar to itself.

1/25/24

Turns out i can make a RPG however sadly not the gun. The game is just as good in my opinion. I am interested but i don't think anything will come out of it.

1/29/24

A company is simply trying to reduce workplace accidents in manufacturing robots. Surprisingly nothing specail.

1/30/24

Ok so they updated some sort of protocol for medical equipment.

2/1/24

They made a semiconductor out of the stuff in pencils. Funny.
We did that in class with a home depot pencil and a piece of paper, and it took them what? 23 years? PATHETIC!

2/6/24

Please may i never have to use easy EDA EVER again!

I almost cried, not going to lie.

Need to install the software for the printers that actually work.

2/7/24

Started reading the "What would Skeitor do?" book and it actually is pretty dope.

Going to add onto the gun game.

2/8/24

Green Steal? Toxic red mud? IN 10 MINUTES!?! Hell yeah brother I will take your entire stock!
I love making shit out of toxic waste YEAH!

2/12/24

I read a tidbit of the second article. I think I want to master python before I master anything else.

2/13/24

A article on roblox? no way!!!
From what i am reading so far it sounds like it is having a lot of success as of late, it sounds to me like they are simply making a lot of money.

2/14/24

I hope we have mostly a free lab day so I can work on Grabby and Punchy a bit more. Don't get me wrong python is cool and all but at a certain point it just got too complicated too quickly.
Finished the book i was reading, might read it again if i am feeling cute…
K so i took a look at the test print i did and get this, the pegs i printed are just barley, JUST BARELY too far apart to fit. However this means I am on the right track.

Update we have labs today… Darn.

Going to work on my python code right now. I can work on the robo arms later.

2/26/24

So they managed to land on the moon again despite nearly failing. Good for them.

I have begun to try and calculate some of the math for a mechanic in Ultrakill.
If a bullet travels at Mac 3 and it hits a coin. Being **Generous** the coin would maintain half that speed of Mac 1.5.
It is safe to say if you were hit in the face by a coin at Mac 1.5 your head would definitely explode into a thousand bloody pieces.
This is simply my dumbly simple metal math, and not using any actual physics equations. If i have the time i can *try* to crunch the actual numbers.

I definitely want to see if there is any other things in Ultrakill I can try and calculate.

later :

Later in the day i mostly grappled with the second monitor and the wiring on it nothing too fancy. Had some fun with it. Now i can afk at twice the speed, or play two games at once if i am felling fiendish.

2/29/24

3dp basket ball selling for a crap ton of money. If i really want to print a ball i can

Later in the day me and sebastian have decided that since that we are not suited to deal with the robot arms. So instead we are going to work on running doom on the arcade machine instead. I feel very confident that we can achieve this.

3/1/24

A neural interface witch a furry used to move ears he didn't actually have.

3/4/24

Did some things… you know how it is.

3/5/24

We got nothing really in terms of new tech. I got a certain game on the brain right now.

3/6/24

Man i love the skeletor help book it is so funny.

3/8/24

Virgin galactic going on to make another space thingy again. Also i used my invisibility suit yesterday nobody saw me. Best prank ever!!! However I have run out of depleted uranium so I can't use it anymore. It was worth it.

3/11/24

I missed mario day. Oh well Sucks to suck.
So they improved some sort of Ai so it could measure races better apparently.

We 3d printed a coin slot for the arcade. Then we need to cut a new hole for the coins

3/12/24

Ok sorry but i am not going to read the article because i have an exciting new update!
The coin slot model i printed out fits PERFECTLY with the hole that is already there. All we need to do is saw off the bottom a bit to make it even,and take a little off the bottom then the slot will work perfectly! I am so excited to get this thing working!

3/14/24

Sebastian is sadly not here today, very sad. We watched a space launch instead of reading today SWEET!

Need to cut the coin hole a bit more evenly and wait for the next test file to print. If I am lucky it will finish before the end of class today. In fact most everyone at my table is absent today… Hopefully we are just going to do a whole lot of open lab time today.

3/14/24

Just need to get burnham to cut the coin hole then Bang! We are in business.

3/18/24

A version of alexa that pins to your shirt? Yeah no thank you. I am going to have a hard pass on that. I do not want to have Siri accidentally trigger during just a casual conversation. Plus imagen how rude it would be if someone just turns away and has to ask what the word you were using means right in front of you. I have never had any success with getting voice activated stuff to work the way I want it to. I don't want Alexa leaking my IP in the middle of a party.

