

Engineering Notebook

Mechatronics Engineering 2025-2026

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<LinkedIn add later>



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: Check out the [New Blog Template Here](#)
Also, please have the newest Blog Entry here at the top... and turn all your text black from the **red**

Aug 13, 2025 Wednesday, Start of Engineering Notebook



Finish one of my assignments so I only need to do one other at home.

Entry

I grabbed the “imitation game” because I know it's also a show that my friend mentioned to me before and I wanted to read the book first then watch it with them. It starts off with a character named Alan Turing and he's described to be really shy but he made friends with a guy named Chistophor Morcom. He starts to develop feelings for him but then we find out that Chistopher died which impacted Alan.

Notes

○ Importance of engineering notebooks

- Keeps vital info/details and helps keep track
- Peer reviews (make detailed notes and experiment/engineering process)
- proves ownership
- Must be dated/signed (need witnesses to sign AND date)
- No erasing and whiting out entrees unless for errors or contains confidential info (safe guarded)
- Captures thoughts
- Portfolio for future purposes

Aug 14, 2025 Thursday, Ohmgee



Finish my assignment, take our printer apart fully

Notes

○ Georg Simon Ohm

- He was a German physicist who discovered Ohm's law, born in 1789. He became a math professor. He wrote a pamphlet in 1827 but it got a lot of backlash and had to resign at the college he was teaching. He started working at another school and started getting recognition. In 1827 he was awarded the copley medal, through this, the physical unit for measuring electrical resistance was called Ohm's law.

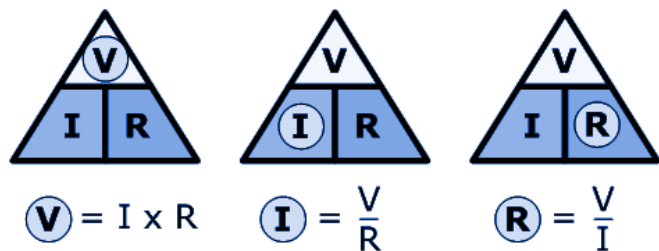


Ohm's Law

-Ohm's Law explains the relationship between voltage/ pressure (V/E), and current/ how much electrons (I), and resistance/ stops the path (R)

General Rules for Ohms Law

Visual for Ohms Law



Aug 15, 2025 Friday, Astrobees



Learn about Astrobees,

Notes

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

Aug 18, 2025 Monday, a



Finish o.

Entry

STEM-Magazine-2020-01-Jan, Adaptive Learning Programs to Encourage Learning in online teaching.

It is about how students can effectively use their time to find an effective way that helps them study and therefore, learn. It breaks down different ways to achieve this, such as active retrieval, mastery learning, interleaved and space practice, scaffolding, and feedback. It also mentions online learning, and the scores of high archivers tend to study more effectively. To sum it up, active retrieval is recalling information, mastery learning is one to one tutoring without the penalties of a lower grade, interleaved and space means you study in intervals (not all at once), scaffolding is a guided support and accesses what the student/learner needs to work on, and feedback is useful comments that a learner can use to improve themselves.

I picked this article because it's hard for me to study outside of the classroom and I wanted to be more informed. It taught me ways to study and it was pretty useful. I think it has a lot of upsides because not everyone studies the same way and this is a useful way to see all the different possibilities.

I learnt about what scaffolding is in study terms, as well as interleaved space practice.

Notes



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

Aug 19, 2025 Tuesday, Ohms Lab

★ ☆ ★

Complete lab

Notes

Scientific Notation

-A number written expressed as a number from 1-10 times 10 to the power

-Ex. 12345. -> 1.2345×10^4 (moved 4 times)

Engineering Notation

-A number written expressed as a number from 1-99 times 10 to the power of multiples of 3

-Ex. 12345. -> 12.345×10^3 (moved 3 times)

R #	Resistor Number Value (from Colors)	Measured Ω	Ω Error In Spec?
#0	Red, Red, Brown, Gold = 220 Ω 5%	217 Ω	3 Ω
#1	Brown, black, orange, silver = 10k Ω 0.01%	9.80k Ω	200 Ω
#2	Yellow, blue, red, gold =460 Ω 0.1%	4.67k Ω	70 Ω
#3	Orange white red silver=78 Ω 0.5%	3.83k Ω	3752
#4	Brown, black, green, gold = 1000k Ω 0.1%	0.987m Ω	23 Ω
#5	Brown, red, red, gold=1200k Ω 0.1%	1.200k Ω	0 Ω

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

Aug 20, 2025 Wednesday, Ohms Lab #2

★ ☆ ★

Entry



I read 1984 by George Orwells, I loved his books and I always wanted to read this particular one after Animal Farm. I know the general storyline is about a dictatorial/totalitarian government who controls everything. I read about Winston and about how the government works, specifically about Big Brother and the Thought police who control everything.

Notes

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

Aug 26, 2025 Tuesday, Some Soldering

★ ☆ ★

Entry

I read about dark matter and was especially interested in what dark matter is, which is the same thing scientists are figuring out. I found that dark matter is a place holder, meaning that we have to find about 85% of our world. I think it's one of those things that keeps people up at night, because so much of our world is undiscovered and unknown. I think if we learn more about this placeholder, it would probably be decades in the future but it would push forward human knowledge.

Notes

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

Aug 27, 2025 Wednesday, Fire Aaaaaaaj eek and Resisters

★ ☆ ★

Work on Fluke assignment

Entry

I read Jurassic Park. It was really interesting because I've only seen clips of the movie but I never watched the full movie or the book. It started off with more corporations who discovered about gene splitting and whatnot, and the story starts off with regular people not knowing anything about these dinosaurs and gaslighting tourists about their attacks. I've only read 2 or so chapters but I'm looking forward to reading more (if i could find it again).

