My motivation for a doctoral degree began to take shape when I joined my university's honors undergraduate research program my freshman year. I met Prof. Ye Duan of the Department of Computer Science, who worked in the areas of computer graphics, computer vision, and human-computer interaction. After Prof. Duan gave a lecture on the research program, I sought him out to learn more about the program and his research. I vividly remember our conversation because of the passion Prof. Duan expressed when discussing the research he was involved in, which included national security and autism research. Prof. Duans fervor for these topics coupled with my own interest in computer graphics and computer vision compelled me to join his research group.

I was extremely active in Prof. Duan's research group throughout my undergraduate career. I researched topics in both computer graphics and computer vision, and I began to see how computer science research could benefit from combining concepts from each of these two fields. The problems posed by the intersection of computer graphics and computer vision greatly intrigue me, and last summer I interned at the Naval Research Laboratory (NRL) where I continued researching similar topics. The software and user study I assisted with at NRL may reduce the number of solder causalities, which helped me recognize the potential impact this type of research can have on society. These research experiences as an undergraduate solidified my research goals for graduate school and beyond.

The combination of computer graphics and computer vision is a relatively young field with many ideas and topics yet unexplored. I plan to dedicate my graduate research to developing fundamental results for this area. One problem I am specifically interested in is extracting 3D spatial information from a single photograph. Recent advances in computer vision have created an opportunity to pursue this issue, but I intend to draw from and expand upon recent findings in both graphics and vision literature to develop more robust 3D spatial estimations of a scene. This research will have applications in surveillance and security, household robotics, animation, and vehicle safety. I believe that unifying these two related fields to solve problems such as this will lead to more efficient and more accurate solutions than previous approaches.

I will complete my graduate study at the University of Illinois Urbana-Champaign, where I am working with professors in both vision (Prof. David Forsyth, Prof. Derek Hoiem) and graphics (Prof. John Hart). I have already begun working with these three professors on two distinct projects combining graphics and vision research. I was fortunate enough to receive a one year fellowship for my first year to be able to work on both of these multifaceted research projects. With the NDSEG Fellowship, I will be allowed the freedom to continue similar work in this fascinating and emerging field.