My goal in pursuing graduate research in computer graphics is to attempt to improve the state of the art in realistic computer imagery and animation. My areas of interest include:

- Introduction of new imaging methods.
- Incorporation of more sophisticated optical models.
- Use of physical dynamics simulation.
- Algorithmic improvements to existing methods for image computation.

I am seeking admission to the program in pursuit of a graduate degree in computer and information science. My hope is to continue the research and publication process I began as an undergraduate, and to be able to make that process my career.

My focus has been on improving the interface between the display and the user. This focus has suggested that strong improvements in perceived image realism may be achieved through the use of simple models of human perception for image evaluation. Existing rendering techniques may be performed more rapidly through similar models. An alternative view suggests that human-computer interface benefits strongly from clear and timely feedback to user action. This may be evidenced in the immediate gains in intuitive understanding and productivity that occur once a program reaches interactive performance levels.

The first introduction to computer graphics research I had was while working for Ping-Kang Hsiung of the Robotics Institute at Carnegie Mellon. This work produced two papers which describe a process to render images that have been warped by time dilation[1][2]. Dr. Hsiung received his Ph.D. in 1990 for his work in this area.

I have studied with Dr. Andrew Witkin on several occasions over the past few years. In addition to his introductory graphics course, he has twice offered a graduate-level "special topics" course. The focus in 1991 was on methods for physically-based modelling, which resulted in the production of a constraint-based rod, spring and mass modeller. It was clear from this work that the point of efficiency at which an application becomes interactive is an extremely significant and powerful one.

My undergraduate thesis work with Dr. Steven Shafer of the School of Computer Science suggests the use of high level models of coherence to evaluate and direct point-based image sampling. This work holds promise as an opportunity to tie together current work in computer vision with similar work in computer graphics. A progress report on this work is currently available[3]; the thesis will be complete in May of 1992.

Denise Blakeley and Ferdi Scheepers, who are both graduate students in the CIS department, were at the ACM SIGGRAPH conference in August of 1991. I was fortunate to be able to speak with them for a while during one of the special interest sessions. They spoke highly of the computer graphics program at The Ohio State University and of the department in general. My application owes a great deal to their encouraging words.

Christine Kmetz, my fiancee, is now a freshman at The Ohio State College of Veterinary Medicine. She expects to receive her DVM in the summer of 1995. We will be married in July, and will be living in the Columbus area from that time forward. We have been commuting between our respective schools in Pittsburgh and Columbus since 1988. We look forward to the increased stability our reunion will provide for our personal and academic lives.

[1] Ping-Kang Hsiung and Robert H. P. Dunn. Visualizing relativistic effects in spacetime. *Proceedings: Supercomputing '89*, pages 597–606, 1989.

[2] Ping-Kang Hsiung, Robert H. Thibadeau, Christopher B. Cox, and Robert H. P. Dunn. Time dilation visualization in relativity. *Proceedings: Supercomputing '90*, pages 835–844, 1990.

[3] Nathan Loofbourrow and Steven A. Shafer. An architecture for adaptive scene sampling. Unpublished progress report, December 1991.