Notes

○ Resisters

- Most fundamental and commonly used electric component
- Job is to resist in a circuit through regulating/set the flow of electrons (by using the type of conductive material they're made out of)
- Contains NO power source, only effects voltage/current
- Different values of resisters produces different values of current and voltage (useful to control the current and flow)



Common Characters for Resistors

- Temperature coefficient
- Voltage coefficient
- Noise
- Frequency response
- Power
- Temperature rating
- Physical size
- Reliability

Carbon Composition Resistor

- Most common type of resistors
- Used in electrical/electronic circuits
- Ratio of carbon dust (conductor) to ceramic (insulator) determines the resistivity
- Low to medium power resistor
- Very large tolerances (high value resistance and need for more precisions)

Film Resistor

- Made of pure metal
- Resistive value depends on the thickness of the film (making either thick film/thin film)
- The cut for the spiral would increase the conductive/resistive path
- Withstands higher max ohmic value

Wirewound Resistor

- Made by winding a metal alloy wire
- Very low ohmic high precision values
- Handles higher electrical currents

Resistor Color Code

- Made

Color	Numeric Value	Multiplier	Tolerance	Temperature coefficient
BLACK	0	1 Ω		250
BROWN	1	10 Ω	$\pm 1\%$	100
RED	2	100 Ω	$\pm 2\%$	50
ORANGE	3	1K Ω		15
YELLOW	4	10 Ω		25
GREEN	5	100 Ω	$\pm 0.5\%$	20
BLUE	6	1M Ω	$\pm 0.25\%$	10
VIOLET	7		$\pm 0.1\%$	5
GREY	8			1
WHITE	9			
GOLD			$\pm 5\%$	
SILVER			$\pm 10\%$	

Aug 28, 2025 Thursday, DMM Labs



Work on labs to get at about 50% done

Entry



I read about the Beam Management in highpower directed energy laser projects. I thought it was really interesting because laser power would replace ammunition needed to neutralize enemies. This is promising because they aren't affected by gravity, they travel at the speed of light, and they don't create any noise. It also has settings for how strong the lasers are, they can be turned deadly to mostly harmless, this helps make the lasers multi purpose. Instead of spending millions on different tools made for niche things, there could be one which acts as a defensive/offense machine or as a guider. The article also mentions that lasers could be a good way to replace military personnel, so no lives would be at risk.

I think this new technology would be extremely beneficial, as it can replace soldiers and make no one's life at risk. However, I think it is scary because technically if anyone with bad intentions got ahold of the technology, we would be in huge trouble.

Notes

Circuit	Measured R1	Measured R2	Measured RT	Calc R1+R2	Measured Vt	Measured V1	Measured V2	Calc Current	Measured Current
1	325.6 Ω	324.4 Ω .	650 Ω	650 Ω	5.11V	2.563 V	2.550 V		
2	9.80k Ω	9.78k Ω	19.55 k Ω	17580 Ω	5.12V	2.568 V	2.568 V		
3	.988k Ω	5.01k Ω	0.990 M Ω	5998 Ω	5.13V	1.559 V	4.90V		
4	3.85k Ω	0.464 M Ω	0.467 M Ω	46785 0 Ω	5.08v	0.008 V	5.13V		

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

Aug 29, 2025 Friday, DMM Labs Day 2

★ ★ ★

Work on lab to finish the measurement for current



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

Sep 2, 2025 Tuesday,

★ ☆ ★

Work on labs to get at about 50% done

Entry

I read about "The Future of AI Nuclear Reactors Powering Data Centres. Their goals are to use AI to both optimize reactor operations and enhance safety measures through using an AI-driven design to test more in more diverse settings than just the laboratories. This helps as a testing ground for new technologies meant to improve aspects such as energy scalability, reliability, and deployment speed. This helps minimize environmental footprints.

It is also different from regular nuclear plants because the Aalo Pod does not need an external water source.

Notes

Sep 3, 2025 Wednesday,

★ ☆ ★

Work on labs for switches

Entry

I found the book again!! I read more about Jurassic Park, so far it's been really interesting. I kinda left on a cliffhanger so I want to read more next week. I think I want to know more about more backstories of the foundation that is making dinosaurs and whatnot.

Notes

Sep 4, 2025 Thursday,

★ ☆ ★

Work on labs for switches

Entry

I read about Einstein hated entanglement- and five other quantum myths. I found out the difference between quantum mechanics and relativity, which is the general theory of relativity mostly focuses on how things happen at large scales while quantum mechanics would focus on things like atom sized or smaller forces.

Notes



Sep 5, 2025 Friday,



Work on labs for switches

Entry

I read about how our phones aren't actually spying on us based on our conversations with our friends or family. It's actually because of the network. Advertisers, identity provider, platforms, and data brokers are the reasons why. A lot of popular platforms like Instagram, YouTube, and TikTok have information of your behavior and predict your wanted ads or next move.

But the thing I was most surprised about was when an Apple contractor revealed that they were actually listening in on audio recordings and only agreed to the settlement this year. This is pretty weird unless they enlist new policies.

Notes

Sep 9, 2025 TUESDAY,



Work on labs for switches

Entry

Notes

Circuit	Measured R1	Measured R2	Measured Rt
1	2.820kΩ	8.25kΩ	10.50kΩ
2	1.670kΩ	9.32kΩ	10.50kΩ
3	6.50kΩ	4.53kΩ	10.50kΩ
4	4.14kΩ	6.97kΩ	10.50kΩ

Sep 10, 2025 Wednesday,



Work on labs for switches

Entry

I read Jurassic Park, it was really interesting since it introduced new plotlines and went further into depth with the creators of the park.



