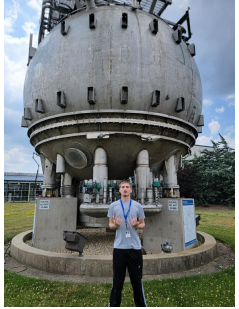
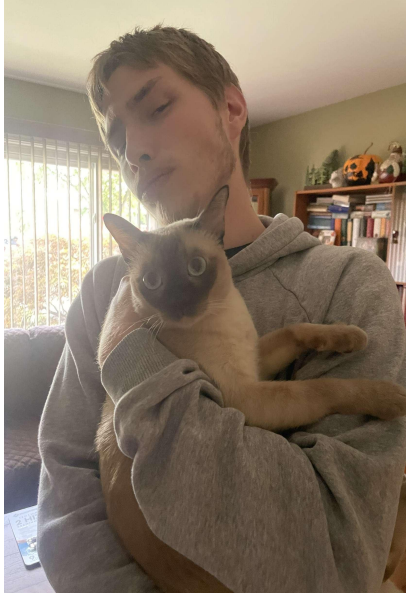
VALOR JROTC Program Fermilab Mechanical Engineering Internship

By Conner Donegan
Target Systems Department
7/26/24

About Me





Rising Senior at Air Force academy High School

Apart of the valor program

Hobbies include MMA, volleyball, basketball, and playing video games

future aspirations: Mechanical engineering, Coding, Programing, Robotics

Why Fermilab?

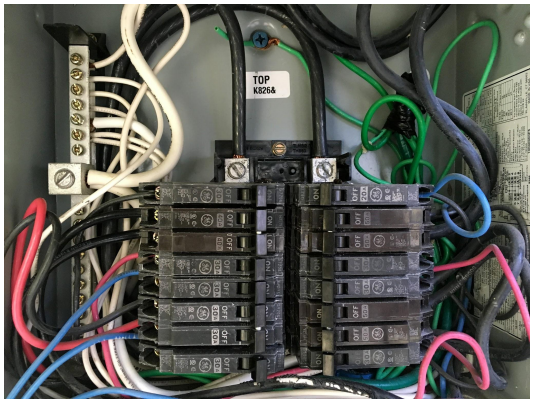
- Hands on experience for current career path
- Gives experience for resumes
- Opportunities for the future with Fermilab
- Challenge

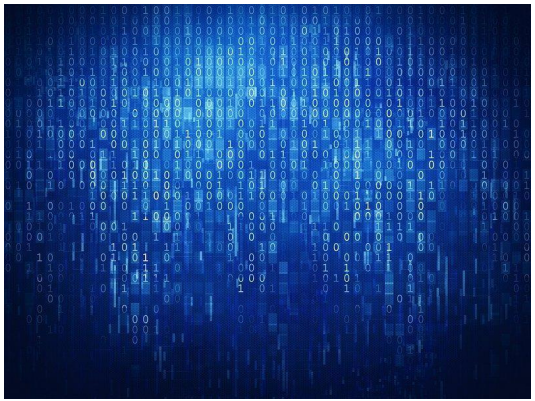
Projects Backgrounds

Building: MI8

Supervisor: John Anderson, Jim Zahurones

Includes: Coding, Wiring, Hands on work, Robotics, and Modeling





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Supervisors

John Anderson

Jim Zahurones

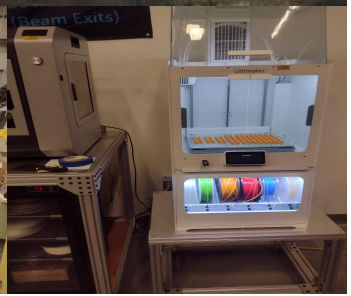
Workspace - MI8

Currently under construction for

Expansion, is where the horns

For accelerators are built, and

Where I reside.



