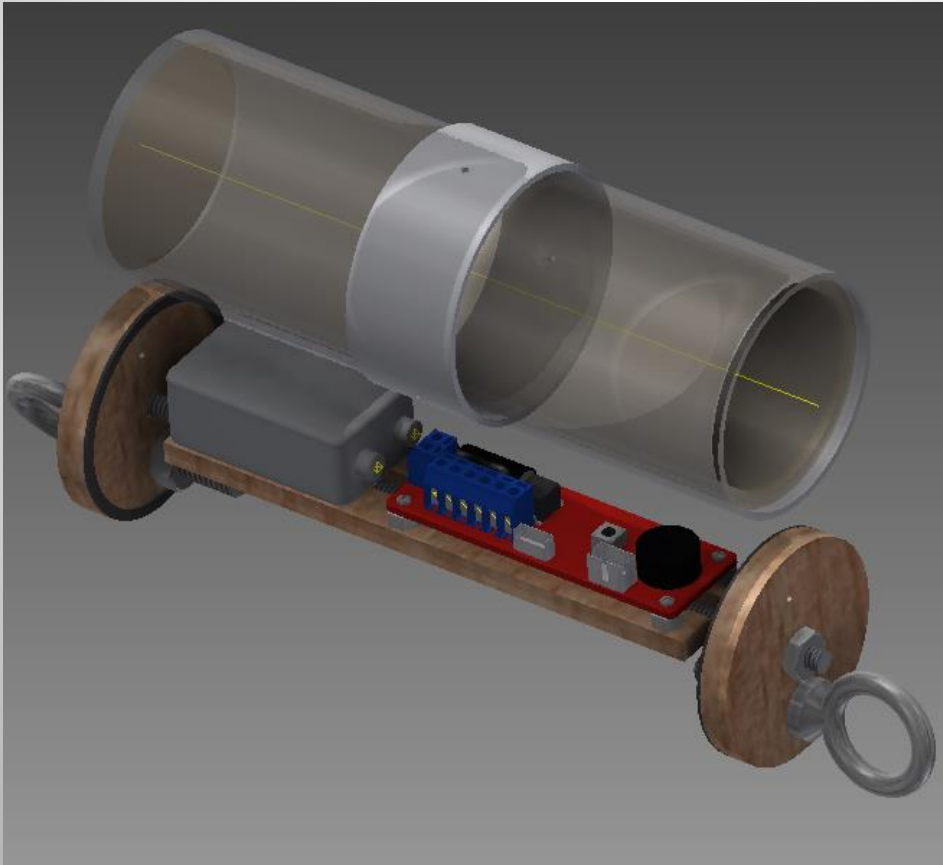


Augustus Huebner

Project Portfolio

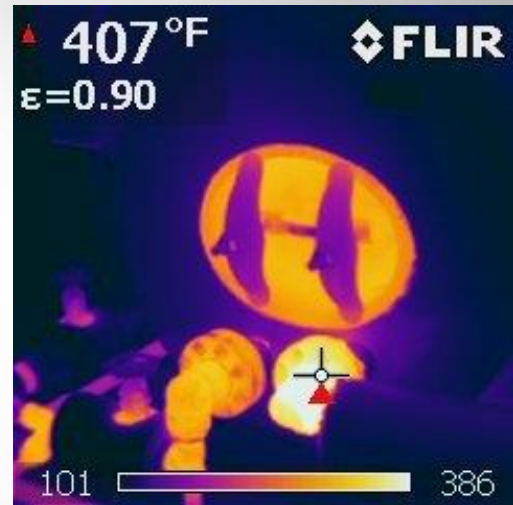


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Thermal Imagery



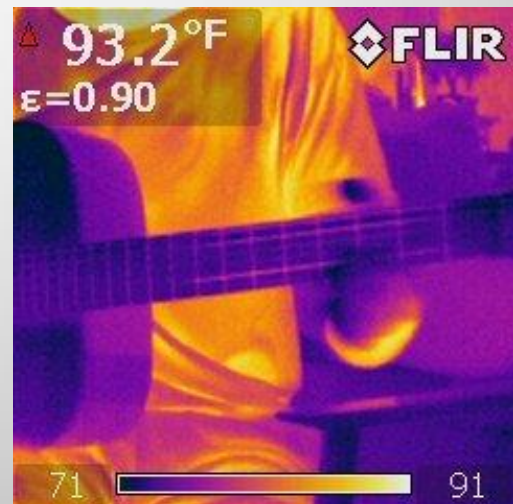
I-beam under thermal stress



Poorly insulated manway and pipes.



