The Capstone project is a technical report is an analysis of a shortcoming of UVA's computer science program and a suggested fix.The STS research paper looks at the effectiveness of machine learning to diagnose mental disorders with an STS approach. These two projects are very loosely related with their only real connection being both in the realms of computer science. The motivation of the technical report is a shortcoming I experienced myself and witnessed classmates themselves struggle with UVA's computer science program. This suggested improvement of UVA's computer science program is something the advisor of this technical support recommended as a possible topic as well. The STS research paper is motivated by being personally affected by mental disorders in my life and my interest in machine learning. The increasing research of machine learning models in healthcare and my personal interests are the primary motivations for this paper.

The technical report looks at UVA's computer science program and compares it to other computer science programs and what the Accreditation Board for Engineering and Technology requires in a CS program. Specifically, this report analyzes an imbalance in the rigor of the Computer Systems and Organization classes compared to the rest of the program. This imbalance in rigor negatively affects the quality of education in students as well as their overall well-being. In order to address this issue the solution is proposed that certain subjects be taken from the CSO classes and spread to other less rigorous classes in UVA's CS curriculum. This reassignment of subjects would be made sure to still be in alignment with ABET's accreditation requirements. The primary class that would receive increased subject material would be Discrete Mathematics and Theory I. If the suggested changes are approved, the next steps would include monitoring of the program to make sure that the desired outcomes are produced.

The STS research paper looks at the current mental health crisis and how machine learning models have the potential to alleviate the crisis. According to the Center for Disease Control, suicide rates have risen by 37% from 2000 to 2018 and more than 1 in 5 U.S. adults will experience mental illness. ANT is used in order to analyze research to evaluate the effectiveness of Machine Learning in psychological diagnosis to help alleviate the crisis by decreasing barriers to healthcare such as time and financial costs. Through this analysis, technical actors of computers, medicine and machine learning AI, cultural actors of trust in AI and medicine, and organizational actors such as patients, doctors, hospitals, insurance companies, research institutes, and patient communities are identified. It is found that while machine learning is in its infancy, it has great potential to benefit stakeholders and society as a whole. However there are barriers mainly mistrust in AI and reliability of AI diagnosis that must be overcome for successful implementation.

The primary skills I have learned from these two projects is how to read and analyze research literature and contribute literature of my own. I have also gained an increased understanding of designing CS curriculums, mental health disorders, machine learning, and healthcare as a whole. By doing both of these projects together instead of separately I gained an understanding of how diverse CS research can be. Computer scientists are needed in a diverse set of fields due to the ubiquity of computers in the modern world. It thus can be interpreted that Computer scientists need a diverse set of skills. Working simultaneously on these projects has increased the variety of skills I may need in my future career and have given me valuable insight on the different career paths I can take as a computer scientist.