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My Spinning Rotating Robot

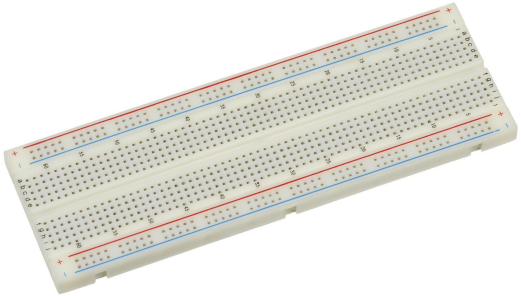
Wiring:

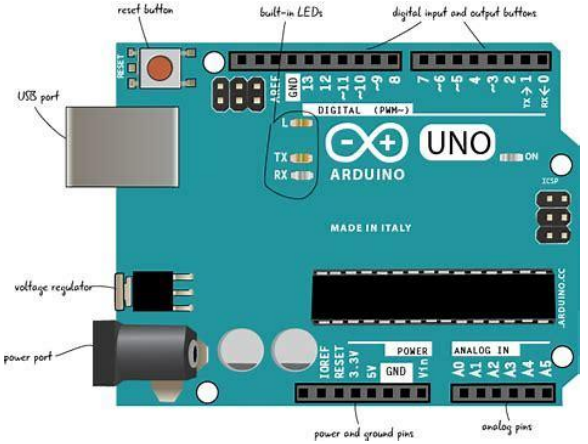
Blue wire: 8

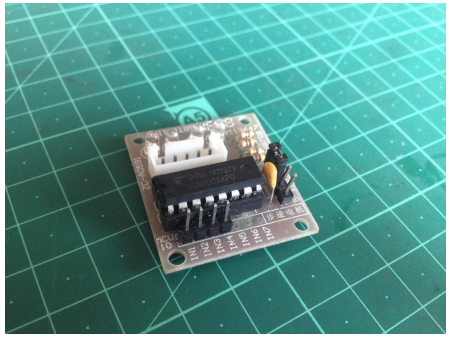
Green wire: 9

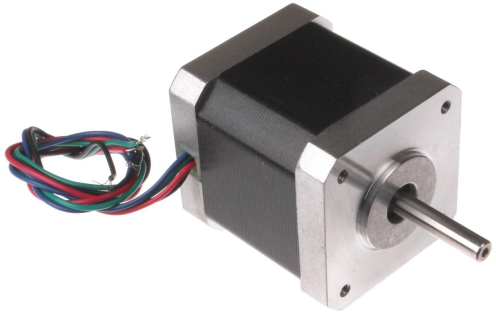
Grey wire: 10

Yellow wire: 11









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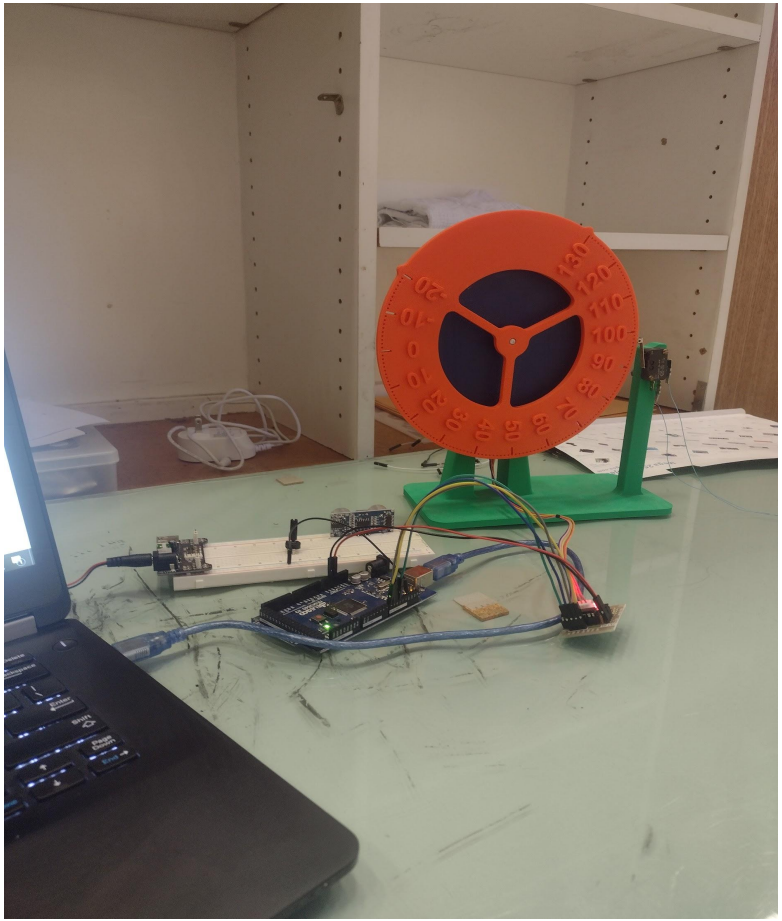
My Spinnin Rotating Robot Cont..

```
#include <Stepper.h>

const int stepsPerRevolution = 500;
Stepper myStepper(stepsPerRevolution, 8, 9, 10, 11);

int stepCount = 0;

void setup()
{
  Serial.begin(9600);
  myStepper.setSpeed(50); // RPM
  myStepper.step(5000);

   Serial.begin(-9600);
  myStepper.setSpeed(50); // RPM
  myStepper.step(-5000);
}

void loop ()
{ // step one revolution  in one direction:
  Serial.println("clockwise");
  myStepper.step(stepsPerRevolution);
  myStepper.step(5500);
  delay(100);

  // step one revolution in the other direction:
  Serial.println("counterclockwise");
  myStepper.step(stepsPerRevolution);
  myStepper.step(-5500);
  delay(500);
}
```



