Statement of Purpose

My commitment to computer science was solidified not in a classroom, but in a small, vibrant community center during an NGO visit. There, I met a young boy whose eyes shone with a fierce intelligence and curiosity. He was deaf, and as he communicated with his hands, his expressions were full of ideas waiting to be unleashed. Yet, in a world increasingly connected by video calls and digital platforms like YouTube, his ability to convey his thoughts was constrained by the limited accessibility of the technology around him. In that moment, a question etched itself into my mind: In this century of unprecedented innovation, why shouldn't he be able to share his ideas as easily and freely as anyone else? This experience is the bedrock of my ambition to develop assistive technologies and fuels my desire to pursue graduate studies, ultimately aiming to dismantle communication barriers and become a professor who empowers others to do the same.

My academic path has been driven by this goal. This focus allowed me to graduate at the top of my class in my Bachelor's program and be recognized as a merit-based scholarship recipient throughout my undergraduate studies. This drive also led me to cultivate a deep love for both mastering established concepts and exploring new, interdisciplinary frontiers, which is why I pursued a minor in Psychology alongside my Computer Science major. Understanding cognitive processes and human learning didn't just complement my technical skills; it fundamentally shaped my approach to problem-solving. I learned that a technically brilliant solution is ineffective if it isn't built on an understanding of the human using it. This philosophy was central to my undergraduate work on a real-time gesture recognition system. The iterative process was where I learned the true value of **grit—it is the quality that keeps me going when solutions are not immediately apparent.** This mindset is encapsulated in a personal mantra that has guided my entire journey: **If I do not know something today, I will know it by tomorrow.** This relentless curiosity drives me to deconstruct complex problems, ensuring I acquire the skills needed to overcome any challenge.

My proposed research is a direct response to the challenge I witnessed. I aim to develop scalable, real-time systems that translate multimodal hand gestures into text, leveraging advanced architectures like convolutional and recurrent neural networks. However, my vision is not purely technical. My background in psychology compels me to design for the user, addressing critical issues like gesture variability, cognitive load, and creating an intuitive, seamless user experience. I am particularly interested in exploring how techniques like transfer learning can personalize these systems, ensuring they are adaptable to individual users and ultimately robust enough for real-world applications, from live online education to remote work meetings.

My long-term goal is to leverage this research to make communication and education

radically more accessible and transparent. I envision a future where intelligent systems can provide real-time translation, ensuring that a talented student, regardless of their mode of communication, can participate fully in a global classroom via video link. This vision is what draws me to a professorship. I want to be at the forefront of creating these transformative tools while also mentoring the next generation of innovators to think critically about the human impact of their work. My commitment is to democratize knowledge, both through inclusive pedagogy and by contributing to open-source projects that make assistive technologies available to all, ensuring that the hope I saw in that young boys eyes can be met with genuine opportunity.

This graduate program, with its strengths in human-centered AI and its collaborative culture, is the ideal environment for me. I am eager to work with faculty like Professor X on specific research interest and Professor Y on another specific interest to bridge the gap between machine intelligence and human need. My dedication to lifelong learning, powered by **grit and the belief that any knowledge gap can be closed overnight with focused effort**, ensures I will thrive in your rigorous program. I am confident that my proven academic excellence, unique perspective grounded in a real-world mission, and interdisciplinary skills will allow me to contribute meaningfully to your department and, ultimately, to creating a world where technology ensures every voice can be heard.