Poorly insulated pipes from a chiller.



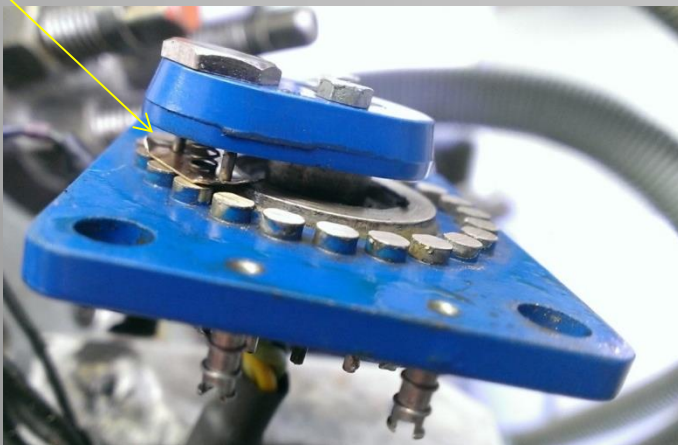
Heating up the strings on a guitar

I was trained in the use of thermal imaging equipment at Princeton University. I inspected their Co-Gen power plant for insulation deficiencies. My report resulted in over \$20,000 of renovations. These are a few of the pictures I took of the plant, and a few other items.

Turret Lathe Restoration

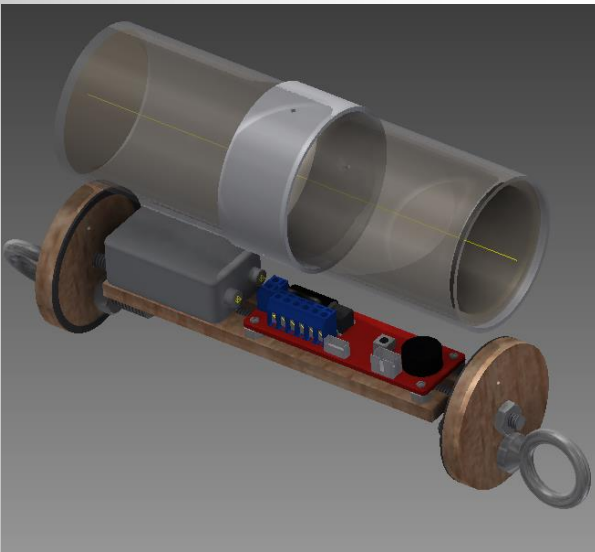
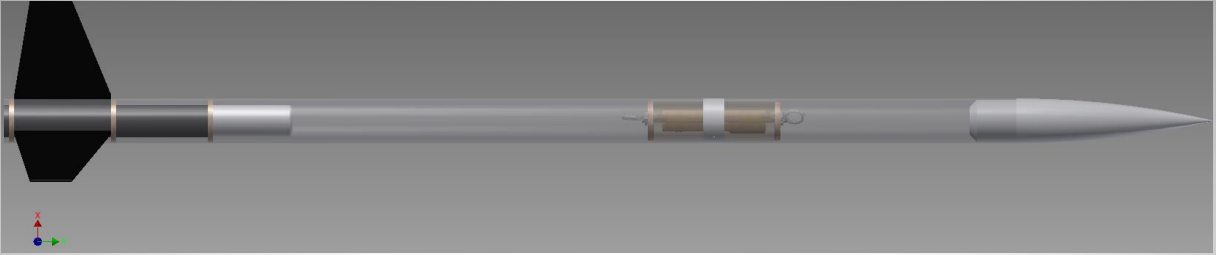


This 1973 Emi-mec eSprint II pegboard turret lathe came to me covered in grease and chips from years of neglect. I cleaned it thoroughly and gave it a new paint job. It also was completely inoperable. After an analysis of its electrical, and hydraulic-pneumatic systems(it was completely analog) I was able to repair it to working condition.



