

## **Thesis Project Portfolio**

### **Creating a Strong Testing Framework with Google Translate Automation**

(Technical Report)

### **Enhancing the Accessibility of the Internet for Elderly People: Socio-Technical Approach**

(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

**Mehmet Faruk Yaylagul**

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Department of Computer Science

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## **Sociotechnical Synthesis**

### **Designing QA Testing Framework and Enhancing the Accessibility of the Internet for Elderly People: Socio-Technical Approach**

“The advance of technology is based on making it fit in so that you don’t even notice it, so it’s part of everyday life.”

Bill Gates

STS is a main practice to connect the intersection between engineering and society to provide the technological needs of humanity. This connection between the two practices motivated me to help society access information in a user-friendly internet platform. Therefore, in my STS research paper, I tried to address the issue of why older people are disregarded in the digital environment. This seemingly unrelated topic has a connection to my technical project which is creating a quality assurance/automation framework for Google Translate.com. My STS and technical projects both aim to help different demographics benefit from the internet efficiently. My STS project highlights society’s role in solving the accessibility problem of the internet for older adults by emphasizing previously conducted research. In my technical project, I conducted an in-depth analysis of Google Translate quality assurance (QA) processes to ensure the usability of the website. The motivation behind this topic was my recent working experience as a QA tester in the summer. I realized how user-friendly web applications impress customers and enhance satisfaction. As a software developer, I also plan to create my own startup based on web applications so I thought that gathering prior information regarding society’s expectancies would be beneficial for my future engineering career.

The technical portion of my thesis is to create an easy-to-implement testing framework with Selenium and Cucumber software tools. This framework will help future quality assurance engineers to test their web-based applications faster and more easily. The significant outcome of this project will be improving the translation accuracy and website usability, particularly for

people with no prior experience in using web-based applications. Web developers will be able to check their application's accessibility and usability by referencing my testing framework.

Additionally, college professors can also show my framework for educational purposes to teach how to create and use a Java testing framework.

In my STS research, I explained the major challenges older people face using the Internet because of social circumstances. I used a social-technical framework to analyze past studies about the factors that cause older people to not use the internet efficiently. I revealed that addressing this issue requires more than just creating a user-friendly internet environment and advancing technology. Understanding the social aspect of the problem is also necessary to enhance elderly people's access to the Internet. If society provides more help and support for elderly people to use the internet efficiently, they can minimize the digital gap between older and younger people. This study is significant because it has the potential to guide people in creating a more inclusive and accessible digital environment for older adults, thereby enhancing their online experience.

Considering technical, organizational, and cultural elements simultaneously, I gained a deeper understanding of how I can design technological tools with a broader social perspective to serve every part of society equally. Therefore, I conducted both my technical and STS research by considering the needs of different demographics. As Bill Gates says we should fit our current technology into our society otherwise it is not an advancement in technology. STS ethics teaches us that our responsibility is to think about society's needs first before we design our product. If the product doesn't serve the society well, it's not well designed. In my STS project, I aimed to integrate the current internet technology into older people's lives through a social approach because elderly people are a significant part of society.