Thesis Project Portfolio

L.A.N.G.P.A.D.: Expanding communication with the touch of a screen

(Technical Report)

Technology and Immigration in the U.S

(STS Research Paper)

An Undergraduate Thesis

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

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

Pedro Rodriguez

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Department of Electrical Engineering

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Sociotechnical Synthesis

Fast advancing technology and grand-scale migration, especially internationally, are two main components of the modern world that our ancestor did not have to deal with. Since they are still “new” components to deal with, it is natural that many nations still haven’t adapted properly to deal with these two factors. Not to mention, that both immigration and technology are more intertwined than what the surface level shows. My technical work and my STS research aim to demonstrate the relationship between technological development and immigration, using the United States as the reference point in this study. With the clear distinction between my technical and research projects, this project allowed me to understand better the role that has technology to allow for more accessible world

My technical work focuses on utilizing the knowledge and experiences obtained through the undergraduate electrical engineering program to design and build a linguistic system device that provides easy access to special characters from the Roman alphabet found outside of the English language. The project involves the use of a MSP430 programmed to use the expanded ASCII language, attached to an LCD touch-screen that displays the special characters available of its respective language, with the current options available being Spanish, French, and Greek. A PCB, designed from scratch, will work as the interface between the two components and the communication to the user’s computers will be done through USB connection. This product is expected to improve the experience of writing in foreign languages, as well as other cases that require special characters for technical reports.

My STS research also delves with the relationship between technology and immigration; however, this research focuses more on how the “current” technology has affected historically and

contemporaneously the immigration process in the United States. For this research, the Social Construction of Technology (SCOT) framework is used to analyze the relevant actors within this debate. My claim during this research was that the United States have constantly failed to fix the core issue and on their immigration process, and instead has focused on updating the process with, already, underdeveloped technology. The aim of this research was to document and analyze the ethics of failing to properly apply technological advancements in complex societal issues.

Working on the technical project and the research paper was extremely valuable. I was able to learn about the difficulties and responsibilities of using technology as a medium for integration of different cultures. Through my technical project, I was able to observe a lack of easily accessible technology for those who are not from English-speaking language living on an English-speaking country, and design an apparatus that accounted for that. Through my STS project, I was able to learn the ethical implications of technological implementation due to the many people that need a well-implement system. My work on both of these projects helped me become better equipped to address future engineering projects.