3/21/24

I was absent for two days and i missed the dogs… that came yesterday. I am very very sad.

Spamming Ai chat bots Wow! who wouldn't see that coming?

3/22/24

Grubhub drone delivery would be amazing! You get a free drone with every purchase!

3/25/24

The dispatchers at 911 actually use some pretty interesting technology when it comes to tracking where you are in a call.

2/27/24

I did a bit of reading and a bit of writing for reading time today. Hope mr burnham doesn't mind.

4/8/24

3D printing circuits, nifty.

4/9/24

I learned that when you directly gaze at the sun with goggles and then look at it though the hole in a sheet of tinfoil the image you see will be flipped upside down because of how the light travels through.

4/11/24

Used my magic hat to disappear for a day.
Read about the top 10 women in Ai today.

4/12/24

Humanoid robot…"scientists believe that with the right software, she will be able to function much like a human."

…

The extinction jokes write themselves ladies and gentlemen. I can see this going down a VARIETY of bad avenues.

4/15/24

3D printable submarines.
I AM GOING TO PRINTING SUBMARINES NOW!!!
Yes sir!

One day everything will be 3D printable.

4/16/24

In 2021, 44,686 people died in falls at home and at work
Gravity had killed 44,686 people. Which begs the question:

Gravity do we REALLY need it?
I mean what would it take to remove it? Well…

You can't blow up the core and remove it.

How do we remove gravity from the earth… well

"According to Newton's law of universal gravitation any object having mass attracts another object having mass and thus it is not possible to remove gravity BUT it is possible to reduce or remove the effect of gravity by the application of other forces." https://www.quora.com/Can-you-remove-gravity-on-Earth#:~:text=According%20to%20Newton's%20law%20of,the%20application%20of%20other%20forces.

Let me state that again.

"According to Newton's law of universal gravitation any object having mass attracts another object having mass and thus it is not possible to remove gravity BUT it is possible to reduce or remove the effect of gravity by the application of other forces."

The earth's mass is way too big to remove its gravity thus the only way to remove gravity is…

To remove the earth entirely.
A small price to pay to avoid all these deaths but, I am sure our future generations will thank us.

4/17/24

I decided to read Who was Nicola Tesla today, and I must say it is very interesting so far.

4/18/24

Sweden agreed to help us explore space. Neat well done! That doesn't really affect me,but i am happy we are getting along with other countries regardless.

We could probably solve the energy crisis if we just pay people to run in hamster wheels to generate electricity. Have a huge cash prize for longest time running on it, and people will flock to it like a cat to catnip. You generate electricity, get paid for it and you supply clean energy to use. It's a win, win.

4//19/24

2 years? For the point of no return? That is what i am getting out of this, but then again it was the Uk who discovered it so i am unsure if it applies to the US or not.

4/22/24

I did the survey but when i went to view the results… I got nothing. Don't know what happened there.

4/23/24

Ai dog fights…AI PLANE DRIVEN DOG FIGHTS. Is it going to get to the point where War will be automated. If so then…that actually would be pretty dope.

I am still way behind in terms of all my work so i can't get into details but regardless it seemed like an interesting read.

4/24/24

Can read gotta make up work.

4/25/24

Did read this one very short and sweet. Seems that solar energy is paying itself back in a way. Making so much that the price for this energy goes NEGATIVE. Good news if you ask me.

4/29/24

WE WON IN A CATEGORY LETS FUCKING GOOOOOOOOOOOOOOOOOOO!

Anyway Story on a teacher using Ai to frame their principal, now that is interesting.

5/7/24

Kavroom rover update. Turns out the way I thought you were supposed to crimp the wires was incorrect. So my team mate Sebastian is taking care of the soldering process. The end goal for our Rover is to have it drive around and have it swing around a little 3d printed knife. This knife is not sharp and wont hurt anyone. It will also have a speaker to blast meme audio and stuff as well.

Re-soldering complete! Wiring on the button will soon begin!

5/8/24

ROVER ACQUIRED!
Now we are going to hack into the Pie then wire it up and then we are set!
 Found some code on it too! Just need to understand what it does… eventually…

5/9/24

Regrettably I think I will not be able to finish my Makibot as I am way too behind at this point to finish it. Which really sucks, but I am going to focus on the rover ,give it my 100% , and hopefully I can tank that failing grade and make it up with the rover grade. On top of that can't get the right parts, and i have drastically overestimated the size and space of my design.