

Thesis Portfolio

**The Smithnator: Recumbent Vehicle
Design and Entry for the 2020 ASME
Human-Powered Vehicle Challenge**
(Technical Report)

Ethics and Social Implication of Intelligent Transportation System
(STS Research Paper)

An Undergraduate Thesis

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

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Table of Contents

Sociotechnical Synthesis

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

Ethics and Social Implication of Intelligent Transportation System

Thesis Prospect

Sociotechnical Synthesis

Humans are not perfect. In terms of decision making of intelligent transportation systems, factors such as ethical, social and technological constraints may come to picture, of which some may lead to discriminatory or biased actions. The amount of data that flows in a smart city is unfathomable by any human power, and the availability of this vast amount of data increases the possibility of misusing and unethical behaviors for those who have access to it. In order to control and manipulate this data, its usage and behavior need to be examined not only from the technical realm (accessibility, security, privacy, etc.), but also from an ethical perspective. Except for that, misconduct behavior of ethical issues is not restrained to just humans: autonomous systems that are capable of making their own decisions can lead to misbehavior as well. Thus, it is critical to ensure the appropriate use and limit ethical and technological misconduct of data processing in order to achieve a vital and intelligent city.

As stated above, the Science, Technology and Society (STS) portion of this thesis will examine the ethics, social and technological implications of Intelligent Transport System (ITS) by comparing two smart city leaders---the United States and China. The technical portion of this paper focuses on designing a Human Powered Tricycle that is commercially friendly, and offers an alternative sustainable transport that is more ergonomic, more efficient and more intriguing than conventional bicycle.