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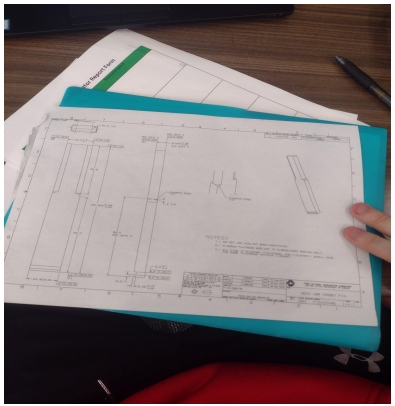
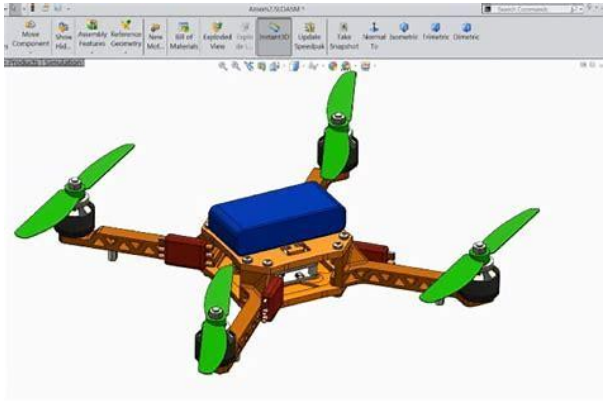
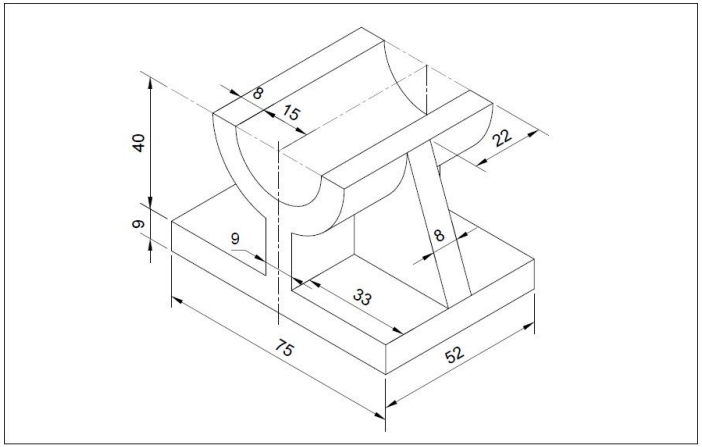
CAD Modeling

I was tasked with creating a CAD model based on the paper version of that model with precise measurements in NX unfortunately i lost access to NX for unexpected reasons.







