

Thesis Project Portfolio

Accessible Navigation Mapping for UVA Engineering Buildings: Supporting People with Mobility Disabilities for Wayfinding

(Technical Report)

Analysis of Urban Electric Scooter and Bike Integration and the Impacts on Accessibility for the Disabled Community

(STS Research Paper)

An Undergraduate Thesis

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Bachelor of Science, School of Engineering

Christopher Owen Cook

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Department of Systems Engineering

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My technical work and STS projects for this year were both focused on accessibility in the built environment. The technical capstone project was a review of the University of Virginia's current wayfinding efforts and an attempt to improve those efforts. The STS project was a literature review of the problem that electric scooters cause for mobility disabled patrons, especially in urban areas. The two projects are similar in the way that they deal with accessibility for people with mobility disabilities.

The STS paper examines the impact of electric scooters and bikes in urban areas with the growing popularity of this new technology. Specifically, the focus is on the social inequality that mobility disabled members of society are facing from these electric vehicles. Electric vehicles are an added variable to the urban environment, which already provides an extensive list of problems for those with mobility disabilities. Included in the writing is a literature review of different studies that have been used to assess the state of the problem in large cities. A study conducted with members of the Norwegian Association of Disabled explains that the urban environment that is cultivated by users of the technology affects mobility disabled patrons on a day-to-day basis. Another study that was conducted in Portland, Oregon shows that the users of these electric scooters often fail to comply with regulations that have been put into place regarding the operation of the vehicles. Through this literature review it is apparent that this technology causes major problems for a minority group within society. The Social Construction of Technology framework is employed to show that humans shape the way that this technology is implemented into society. The different relationships between stakeholders that impact this technology and its use in the built environment makes for an intriguing analysis. There are some

recommendations throughout the paper on how each of the different stakeholders could improve this growing problem.

Our technical project has a goal to improve the University of Virginia's campus' accessibility and increase the ease with which candidates with mobility disabilities navigate grounds by providing a comprehensive wayfinding resource. To create an accessible campus that exceeds ADA standards for students, faculty, staff, and visitors, we will first identify the information and accessibility features needed to better accommodate people with mobility disabilities to navigate on Grounds. This information is collected with types and sources differentiation. Then, a more disciplined process for collecting and analyzing these data will be defined as we complete this project. We will be examining the different barriers within each environment and focus our mapping process only on buildings within the UVA Engineering School. This project will focus on laying the foundations for a wayfinding application as a part of a more comprehensive solution for people with special needs to navigate the school.

Working on both projects at the same time made it possible to look at the problem of accessibility from two different approaches. In the University of Virginia study, the group was trying to improve the problem of accessibility. In contrast, the individual project was a review of the stakeholders which are involved within the problem. Being able to work on both projects together provided a view of this multifaceted problem of accessibility in the built environment.