My name is Lilshay Rogers and I am currently attending Elizabeth City State University (ECSU) located in Elizabeth City, North Carolina. I am double majoring in computer science and mathematics. Entering in the field of computer science not only places me in one of the world's most demanding fields of study, but it also grants me the chance to learn amazing skills like programming languages, robotics, and software engineering.

To further assist me on the path to mastering computer science and mathematics, I have recently been accepted into the Center of Excellence in Remote Sensing Education and Research (CERSER) program directed by Dr. Linda Hayden. Being a part of CERSER allows for undergraduates to conduct extensive research, participate in national conferences, and attend summer internships.

In April 2018, I was able to complete my first research project titled *A Multivariate Regression Analysis of Hospital Stays in a Nosocomial Infection Control Data* under the mentorship of Dr. Julian Allagan. Utilizing the R programming language, we were able to develop and analyze several linear regression models to predict the leading cause of hospital stays in the US with project data extracted from Center for Disease Control-Atlanta. In particular, we aim to answer the question: what leading factors influenced the response variable 'Stay' the most. In the end, we found that the variables 'Nurses', 'Risk,' ,'Census' ,'Age' and 'Region' had the biggest impact on longer hospital stays. As a result, we recommended hospitals find ways to lower the risk of hospital infection, and perhaps increase the number of nurses.

To help me further build on my programming skills, I participated in the 2018 Science Gateways 4 Week Coding Institute in July of 2018. Throughout the four weeks, my fellow interns and I were able to utilize several different programming languages such as R, Python, Java, and HTML. Additionally, I attended a number of workshops that allowed me to get in-depth understanding of the world of supercomputing and ethical hacking. During the third week of the institute, I was able to attend the Practice & Experience in Advanced Research Computing Conference (PEARC) 2018. There was able to network with quite a number of professionals from different fields such as academia, industry, and research. Towards the end of the conference, I took part in the SGCI Hack-a-thon. My group members and I settled for the Comic^2 Gateway project, which entailed creating a image stacker viewer web-application that displays 500-5000 images at a time. Overall, the institute not only helped me build on my prior programming languages but also added more to my knowledge of computer science as a whole.

In the summer of 2019, I took place in the National Science Foundation Funded REU: Mathematical Modeling in Environmental, Biological and Other Sciences (MMEBS) Program. Throughout the eight week program, I attended presentations on a variety of topics related to research and graduate education, experienced life as a member of a laboratory, took full ownership of a research project, and concluded by presenting my research results at the B-CU Summer Research Symposium. My research project entitled: *Model for Tumor Growth and Exploring Cancer-Immune Dynamics and Tumor Dormancy*, was conducted under the mentorship of Dr. Seenith Sivasundaram and entailed presenting a general method utilizing ordinary differential equations (ODEs) to model and analyze cancer-immune interactions, and in particular, immune-induced tumor dormancy. Employing the help of mathematical software known as Maple and

MATLAB, I was able to solve a number of ordinary and delayed differential equations that took account multiple parameters associated with cancer such as immune system population, amount of chemotherapy drugs, total population of tumor cells, etc. Once I was able to solve and graph my last set of delayed differential equations, I found that the immune system seems to stabilize as the population of tumor cells begin to decrease as well as the amount of chemotherapy drugs needed to be administered.

My goal is to graduate ECSU with a Bachelor's degree in Mathematics and minor in Computer Science. I also plan to further my schooling by pursuing my master's degree and doctorate's degree as well. In the near future, I intend on applying my skills of science and technology to a S.T.E.M career related area.