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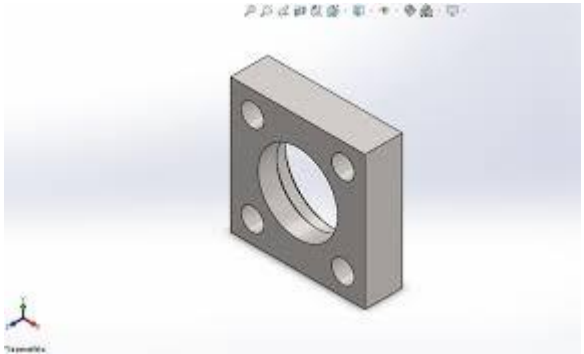
CAD Modeling Measurements

These models were sent back after being made as a cad model, I was tasked with using a machine named a faro arm to measure of the surfaces of the model to make sure they were shipped in the right measurements in polyworks.



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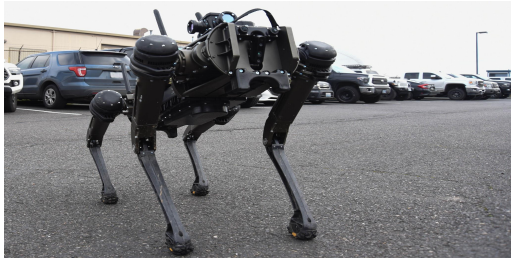
Favorite Workshops

Resume Workshop

- Explored how to write a better resume and how fermilab helps

College Admissions workshop

- Learned about how college admissions work with tips and tricks



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Reflection

Pros: The people, being in a professional environment, a lot of learning, exposure to mechanical engineering and the opportunities with STEM (also the food)

Cons: Coding, new things to learn in a short period of time

Goals: Expand on the skills and knowledge from the internship

Special Thanks To:

The Bus Driver: Brings me to fermilab everyday even if i'm running late

Anahi Beltran: Emailed important events and details

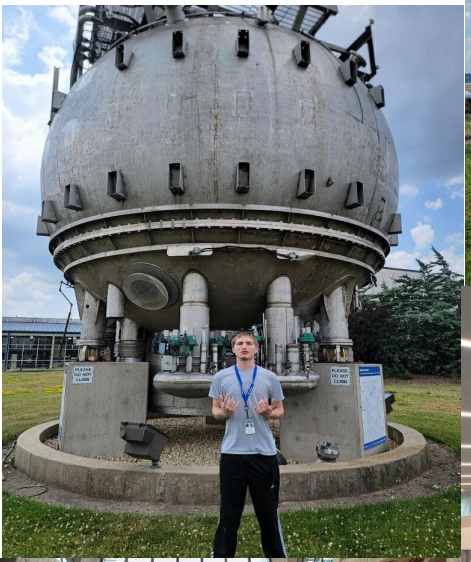
Cortez Watkins: Gave me a rides to MI8 and brings concessions (Talks to the cookie monster)

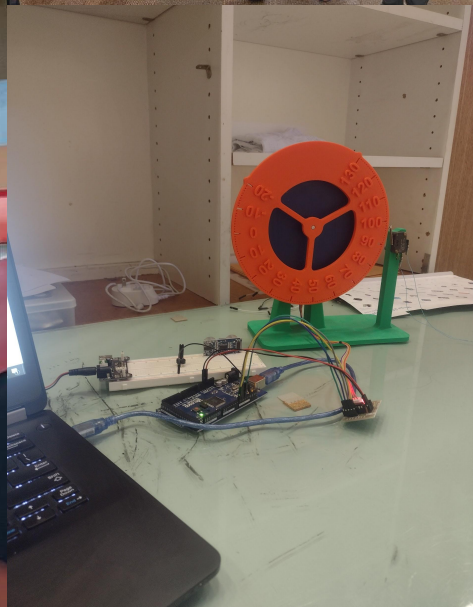
Susumu Uchiyama: Recommendation

John Anderson & Jim Zahurones: My supervisor and also taught me how to do my job and what goes into mechanical engineering

My family: Of course

Extra Pictures





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THANK YOU

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