Circuit	Measured V1	Measured V2	Measured Vt	Measured R2	Calculated R2
1	4.04V	1.117V	5.15V	10.55Ω	
2	1.665V	3.483V	5.16V	10.55k	
3	2.039	3.114V	5.16V	10.55k	
4	3.125	1.997	5.16V	10.55k	

Robot Club - <START>

What Did I Working On Today (Robot Club, Other Projects):

Start research on the 2nd project (rover controlled by a program to move)

Talk to Mr burnham

Choose a robot

Planned Task List:

- ☐ Talked to Mr Burnham
- ☐ Choose roobot

Useful Reference Links:

https://www.instructables.com/Android-controlled-path-following-vehiclehttps://www.reddit.com/r/p5js/comments/nhkvk6/create_a_path_for_an_object_to_follow_by_drawing/
<https://www.youtube.com/watch?v=GVPdQKiWcyA>
<https://www.youtube.com/watch?v=9c2yeqhoBvo>

What Did I Do Today:

parts needed (HC-06 Bluetooth module, sensor)

We decided to program this on Javascript or APK (we are planning for the program to be run on a laptop).

What Will We Work On Next Time?

- ☐ Talk to Mr burnham

<copy text between these lines>



Sep 11, 2025 Wednesday,



Work on labs for switches

Entry

.

Notes

Robot Club - <ARM>

What Did I Working On Today (Robot Club, Other Projects):

Pulled out Huey's arm

Got it working (controller works)

Back motors and arm doesnt work.

Planned Task List:

☐ Chose Huey

Useful Reference Links:

<https://www.instructables.com/Android-controlled-path-following-vehicle>https://www.reddit.com/r/p5js/comments/nhkvk6/create_a_path_for_an_object_to_follow_by_drawing/

<https://www.youtube.com/watch?v=GVPdOKiWcyA>

<https://www.youtube.com/watch?v=9c2yeqhoBvo>

What Did I Do Today:

Pulled out Huey's arm

Planned

What Will We Work On Next Time?

☐ Plan out the structure for Huey

☐ At least build body structure

☐ Maybe start on arm(?)

Sep 12, 2025 Wednesday,



Work on disassembling huey

Entry



I think it was honorable for Chouinard to give up profits for the sake of our environment. He wasn't pressured to stop selling the products, he decided to stop selling them after seeing the harm they did to the natural environment. I think it's important to mention that he was a climber as well, so he enjoyed being outside and exploring. I think a person who is purely in the business for profit would not be someone who climbs, and I think that's why it's so important to have the products reflect the ceo/person in charge of profits rather than someone who creates something because they

Robot Club - <DISASSEMBLE >

What Did I Working On Today (Robot Club, Other Projects):

Tear down Huey

Planned Task List:

- ☒ Take Huey's wheels
- ☐ Take off the st

Useful Reference Links:

https://www.instructables.com/Android-controlled-path-following-vehiclehttps://www.reddit.com/r/p5js/comments/nhkvk6/create_a_path_for_an_object_to_follow_by_drawing/
<https://www.youtube.com/watch?v=GVPdQKiWcyA>
<https://www.youtube.com/watch?v=9c2yeqhoBvo>

What Did I Do Today:

Pulled out Huey's arm

Planned

What Will We 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
- ☐ Be sure these items get on your Big list

Sep 16, 2025, Tuesday

* ☆ *

Work on Huey

Notes

WHILE Statement Loop

```
// my code
int var = -1;
```



```

void setup ()
{
  Serial.begin(115200);
  Serial.print("end of setup\n");
}

void loop ()
{
  Serial.print("start of loop\n");
  var = 12;
  while (var > 0)
  {
    Serial.print(var);
    Serial.print("\n");
    // do something repetitive 200 times
    var--;
  }
  Serial.print("end of loop\n");
}

```

Sep 17, 2025, Wednesday

★ ☆ ★
Work on Huey

Entry

I read Jurassic Park and finally got to the park where they go into the park itself. I think it was really interesting because they went over how it looked like in the books and how they created the dinosaurs.

Notes

Sep 18, 2025, Thursday

★ ☆ ★
Work on Huey

Entry

Sparkfun is a site where you can buy components from. Its main goal is to turn ideas to reality and explore topics such as machine learning and robot building. Basically making things like that accessible for anyone at any skill level. I think the thing I'm the most interested in is probably the kits since it has every part and it'll be fun to fully put it together since you would learn a thing or 2 about it.

Notes



Test	Brightness	Selected R_2	Measured V_2	Measured V_T	Derived V_p	Calculated I	Calculated R_p
	example	1K Ω	0.07mv	4.82v	4.81993 v	0.07 μ A	68.86M Ω
1	Covered	1.007k Ω	217.1mv	6.16v	-0.2889v	215.6 μ A	-1339.98 Ω
2	Some Light	1.007k Ω	0.506v	6.16v	5.654v	0.502mA	11.26k Ω
3	Room	1.007k Ω	1.600v	6.16v	4.56v	1.589mA	2.87k Ω
4	Brighter	1.007k Ω	1.881v	6.16v	4.279v	1.868mA	2290.69 Ω
5	Full Bright	1.007k Ω	4.88v	6.16v	1.28v	4.85mA	264 Ω

Sep 19, 2025, Thursday

★ ★ ★

Work on Huey

Entry

I read about the multi drone operations. I thought it was really interesting and also probably way more convenient, obviously having one controller for 3 drones rather than having a controller for each drone. I also think it could be very beneficial as it highlights the use of it by firefighters, police and city planners. Mainly because you can use one controller to supervise one event, another for fire, and many more. It's just more convenient and quicker that way than it is to find a specific one and then be forced to find another. The only concern is if anyone were to hack the drones and it would be more troubling since they have controls on even more drones.

