Mathematical Art Studies

I have always struggled to find my place. I have Autism which leads me to have a variety of specific interests. While attending the University of Louisville I have changed my major multiple times, always circling back to Mathematics, but have never felt as if I found my true calling. I never wanted to be a math teacher, actuary, data scientist, or have any of the standard careers that a mathematics major has after graduating. I always struggled to find like-minded individuals in the mathematics department. I realized the reason why I enjoyed math was different from why other math majors enjoy math. Instead of seeing mathematics as a tool that is used to obtain a specific value, I see it as a curious natural phenomenon that has a strange way of popping up in all aspects of life. My favorite place that mathematics appears is in art. It amazes me that in a field that is known for being free and creative that something so strict and orderly can show up. I am influenced by artists such as MC Escher, Leonardo da Vinci, Ester Mahlangu, and Pablo Picasso. I admire the way these artists so seamlessly use mathematical principles to create visually capturing pieces. I am interested in Celtic Knots and how they apply to Knot Theory, how MC Escher used recursion in his art, and how Renaissance artists used geometry to create large proportionate statues. I chose the title Mathematical Art Studies for this program because it will focus on the relationship between mathematics and art from a historical point of view.

My goal for this program is to gain a deep understanding of mathematical and artistic principles and how they are interrelated, while also learning communication techniques that can be used in my future career. This program will utilize the Mathematics, Art History, and

Communications departments. The first concentration, and A&S Minor, is Mathematics. The concentration in Mathematics will give me a solid background in mathematical principles that will help me understand how they are connected to art. The second concentration will be in Art History because it will give me an understanding of artistic principles and how they have been used for several centuries. My third concentration will be Communications, which will teach me effective strategies and techniques to communicate my research with others. Mathematics and Art History are interrelated because artists and mathematicians alike both study things such as shapes, patterns, symmetries, measurements, and proportions. Mathematicians and Art Historians use similar communication techniques in their fields, like creating research proposals and projects. In the spring of 2021, I started my own personal research project where I created a computer program that recognized and counted specific shapes in surrealist paintings, and I used statistical methods to determine how frequently these shapes appeared in the artistic genre.

My goal is to either continue to study this topic on the graduate level or to have a career researching this topic at an art museum. This program will give me the background knowledge that I will need to either pursue this field at a higher level of education or work in a museum setting. While other people working in an art museum may have backgrounds in art history or studio art, I will have the advantage of having a background in mathematics, art history, and communications, which will make me a more marketable and well-rounded employee. After completing the program, I will have developed a specialized skillset and background that not many others will have, which will make me stand out when applying for jobs. As a person with autism, I view the world in a different way. I am able to recognize patterns, sequences, and connections where people without autism typically would not. For this reason, I am uniquely

qualified to pursue this program. I will be successful in this field because I have an eye for patterns, I am mathematically gifted, and I am passionate about the topic.