This rotary switch was missing the small copper contact in the picture causing the majority of the lathe's malfunctions. I made a new one, installed my replacement and everything worked fine.

High Powered Rocket



Electronics bay design



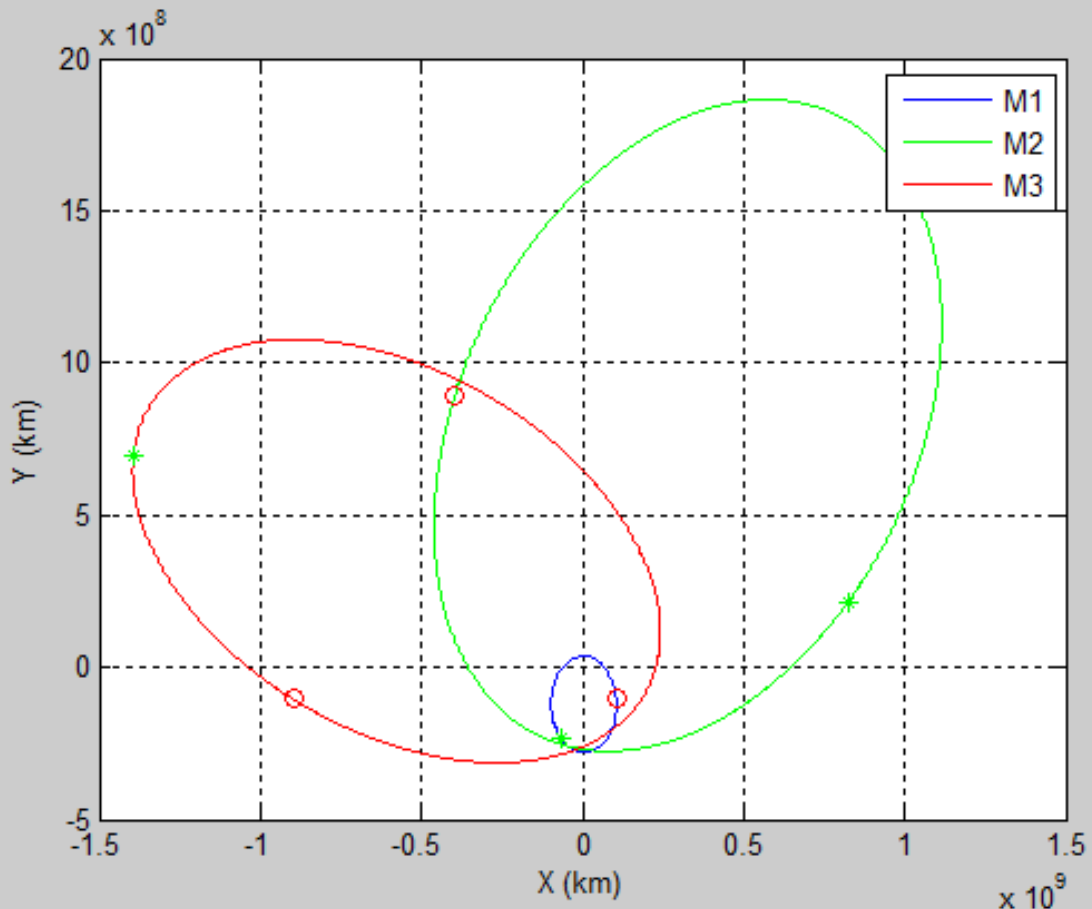
The final electronics bay

I designed and constructed this rocket then flew it obtaining my first certification level in high power rocketry. It weighed 3 lbs, flew to 3080 ft, and accelerated at 32g!