Notes

Sep 22, 2025, Monday

★ ★ ★

Work on Huey



Entry

I read about the Voyager launch into space. I thought it would be very useful because the space based cloud infrastructure uses AI which makes transferring data back to Earth much quicker (basically on board analytics). I think this would be very beneficial in the future because AI can spot things that would've gotten ignored by the human eye and the on board analytics ensures it is always connected on earth, getting rid of any delays. This helps with defense as well, it can capture the moments before a giant space object hits the earth and transfer this data much quicker so we can plan accordingly.

Notes

```
// C++ code
//
const int analog_pin=0;
const int LED=7;
int ADC_val=0;
int digital_map_LED;
void setup()
{
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(analog_pin, INPUT);
}

void loop()
{
  ADC_val = analogRead(analog_pin);
  Serial.println(ADC_val);
  digital_map_LED =map(ADC_val,0, 1023, 0, 255); // scales PWM output (8-bit);

  analogWrite(LED, digital_map_LED);

  //digitalWrite(LED, HIGH);
  //delay(1000); // Wait for 1000 millisecond(s)
  //digitalWrite(LED, LOW);
  //delay(1000); // Wait for 1000 millisecond(s)
}
```

Sep 23, 2025, Tuesday CODE



Work on Huey

Entry



I read about answering the question if we are too dependent on ai. I think it's pretty important to know especially when ai is more popular than ever. I think with stuff like google ai, it is especially harmful because it basically summarizes everything that would have originally popped up, this can lead to points that contradict each other, etc. Its also really harmful to learning and brain development because if someone uses it for everything, it eliminates creativity and thinking. I think the point they make is, "Some countries are creating populations that get more intelligent by working with AI. Others are creating populations that get more dependent on AI" is the absolutely best way to put it. More dependency on AI leads to the death of human thinking and creativity while using AI for certain things is the best way for a more efficient result(s).

Notes

PART 4-5 OF LAB

```
if (ADC_val<511) {
  Serial.println("more than 511");
  delay (100);
}else if(ADC_val>511) {
  Serial.println("its less than 511");
  delay (5000);
}else{
  Serial.println("its equal");
}
```

FULL CODE

```
// C++ code
//
const int analog_pin=0;
const int LED=7;
int ADC_val=0;
int digital_map_LED;
void setup()
{
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(analog_pin, INPUT);
}

void loop()
{
  ADC_val = analogRead(analog_pin);
  Serial.println(ADC_val);
  digital_map_LED =map(ADC_val,0, 1023, 0, 255); // scales PWM output (8-bit);

  analogWrite(LED, digital_map_LED);
```



```

if (ADC_val<511) {
  Serial.println("more than 511");
  delay (100);
}else if(ADC_val>511) {
  Serial.println("its less than 511");
  delay (5000);
}else{
  Serial.println("its equal");
  }

  //digitalWrite(LED, HIGH);
  //delay(1000); // Wait for 1000 millisecond(s)
  //digitalWrite(LED, LOW);
  //delay(1000); // Wait for 1000 millisecond(s)
}

```

Sep 25, 2025 Thursday,

Work on Huey

Entry

When I read jurassic park, I finally got to the point where they met with the dinosaurs in teh actual park. It was really fun reading and the disagreements that the company has regarding the dinosaurs.

<Date> Sep 26, 2025 Tuesday,

Work on tinkercad and Huey

Entry

I read about "The Future of AI Nuclear Reactors Powering Data Centres. Their goals are to use AI to both optimize reactor operations and enhance safety measures through using an AI-driven design to test more in more diverse settings than just the laboratories. This helps as a testing ground for new technologies meant to improve aspects such as energy scalability, reliability, and deployment speed. This helps minimize environmental footprints.

It is also different from regular nuclear plants because the Aalo Pod does not need an external water source.

Notes

Sep 29, 2025 Monday, a

Work on Huey.

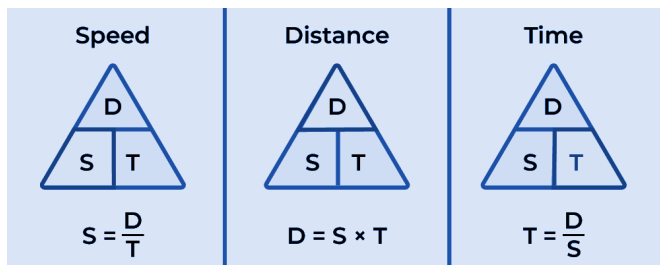


Entry

I read about "Anthropic CPO Admits They Rarely Hire Fresh Grads as AI Takes Over Entry-Level Tasks" because it's pretty concerning to me. Mike Krieger, former co-founder for Instagram who doesn't hire new grads. Opting for AI for entry level jobs, only hiring experienced people who can solve complex problems. He even fired engineers who rejected the idea of only using AI for the job rather than actual people. His friend also remarked. 'Mike I'm really glad you launched Claude Max because Claude is my product manager Claude is my lawyer Claude is my you know founder therapist as well.'". He uses the AI to train the AI to improve itself. Claude AI is basically just someone you can ask for advice and it will generate one for you.

I think this is pretty concerning because he's eliminating the entire existence for entry level people to an AI. I think later in the future the computer science degree will be less and less popular with more companies leaning towards AI because it's cheaper and faster.

Notes



Speed = speed of sound (340m/secs / 0.034 cm/micro secs)

Time = time it takes to get out and back (time of pulse is 0.034 cm/micro secs x 500 micro seconds = 17cm / 2 = 8.5cm)

Sep 30, 2025 Tuesday, Ultrasonic sensor



Continue coding for parts 3 and 4

Entry

I read about how OpenAI is making it possible for users to buy the items straight from the chat. ChatGPT Plus includes the option for a "buy now" button, making it more convenient for the user than going on a link. I think this is pretty good but I don't see myself in the future doing that simply because it probably means that you have to attach your Etsy and Shopify account to it and I'm not that convinced that it's the most secure.

