

**Thesis Project Portfolio**

**Instruction of Security in Web Development**

(Technical Report)

**Control of Education: Opposition to Critical Race Theory in the United States**

(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

**Helina Solomon**

Spring, 2022

Department of Computer Science

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## **Sociotechnical Synthesis**

Education is expanding all around the world and instruction mannerisms greatly influence a learner's development in cognition. Many subjects in classroom education involve inherited assumptions from deep-rooted precedents of long ago. However, as society evolves, teaching techniques and material must actively respond to change in order to best serve students. Thus, it is essential that educators are consistently instructing contemporary ways of learning to better equip students with the knowledge and skills necessary to overcome future challenges.

In my capstone project, I propose new structures of teaching that aim to better suit a progressive society. My STS research paper and technical report strives to enhance traditional learning styles currently employed in education systems. As new ideas are built upon existing concepts, deeper connections between related concepts can be established. By reexamining inherited assumptions in status quo education, the objective of my project is to prepare students for the ever-changing world.

My technical report proposes a new course in computer science. I present a fusion of two CS courses, Introduction to Cybersecurity (CS 3710) and PL for Web Applications (CS 4640). Through constructing this class, I've learned that there are many benefits of the synthesis of these courses. Students will be taught how to produce web applications while simultaneously applying security concepts. This in turn would better prepare students for the professional world as cyber-attacks are compromising websites every day. The demand for secure web applications is expanding, thus students wishing to pursue front-end development occupations or projects would attain the skills necessary to build and design secure web applications.

My STS research paper inspects the critical race theory (CRT) and examines the significance of the pedagogies position in K-12 education. There are many critics opposed to the addition of CRT in compulsory education. However, through my research, I've learned that the pedagogy is crucial to

understanding how racism is embedded in legal systems and policies. The critical race pedagogy strengthens students' ways of recognizing racial biases and social inequality. Without critical race theory, students in K-12 education are learning a fabricated version of United States history that fails to match reality.

# **Instruction of Security in Web Development**

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Daniel Graham, Department of Computer Science