The electronics bay allowed it to deploy two parachutes, a small one at the height of its travel then a large one near the ground for a soft landing. The bay had tight clearances required to fit the instruments.



Lagrange's Three orbiting bodies problem.



```

ydot = @(y,mu) [y(4);
    y(5);
    y(6);
    -mu(1)*y(1)/sqrt(y(1)^2+y(2)^2+y(3)^2)^3;
    -mu(1)*y(2)/sqrt(y(1)^2+y(2)^2+y(3)^2)^3;
    -mu(1)*y(3)/sqrt(y(1)^2+y(2)^2+y(3)^2)^3+y(3)*mu(1)/sqrt(y(1)^2+y(2)^2+y(3)^2)];

```

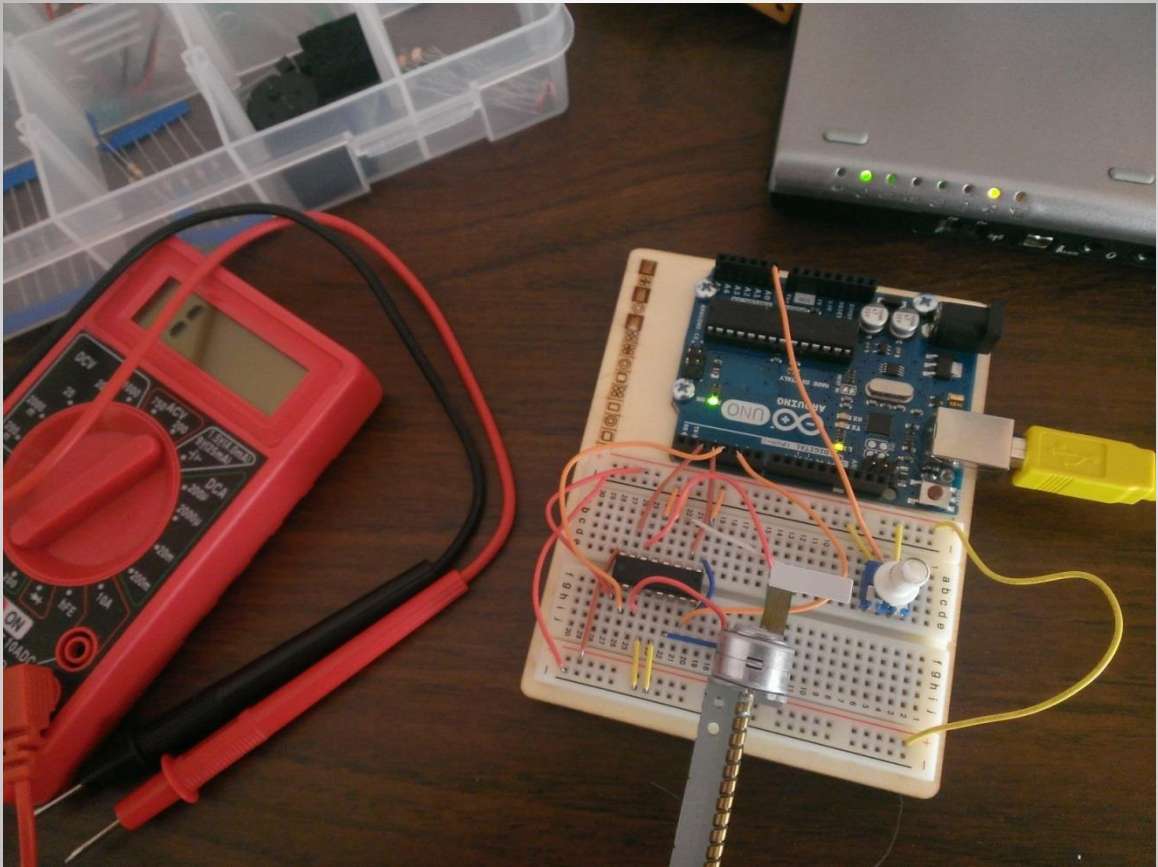
Through study I have come to appreciate mathematics. The graph above is the result of one of my mathematical investigations. It is one of Lagrange's solutions to the tricky physics problem of three large bodies orbiting each other in space. I wrote and integrated this differential equation in MATLAB producing the graph.