Notes

Picked out a sensor (joystick module) I worked on the slides and figured out the pins.

📄 Copy of 37 Sensors Presentation - Sensor Name - Your Name Here

📄 Copy of 37 Sensor Instructable - Draft #1



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

Oct 1, 2025 Wednesday,

★ ☆ ★

Work on presentation and Huey

Entry

I read Jurassic Park and got to the part where they got attacked by the T-rex. I thought the chapters I read today are probably one of my favorites as of now because it introduces us to one of the main issues of the story and the secret 'villian'/antagonist.

Notes

Oct 2, 2025 Thursday

★ ☆ ★

Finish o.

Entry

I read about an eye tracking AI system to prepare astronauts for mars. It says it uses advanced AI to track the eye movements, which gets transferred to their cognitive and fatigue levels. Once either gets too low, it pops up a warning to indicate the status to the astronauts. This helps them be at their peak performance. It will be implanted on the monitors but it is just a good prediction rather than a completely accurate technology. I think this will be essential for not just the astronauts, but also for other things like monitoring the amount of rest you need/have in your everyday life. As AI starts getting more and more advanced, I think it would only get more and more accurate with the readings and through this we get to learn more about our solar system.

Notes

Oct 13, 2025 Monday

★ ☆ ★

Finish o.

Entry

I read about how OpenAI sora has surpassed other competitors like chatgpt and google gemini. I think this is shocking since chatgpt has been such a big staple or was the most talked about AI system. I think this is because of the generative feature of AI videos. I think it actually is very concerning. I saw some AI videos that were scary realistic when I was scrolling through social media, as well as commenters being more wary of videos and questioning if every



video is AI. I think SoraAI should absolutely put some kind of watermark because this tool can be used for much more evil than good.

Notes

Oct 15, 2025 Wednesday

★ ☆ ★

Finish o.

Entry

I read Jurassic park, it was revealing the kids and some of the adults were still alive. Lots of other info abt how the park got deactivated.

Notes

Oct 16, 2025 Thursday

★ ☆ ★

Finish o.

Entry

I read about meta tightens grip on AI research. This led to a lot of controversy and negative responses. It wants to shift from an open research corporation to a much stricter corporation which led to delays and lots of team changes. Those in charge are more inclined to further research at the price of stability which I feel is just the wrong direction. All the negative reactions they got from their staff members are completely warranted and the company should move to the opposite direction.

Notes

Oct 21, 2025 Tuesday,

★ ☆ ★

Entry

I read "The next revolution in biology isn't reading life's code — it's writing it" and I think it was really cool. Its goal is to basically break down and write a human genome. What surprised me the most, however, was how far the development has gone. For example, this large upscale project took 3 billion dollars and 13 years to sequence a human genome back in 2013 but now it takes a few 100 dollars and only a few hours. This much progress in those 12 years is so impressive to me and I believe as technology advances, it would be able to sequence strings among strings of human



genomes. While it is incredible, I do feel like it can be taken in the wrong direction quickly. As technology advances, there may be a need to advance and discover more which could lead to either extremely powerful or weak humans.

Notes

<Date> Oct 23, 2025 Thursday,

★ ☆ ★

Work on tinkercad and Huey

Entry

I read about articler questioning if humans should colonize space. I think 4/5 of the space experts saying no is reasonable since I believe it would be more bad than good. More and more nations would fight over resources again but it would be even more costly. Furthermore, there probably wouldnt need to have a “backup” planet if we took the effort into trying to make the one we live in teh best. More planets would also lead to people thinking our original planet would be nothing so they dont feel any effort to change it for the better since they know theres another planet waiting for them

Notes

<Date> Oct 24, 2025 Thursday,

★ ☆ ★

Work on shadow box

Entry

I looked at the types of inventions at the Electrify NY Shows Cars, I think the most interesting was probably the drive test module, I think I've seen things similar to that but it's definitely a good way for people to start getting comfortable driving with a wheel. Another thing is the electric unicycle, which follows a path and is used as a tool to try to teach people how to ride a unicycle. These tools would help people in the future a lot because it helps people learn quicker when they're young with less likely chances of them getting hurt as often. I chose this because I wanted to see the unique ideas that people were able to make electric.

Notes

<Date> Oct 27, 2025 Monday,

★ ☆ ★

Work on shadow box

Entry



I looked at the ROSbot 2R because of its ability of driving and traversing indoors and its Autonomous capabilities. The ROSbot XL has a raspberry pi which makes it possible to add cameras, arms, and sensors. I think I would try to incorporate something like that to my robot. While the pather's switchable components makes it possible for arms, cameras, and sensors.

Overall I think it would be useful to install sensors or cameras because they both help with navigation.

Notes

<Date> Oct 28, 2025 Tuesday

★ ★ ★

Work on shadow box

Entry

I read about how Speed is the new energy subsidy. Now that Trump's bill is in act which wanted to accelerate the phaseout of credits and adding complex new sourcing requirement. It also put a deadline, making multiple projects appear at once and also creates more competitive as a new project pops up every day.

I think this is interesting because it kinda requires a project to somehow stand out from the rest, and this leads to the people behind these projects to do the best they can to compete with the others. This leads to the best of the best to stand out which makes people use the best wayka

Notes

<Date> Oct 29, 2025 Wednbesday

★ ★ ★

Work on Huey

Entry

I read Jurrastivc park and finally finished it. I think the ending was a bit abrupt but it kinda paves a way for a second book

Notes

- **What was the most challenging "Engineering" project you've worked on, and how did you overcome the difficulties it presented?**
 - **Tip: You can replace "Engineering" with School, Club, Team, or Group.**
 - **Hint: Think of a challenging project. One that you have to do by yourself or as a team. Think about the problems and difficulties. You are trying to show your problem solving skills. Tell about he project, but focus on how you solved any problems. Be specific.**



- Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

The most challenging project I've ever worked on was when my teammate during a speaking final for my French class. It questioned and challenged my communication, collaboration, and memory skills. Thankfully, I got over this hurdle by reaching out to them days before the presentation due date to express my worries. They answered, and we thankfully went over our lines again and again. In the end, we managed to present it with ease and our lines came naturally because of the consistent practice.

