Dear Professors,

I am Shuo Ren, an undergraduate student from the School of Computer Science at Huazhong University of Science and Technology. It is an honor to apply for the graduate program at your prestigious institution, and I would like to present myself and my research interests in this research statement.

First and foremost, I am committed to the pursuit of excellence and have unwavering confidence in my abilities. Academically, I have consistently demonstrated dedication and outstanding performance in my studies, establishing a strong theoretical foundation and extensive knowledge. Presently, I rank in the top **1.5%(5/344)** of my major, with a **GPA** of **3.92/4**. Moreover, I possess a strong aptitude for mathematics, as evidenced by my exceptional grades in calculus (98), linear algebra (97), and complex function (95). I have also developed a solid foundation in computer science, with excellent scores in courses such as data structure course design (99), algorithm design and analysis (96), Java language programming (99), assembly language programming practice (97), and computer communication and network practice (96). Additionally, I have demonstrated English proficiency with a score of 533 on the CET-6 and 6 on the IELTS exam.

In terms of research, I have participated in the packing project under the guidance of Professor He Kun at our university. As the first author, I published a paper titled "Local Dynamic Programming Algorithm Based on Greedy Backtracking for Solving the Complete 0-1 Knapsack Problem (LDPGB)" at the 2022 Chinese Theoretical Computer Science Conference (CCF NCTCS2022). This algorithm employs greedy and backtracking techniques to quickly identify an approximate optimal solution, then refines it using local dynamic programming to approach the optimal solution, balancing the algorithm's accuracy and time complexity. Additionally, I co-authored a paper titled "Solution Space Exploring and Descent for Packing Equal Spheres in a Sphere (PESS)" with Zhou Jianrong, Professor He Kun, where I contributed to the design of the potential function and overall experimental verification. Our proposed heuristic algorithm, the "solution space exploring and descent method," has proven efficient for the packing equal spheres in a sphere problem and has resulted in the discovery of numerous new records in the field.

Furthermore, I have completed several engineering projects, including the design and implementation of psychological diary software based on neural network analysis (PsychoDiary), construction of a CDCL-SAT solver, conversion of a high bit-width logic equivalence verification problem into a SAT problem for the EDA contest, a public transportation map navigation system using Dijkstra's algorithm in C++ and Qt, an automatic Gomoku game system based on alpha-beta pruning, a face recognition and detection system using the Hadoop framework, a memory-based search engine implementation with inverted indexing using Java, and the application of LSTM to predict commodity prices.

In addition to my research and projects, I have actively participated in various national and international competitions, such as the 2022 China Software Open Innovation Competition, 2022 RoboCom Robotics Developer Contest, National College Students' Mathematical Modeling Competition, and the American College Students' Mathematical Modeling Competition, achieving commendable results. These experiences have sharpened my practical application skills and problem-solving abilities, allowing me to gain a deeper understanding of cutting-edge knowledge and technology in the field of computer science.

Looking forward, I am particularly interested in AI-related research, specifically in investigating how AI can enhance personal productivity beyond language assistance. I aspire to develop theoretical models and conduct practical experiments to explore this subject, making academic advancements that can be applied in practice. My ultimate goal is to become a distinguished computer scientist with extensive practical experience and innovative abilities, making a positive impact on society's development and progress.