The Thomas Davenport Electric Motor:

Restoring a Replica and Exploring Artificial Magnets

An Interactive Qualifying Project
Submitted to the faculty of
WORCESTER POLYTECHNIC INSTITUTE
In partial fulfillment of the requirements for the
Degree of Bachelor of Science

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Abstract

Thomas Davenport was an early 19th century inventor that came from humble beginnings. In the 1830s, he created an electric motor capable of rotational motion instead of simple oscillatory motion. Despite the ubiquity of electric motors today, Thomas Davenport's invention was underappreciated during his lifetime. Our goal was to rebuild a working replica of Thomas Davenport's replica, as well as explore the efficacy of creating an artificial permanent magnet along the way.

Acknowledgments

We would like to thank Professor Goulet for providing support and letting us take this project in an interesting direction. A special thanks to Doug Leonardi, who provided us with materials to pursue our attempts at creating an artificial permanent magnet. Thanks to Ian Anderson, we were able to gain access to the welding room at WPI's Washburn Shops, which was enormously helpful for exploring how to create a magnet. We would also like to thank all members of the previous IQP team whose prior work was very helpful to us.

Redirecting!

Our website: `https://www.bandaloo.fun/iqp-site/`

In lieu of creating a traditional paper, we decided to create a website! It is rich in multimedia content: large images, embedded videos and links to other resources. This PDF is largely to satisfy the formality of submitting a PDF to the eCDR. We genuinely hope that interacting with our site is a fun and unique way to understand our project.

About That Site

Due to the nature of the coronavirus pandemic, we had to bisect the workload almost completely at the end of the project. Sam Johnson assembled the motor largely on his own over the course of D Term of 2020, while Cole put together the website.

The website was made with no front-end build tools, or with services like Squarespace, Wix or Wordpress. We created the website with HTML5, CSS, and JavaScript for some additional features, such as the ability to toggle between "light" and "dark" mode for a more comfortable reading experience, as seen in Figure 1. Currently, the static content for the website is hosted on GitHub Pages, which is a site hosting service for static content.

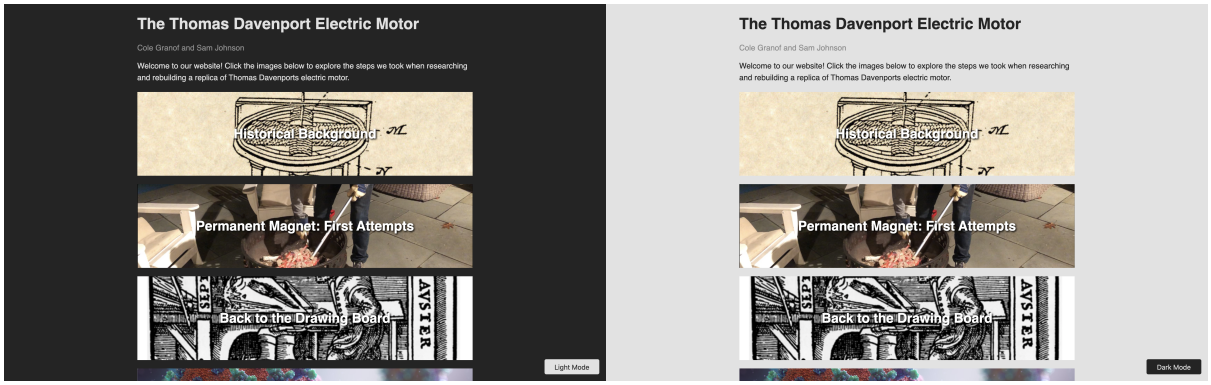

Figure 1: Dark mode and light mode on the home page

Although HTML5 now has support for `<video>` elements, we decided to use YouTube to host our timelapses and other recordings, and embed those videos directly into the site. This made it easier to manage uploads for ourselves, and has the added advantage of also having our videos hosted on another platform.

The code repository is available at `https://github.com/bandaloo/iqp-site`. We used GitHub to host the code and for version control.