- Tell me about a time when a project or assignment didn't go as planned. How would you approach the situation differently in the future?
 - Hint: This is a question about how you behave. You are telling about how you approach problem-solving. You should give examples that demonstrates your ability to recover when things go wrong.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

In my art class, we were given instructions where we had to complete a alebrije and unfortunately, mine did not look and turn out the way I wanted to. The colors were mismatched because I did not plan as far ahead as I should have, it had very noticeable paper sticking out when it was supposed to be smooth. If I had to redo that project all over again, I would have definitely planned ahead and paid more attention to the application of the paper. Overall, there was a lot of improvement that could have been done and I shouldn't have procrastinated as much during the time we were given in class,

- What type of "Engineering" work do you have the greatest passion for, and why do you enjoy it so much?
 - Tip: You can replace "Engineering" with School, Club, Team, or Group.
 - Hint: This question is asking about your passion. What interests you. You will want to talk about what "Engineering" topics interest you, and why. The "Why" is the important part of this question.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

From the beginning of my life I knew what career fields I wanted to pursue, anything related to space, our universe and environments, and machines. I've been inspired by TV shows like Wild Kratts and National Geographic to start a zoology or biology career. However, science fiction books like the Magic Treehouse Series inspired younger me to pursue a career in science and engineering. Now that I am more aware of the various types of engineering, I believe I would see myself working as an ocean engineer or an environmental robotics engineer.

Where do you see yourself five years from now? How do you plan to get there?

- Hint: You want to show you have a plan. You also want to show you know how to execute that plan. If you were applying for a job, you would want to do some research into the natural progression in that company. Write about where you want to have accomplished in 5 years..Also a new employer is going to invest a lot of time and money in your training



and development, and they don't want to hear that you get bored easily and will likely look for opportunities elsewhere before too long.

- Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

Currently, I plan to major in mechanical or ocean engineering. Whatever I do in the future, science would take a huge chunk of it. At this time, I want to enroll into tech/engineering universities and colleges such as Berkley, Ann Arbor (university of michigan), Virginia tech, or any other colleges/unis that have a marine/ocean related engineering program. I plan to enroll myself into a lot of internships, focus on my school subjects, and possibly watch videos from the schools I'm interested in to show my interest in the subject and the school itself.

- What do you enjoy most and least about "Engineering"?
 - Tip: You can replace "Engineering" with School, Club, Team, or Group.
 - Hint: This question is checking to see if you understand all the "parts" of engineering. There are tasks that are fun, and others that are not... But as an Engineer, you probably will have to some of the fun and not fun stuff. Do some research about all the tasks related to an Engineering Field.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

Engineering is an amazing blend of science and art and combines 2 of my all time favorite interests. I love the designing and creation parts of it. However, it could be very time consuming but I do think it is worth it especially since I do have a strong interest in that career field.

- How do you manage your time during a fast-paced "Engineering" project, and how have you improved your time management over the course of your career?
 - Tip: You can replace "Engineering" with School, Club, Team, or Group.
 - Hint: This is a behavioral question... It is asking how you behave under stress. Think about how you manage your time. Do you have any stories about how you had to manage your time in a project, and how that helped or hurt getting the project completed.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

Recently, I have been diving into ways to manage my time and productivity. I found myself often filling out applications for jobs, internships, and volunteer work. This was a huge drastic change from what I did last year, where I just watched videos, played games, and while I was having fun doing these activities, it was not what I wanted in the long run. Ever since I started to pursue my admiration and love for engineering and STEAM/STEM in general, I felt the urge to do something that can be beneficial for me, my future, and the ones around me. My newfound love for hard work in general has made me much more productive and fulfilled. I can complete my homework and assignments on time. A year ago, I would've only felt the urge to work on my projects for a day and the phase will be over the next, nowadays I've been consistently feeling the need to work on something.

■



- What new "Engineering" skills have you recently developed?
 - Tip: You can replace "Engineering" with School, Club, Team, or Group.
 - Hint: Think about how you learn. What new skill have you acquired? How did you do it. This is where you show you like to learn on your own, maybe, outside of normal school assignments. This could be a class you did, like Udemy, Instructables, Kahn... Something you did a deep dive on Youtube... Be specific.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

I felt like I learned a lot more skills that have to do with anything technical thanks to a course taken at a technical school. I learned about circuits, C++ coding and arduinos, and writing down my progress. The most important thing I learned is actually updating my engineering notebook because it's my first time consistently writing down what I did and my overall progress each day in my classes. It definitely helped with my productivity since I would look back to the dates and see all the work we completed. It also gives me a good way to see my progress and thought process.

<Date> Oct 30, 2025 Wednesday

★ ☆ ★

Work on Huey

Notes

- What "Engineering" resources do you use to stay on top of the latest news, technology and developments in the field?
 - Tip: You can replace "Engineering" with School, Club, Team, or Group.
 - Hint: This question is about telling a story about how you learn, and where you turn when you need to do some research. This could be about how you get the latest "Engineering" news. Reddit... YouTube, Twitter, TikTok... Company Blogs or News letters. Maybe focus your answer on how you might do this in the future.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.
- Why are you interested in a position with our company?
 - Hint: Your interviewer is trying to understand "Why us?" This is your chance to tell him what you know about the company and express a genuine enthusiasm for the role. Take a look at different company websites, job



descriptions, and any recent press releases. Answer this question based on your ideal company...

