

Thesis Project Portfolio

The Smithinator: Recumbent Vehicle Design and Entry for the 2020 ASME Human-Powered Vehicle Challenge

(Technical Report)

Evaluating Charlottesville's Plans for an Eco-Friendlier Transportation System

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

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In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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THESIS PROSPECTUS	

Sociotechnical Synthesis

This portfolio dives into the issue of sustainable transportation. The technical paper describes my human powered vehicle (HPV) capstone team's project to identify and build an exceptional HPV to help accelerate the adoption of such eco-friendly vehicles for human transportation purposes. The STS paper explores what is being done in Charlottesville to move towards a greener transportation network.

The technical portion describes a holistic project where my team identified the need for human powered vehicles, explored and developed potential designs, and manufactured parts of the vehicle itself. We started off by researching the potential benefits of increasing the use of human powered vehicles and then moved towards exploring potential designs. Then, we conducted research to understand what would attract people into using HPVs. From this data, we were able to develop designs and manufacture an HPV that would significantly satisfy and thus attract more riders.

The STS portion explores the actions taking place in Charlottesville to increase the adoption of sustainable transportation in the city. It identifies the participants from the city government to grass-root level organizations. It consolidates the various groups' agendas. Finally, after exploring cases from cities around the world, the thesis suggests that the city leaders and government officials can help the city move quicker toward an eco-friendlier transportation network through cooperation and leadership.

The technical project provides valuable insight into developing sustainable technical design through crowd-sourcing, technical analysis, design, and simulation, while the STS paper highlights current efforts towards promoting sustainable transportation in Charlottesville and

provides organizational guidance to consolidate agendas to move the city toward a greener future. The work as a whole encapsulates methods needed at both the ground and operational level to further our society using technology.