F.I.R.S.T. Robotics



I was a member of FIRST Robotics Team 293 for four years. This robot pictured was the third I helped build. I was the leader of the mechanical design and fabrication teams. Personally I was in charge of the design and fabrication of all of the carbon fiber sandwich panels/ramps as well as the extending pneumatic arm. I enjoyed teaching others students the techniques and skills F.I.R.S.T had taught me, in which I still maintain a strong interest.

Arduino and Programing

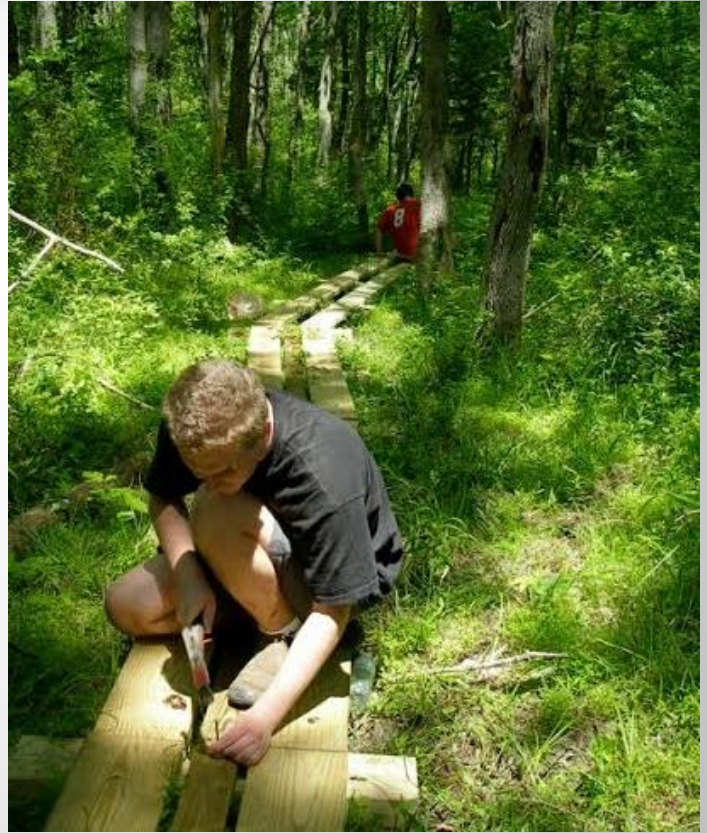


I have always had a fascination with computers and the mechanisms though which they can control the physical world. Pictured above is a simple bipolar stepper motor controller using an Arduino and a h-bridge I was experimenting with. Arduino has given me the chance to marry my interest in programing and mechanics in a very accessible package. I am fond of experimenting with all my electronics to see what I may modify.

Eagle Scout Project



A kiosk we built for the trail head.



The trail included a 60ft boardwalk.

The Boy Scouts of America gave me many opportunities to learn and grow as a leader. I reached the rank of Eagle Scout through the completion of many requirements culminating in the planning and execution of a mile long trail construction project. I lead groups of more than 20 volunteers working for a combined 260 hours to construct the trail. The Boy Scouts gave me many opportunities to educate and learn with my peers about hiking, camping, and leadership. I actively use the skills I gained through them daily.

Other Interests



Lake Colden, NY



A large Ring-Neck Snake, VA



A lady's Tress Orchid, VA



Bouldering in the NJ Sourlands

In addition to engineering, I enjoy the great outdoors. I spend a great deal of time with my friends hiking, camping, rock climbing, and finding/identifying species of plants, animals and fungus. I also play the piano, mandolin and ukulele.