- Write about the ideal job you would like to get. Be specific. Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

I am a student that is very detail oriented and eager to learn and gain experience I would not have gotten the chance otherwise. I view my work as a direct reflection of me and my work ethic, so I want others to see the best parts of my work that I can offer. I can adapt well to both learning and problem solving, such as the case with an ongoing project that involves creating and designing an RC rover with an arm.

- Can you describe a situation where you dealt with a difficult client?
 - Hint: "The customer is always right" is not really true. Yes, you need to do what your customer wants, but you also have a responsibility to make sure the customer does not make a mistake. This is a "customer service" question, about how you deal with conflict.
 - You want to tell a story about how you can be emotionally stable and how you perform under pressure. You want to tell a reassuring story about how you will be able to resolve tense situations to keep clients happy. Do you have a story about that?
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.
- How do you keep yourself organized?
 - Hint: As an Engineer, or any job, you might need to juggle multiple projects.
 - Tell a story about how you organize your time and tasks. Do you keep "to do list"? How do you set goals? "I am a goals oriented person, and this is how I do it..." Keeping projects on time and on budget is critical. You will want to tell a story about how you have good organization skills so that when it gets busy, you'll be able to manage the work:
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now

I set smaller goals that would slowly build up to my main and biggest goal. For example, I have been working on a RC robot rover with an arm for a few months. I believed that setting up little goals like, "Add wheels" for one day and, "Connect motor to correct control" the next made me less burnt out on this project because I know exactly what I have to do for the next goal. Finally, once all the smaller goals have been accomplished, I would finally be able to run my RC robot rover and complete the final goal.

- Why should we select you for this position?
 - Hint: This is the Ultimate OPEN ENDED Question.
 - You need to make yourself stand out from everyone else that has basically your same skills... Make sure to sell yourself and mention any special skills you bring to the table. Be ready to talk yourself up: "I have a great foundation of technical <insert your unique skill here> skills that I would bring to the role along with my drive and work ethic. I'm also great with people and am



confident I would easily fit in to the organization and contribute to your strong workplace culture.”

- Write a "story" that is 3-5 sentences long... or longer... the longer the better right now

I adapt well to the constantly changing environment and/or events, I show great appreciation and love for my work and I try to consistently have the same level of quality each time. My skills of listening and completing tasks shows my ability for task initiation and completion.

- What process do you have in place for double-checking your “Engineering” work and ensuring that mistakes don't slip past you?
 - Tip: You can replace "Engineering" with School, Club, Team, or Group.
 - Hint: This is a great question to tell a story about how you are "Detailed Oriented".
 - How you "take pride" in your work. Do you have a story about how you caught a problem or mistake and saved the day?
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

Each time I create something, I often test it over and over again until I’m sure it will work. When I am creating an art piece, I would always smudge and experiment to ensure it won't crack when I put it in an oven and I would consistently do this. When it breaks, I simply recycle the clay used and turn it into another art piece or completely remake it.

- What is your greatest weakness?
 - Hint: Everyone, including you, has a weakness... probably more than one.
 - This is again a very OPEN ENDED question, where you can tell a story about how you turned a weakness into a strength. To provide a good answer to this question, you should focus on a non-essential skill, highlight skills you have improved, and turn a negative into a positive: “I used to have a tough time talking in front of groups of people which was difficult when I had to make presentations. I enrolled in public speaking training to try to improve my confidence, and now I’m much more comfortable talking in front of large groups.”
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.

Time has always been my biggest enemy throughout my entire life and I find myself wasting it quite often. However, since I started to spend my time doing something I love and have a passion for, I’ve been finding myself finding many opportunities that I would just skim over in the past. I think my new found passion mostly is related to engineering and my dream to pursue a career in the realms of it because it gives me more motivation to find opportunities that would allow me to fulfill my dream to work as an engineer.

- Tell your own story about a skill you have that maybe most others don't have. What Unique Skills do you have?
 - Hint: Write your own question. and then answer it.



- This is OPEN ENDED. Use it to tell a story about a skill you have that maybe most others don't. Be specific.
- Write a "story" that is 3-5 sentences long... or longer... the longer the better right now.
- Tell your own story about an Experience you have had, that has given you a specific and unique perspective. Show that because of this life experience, you have a perspective and an understanding that is valuable.
 - Hint: Write your own question. and then answer it.
 - This is OPEN ENDED. Use it to tell a story about a life experience you have had that maybe most others have not, and how it has given you a unique and valuable insight. Be specific.
 - Write a "story" that is 3-5 sentences long... or longer... the longer the better right now

When I first entered my French class, I did not have that much experience with the language and my French teacher is the type to call on people to hear our speaking skills. This did give me a lot of anxiety, especially when taking into account her high levels of expectations. However, I managed through a lot of her class with practice and studying. Despite disliking her teaching style, she did teach me that practice does make perfect and her randomly picking on people helped desensitize my anxiety when getting called on.

<Date> Nov 3, 2025 Monday



Work on Huey

Notes

Headline

Demonstrated great customer service and animal care at multiple non-profit cat rescue organizations | Arranged the main adoption areas to ensure cleanliness and safety for cats, customers, and co-workers | Ability to identify the different personalities of cats, and captured their behavior to discuss for potential adopters | Aspiring engineer for robotics | Marine life enthusiast

Aspiring engineer for ocean, environmental, and aerospace robotics | Marine, wildlife, and space enthusiast | Upcoming participate of a region-wide robotics competition hosted by SkillsUSA (will change depending on results) |

Demonstrated outstanding customer service and animal care at multiple non-profit cat rescue organizations | Arranged and mopped main adoption areas to ensure cleanliness and safety for the cats, customers, and co-workers | Ability to identify the different personalities of cats and capture their behavior to effectively inform visitors and potential adopters

<Date> Nov 3, 2025 Monday



Work on Huey

Notes

I am an aspiring engineer for ocean, environmental, and aerospace robotics. Enthusiastic with wildlife and animals. Experienced with animal care and handling at known non-profit organizations like Minicat Town and IBOK Rescue. Computer and technology skilled. Intermediate knowledge of C++, Arduinos, and circuits. Background in the design and creation process of multiple projects involving motors, wiring, and gears.

