PERPETUAL MOTION MACHINE

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Background

- **A perpetual motion machine is a device that is intended to run forever, once activated, without any external energy input.**
- **Although the concept of perpetual motion has been proven impossible according to the first and second laws of thermodynamics, our team has been tasked with creating a machine that convinces its audience otherwise.**
- **This team has been formed around our sponsor and stakeholder, Professor John Parmigiani and the Oregon State University Prototype Development Laboratory. Professor Parmigiani is expecting our team to design and build a convincing, desktop sized perpetual motion machine that can be inexpensively and readily manufactured.**

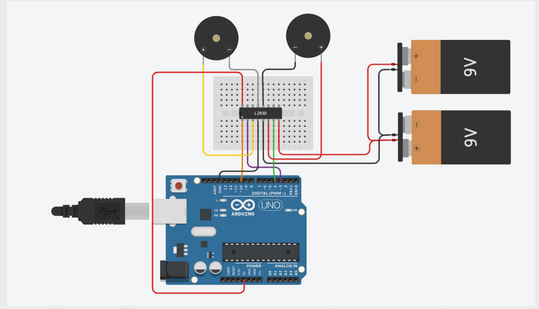
Team Goals

- **Our main goal for this project is to convince the average person that our prototype appears to be operating perpetually without any external energy input.**
- **These goals will include achieving the desired size of 8”x8”x8”, keeping the manufacturing cost under $20 per unit, using only readily available materials, and completing the entire project within our $500 budget.**
- **Expand our teams knowledge of product research and design.**
- **Expand our teams knowledge on prototyping and man.**

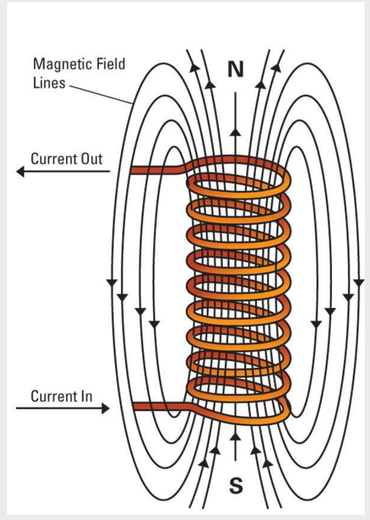
Oregon State University

Machine Operation

- The machine is meant to give the illusion of magnets repelling each other keeping the teeter totter in a form of perpetual motion.
- In the base of the teeter totter the magnets are actually electromagnets that are connect to an arduino board programmed to turn the magnets on and off at a specific interval to keep the device in motion and trying to mimic the natural frequency of the teeter-totter.



Wiring Diagram, note parallel battery wiring



Example of electromagnets magnetic field

Testing

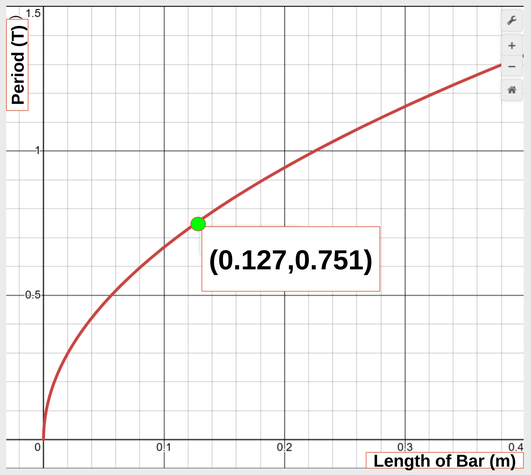
- The machine can operate for the whole length of the career expo (5 Hours)
- The decibel reading for the device came in below 25 decibels
- Able to withstand falling from a short distance
- Unit cost of less than $20 per unit.

Importance

Creating a perpetual motion device is impossible, but creating a device that gives off the illusion will inspire young engineers to get in the field and think outside of the box hopefully leading to greater scientific advancements.

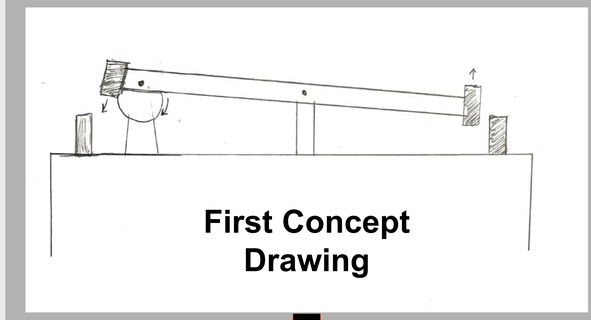
Future Work

- Testing machine to ensure that the teeter-totter does not fall out of sync with the electromagnets over the 5 hour run time.
- Machining physical prototype
- Hiding electronics in what appears to be a solid wood block

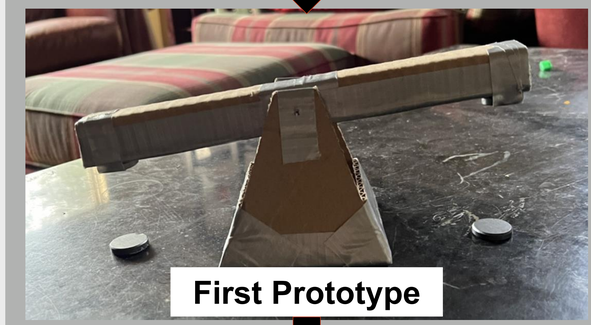


Graph of period equation given a magnetic force of 8.9 and with varying bar lengths in meters

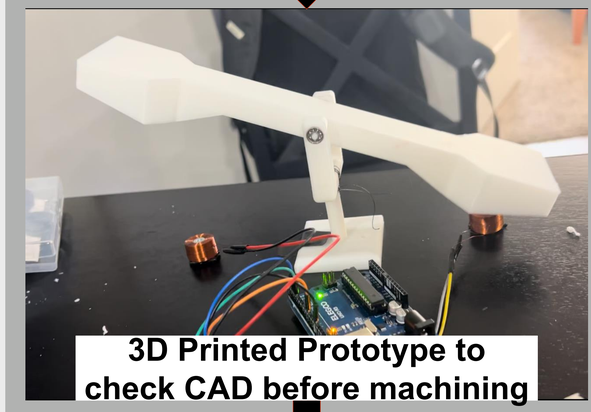
Design Process



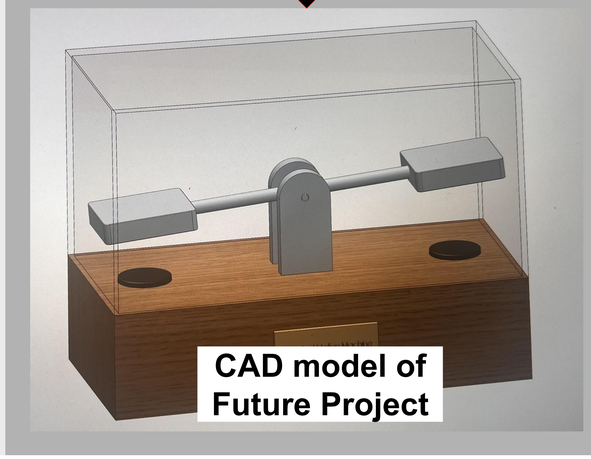
First Concept Drawing



First Prototype



3D Printed Prototype to check CAD before machining



CAD model of Future Project