Since childhood, I have harbored a genuine passion for numbers and geometric figures. As a little kid, I could easily memorize phone numbers, and I gradually developed an interesting habit of decomposing them into prime numbers. Years of studying mathematics expanded my knowledge, and I became more captivated by the beauty of logic and precision in the math world. I am amazed to see how a messy polynomial can be transformed into a product of more orderly structures, or how the sum of an infinite geometric series can be expressed in a simple form of fraction.

Throughout the years, I was not satisfied with merely taking courses and absorbing new knowledge. I passionately participated in various math competitions to put my theoretical knowledge into practice and cultivate my problem-solving ability. Among all competitions, I could distinctly recall a math problem I encountered during the preparation of the AMC. It was a probability-related question that asked me to get an odd number while making sure all even numbers appeared once. I was so engrossed in the question that I even skipped dinner, forgetting about the time. However, the sense of achievement that arose from solving the challenging problems was beyond compare.

Recently, I took some introductory courses in data science and marveled at the infinite possibilities that lie in this emerging field. During classes, I collaborated with my classmates on a case study about the identification and categorization of coins using computer visualization methods. We finished a paper titled “*Brazilian Coin Counter Research Report*” discussing a model we designed based on the AlexNet Convolutional Model. This valuable experience expanded my knowledge as I gained a fundamental understanding of data collection, data classification, and the Convolutional Neural Network models. My academic curiosity was piqued as I conducted a data analysis using Python.

To further my study, I believe the Department of Mathematics at the University of Wisconsin-Madison will be the most ideal place for me. After careful school research, I am deeply impressed by the flexible curriculum and numerous courses that enable students to explore their specific interests. In particular, I am passionate about taking courses like MATH 320: *Linear Algebra and Differential Equations*, MATH 444: *Graphs and Networks in Data Science*, and MATH 443: *Applied Linear Algebra*. By taking these courses, I will be able to establish a solid knowledge foundation of linear transformation, matrix factorization, and linear algebra that underpin my knowledge of CNN.

In addition to acquiring advanced math knowledge, I eagerly seek opportunities to apply my theoretical knowledge to real-world practices and research projects. This profound interest was cultivated when I participated in the Space City Competition, a global academic event organized by NASA. In the Asian Regional Finals, my team used the Lagrange method to calculate the position of the perigee. To fully understand the method, I employed advanced knowledge of mathematical modeling, potential functions, and integration methods. Later on, I fell for another fascinating concept of the Hidden Markov Model while reading a book titled “*The Beauty of Mathematics*”. The contents left me intrigued by the field of speech recognition by computers. Such experiences led me to realize that mathematics is truly a body of knowledge with application to all fields of science.

In this way, I am eager to fully utilize the abundant research resources and practical opportunities provided for undergraduate students. More specifically, I expect to take part in the URS (Undergraduate Research Scholars) Program to engage in research projects and collaborate with world-class scholars. For example, I am attracted to the research areas of Assistant Professor Nan Chen, who mainly works on machine learning techniques, modeling complex systems, high-dimensional data analysis, etc. If given a chance to join the vibrant community of UW-Madison, I believe I will fulfill my dreams and embark on a journey of infinite possibilities.