- You can use Google, ChatGPT and any other web resources to learn and research this Wind Tunnel Lab/module topic
 - Research & Engineering of building a wind tunnel. Find Instructables, YouTube, Other web sites where some one has built a small wind tunnel.
 - Save all the links. Make a giant list of links. Add a short summary to each link.
 - Research what types of sensors are used in a wind tunnel. Make a big list, and find some sites that show how to use them.
 - Research & Engineering of setting up and measuring data from sensors (what type if sensors are in a wind tunnel)
 - Research how to use AI and Machine Vision to capture and process data.
 - Add to this list. What else should we know about how to build and use a small classroom wind tunnel?
 - **Assignment:** Write a big list of links and sites that help us know how to build, test, measure and do cool labs with a Wind Tunnel. What Engineering skills we should learn while "playing" with the wind tunnel?

<Date> Nov 12, 2025 WEdnesday



Work on Huey

Notes

- **Frequency, Pitch, Duration - (Hz).** Higher frequency = higher pitch.
- **Piezo Buzzer** - A small sound-producing device that converts electrical signals into audible tones. The main hardware used with `tone()`.
- **Non-Blocking Code** - Programming that does **not pause** the processor. Allows the robot to play sounds while still moving, sensing, and processing.
- **millis()** - A built-in Arduino timer function that returns the number of milliseconds since the program started. Essential for creating non-blocking tone timing.
- **tone() / noTone()** - Arduino functions used to **start** and **stop** generating sound on a digital pin.

Frequency



- how fast the sound wave vibrates.
- Measured in Hertz (Hz) — cycles per second.
- Higher frequency = higher pitch (like a whistle).
- Lower frequency = lower pitch (like a bass drum).
- Pitch - Pitch is how “high” or “low” a sound seems. Pitch is determined directly by frequency.
- Tone - A tone is a sound made at one constant frequency.
 - Example: 440 Hz is the musical note A4.

$$f_{\text{tone}} = \text{FCPU} / (2 \times \text{Prescaler} \times (\text{OCR}_{\text{nx}} + 1))$$

(FCPU = 16,000,000 Hz on a typical Uno/Nano.

- Prescaler = 1, 8, 64, 256, 1024 (or other, depending on timer).
- OCR_{nx} is the compare value (0..255 for 8-bit Timer2 or 0..65535 for 16-bit Timer1).
- The factor **2** is because the output pin toggles on each compare match (two toggles = one full square wave period))

The minimum timing, is well within the limits of the OCR_{nx} (interrupt timing)

$$f_{\text{toneMin}} = \text{FCPU} / (2 \times \text{Prescaler} \times (\text{OCR}_{\text{nx}} + 1))$$

$$f_{\text{toneMin}} = 16\text{Mhz} / (2 \times 1024 \times (255 + 1)) = \sim \mathbf{31 \text{ Hz}}$$

`tone(pin, frequency, duration);`

- **pin**: output pin connected to the buzzer
- **frequency**: tone frequency in Hz (cycles per second)
- **duration**: how long the tone plays (milliseconds, optional)

`tone(8, 1000, 500); // 1 kHz tone, lasting 500 ms`

`tone(8, 500); // Play 500 Hz tone continuously`

`noTone(8); // Stop the sound on pin 8`

<Date> Oct 24, 2025 **Friday**

★ ☆ ★

Work on shadow box

Entry



I read about the Blue Origins Booster. I think it would definitely be beneficial because most rocketship boosters end up in the sea, increasing pollution and the new found invention for a reusable booster would just be better for everyone. It works as the booster pushes the rocket off through the densest part of Earth's atmosphere, and falls down back to Earth. Then, its fins navigate back to its launching pad/platform. It's also larger than the one already created by SpaceX, measuring at 190 feet and a diameter of 23 feet.

This is a huge feat for the future of our development, because it means slightly less pollution in the sea and more funds for space companies to use the money meant for the booster on other things.

Notes

<Date> Nov 17, 2025 Monday

★ ☆ ★

Work on code for Huey

Notes

FINAL TOP 4

1. -something about trash pollution (How do we reduce the trash pollution?)
 - a. Why don't people throw their trash away properly?
 - b. How is the trash being built up?
 - c. Specific spots of where trash is abundant?
2. -easy access to drugs (How to prevent/address the problem with people and drug addictions?)
 - a. Why do people get addicted to drugs?
 - b. How do they get so many drugs?
 - c. Why do some places have more drug addictions?
3. -Wildlife endangerment (how to restore our ecosystems?)
 - a. How to track and export invasive species out
 - b. How to restrict human activities like hunting, deforestation?
 - c. How to reduce trash pollution?
4. Water pollution (how can we reduce pollution in water)
 - a. How to reduce microplastic?
 - b. How to restrict human activity?

<Date> Nov 18, 2025 Monday

★ ☆ ★

Test code for Huey

Entry



I read about how Lux speeds up AI deployment for national properties. It expands the near term AI capacity for DOE and accelerates progress on problems. It's an AI software stack that will support large scale AI training and distributed inference. This makes it possible to make more problems on research priorities. I found it very interesting how much AI can further the advancement of humans. I think this software stack can definitely be beneficial for anyone, because as more information comes out from researching, the more we would know. It would end up benefiting everyone.

