On Background & Why Ph.D.

My path to graduate school is defined less by external barriers and more by the internal conflicts I resolved to understand my own potential. At 15, I faced a pivotal choice. I could remain in China for a rigid and STEM-focused education or come to the United States for secondary school. I chose the latter to prioritize a holistic environment where I could continue my training in piano alongside my studies. However, the transition into an unfamiliar world was far more isolating than I anticipated. Without the strict parental oversight that had previously structured my days, I initially faltered. I retreated into video games for two years and used them as a shield against cultural dislocation.

This period of stagnation ended abruptly during my sophomore year with my maternal grandmother's passing. She always possessed an unshakeable belief in my potential. Her loss transformed my lingering guilt into a deep resolve. I realized I could no longer squander the sacrifices made for my education. I shifted my focus from escapism to a disciplined pursuit of academic growth.

This battle with self-doubt followed me into my undergraduate years and evolved into intense imposter syndrome. On paper, I thrived. I navigated heavy coursework to graduate in four years with three degrees and a minor across distinct fields. Yet, I felt like an outsider in research circles because I did not produce immediate and publication-worthy results. I participated in numerous reading groups and directed research projects, but the lack of a rapid breakthrough made me question my aptitude.

My decision to apply for a Ph.D. is the result of dismantling that narrative. I persevered through prolonged periods of uncertainty and eventually found my breakthroughs. Through this process, I came to understand the true nature of scholarship. I realized that research is defined by stamina and the courage to persist through failure rather than instant glory. I decided to apply to the Ph.D. program only after convincing myself that I possess the strength to produce the quality work I have always aspired to.

On What I Can Bring to Cornell

Teaching. I have always believed in the power of personalized education. From my undergraduate days at USC to my current MS at Duke, I have been fascinated by the art of teaching and the importance of understanding a student's unique learning style. **I contribute to the academic community via two distinct approaches: creating resources and direct mentorship**.

Creating resources is essentially a formal way of saying "keeping my own lecture notes," a habit I've maintained since my sophomore year. The motivation was simple: many courses I wanted to take lacked publicly available scribed notes, so I decided to fill the gap for future students. I am equipped with a niche skill: **real-time LaTeX typesetting** using a heavily snippet-augmented Vim and Inkscape workflow. This allows me to turn live lectures into detailed, self-contained write-ups. I have done this for essentially every advanced Math/CS class I took, making

them publicly available. I pay particular attention to "sticking points" where first-time learners often stumble. For example, I went in-depth explaining the intuition of the ϵ-δ language for analysis and wrote supplemental sections on residual graphs for the Ford-Fulkerson algorithm. These documents, often exceeding 100 pages, serve as hands-on course materials. It has been incredibly fulfilling to see my notes circulating among the STEM communities at USC.

Then there is direct mentorship (TA): teaching is genuinely fun! I have thoroughly enjoyed stepping out from behind the screen to serve as a TA, particularly for theory-heavy classes where the challenge lies in explaining abstract objects (no TAing for debugging code, ever). In my office hours, I constantly remind myself that everyone comes from a diverse background with a unique way of learning. I tailor my pedagogical approach to the individual; some prefer a rigorous theoretical derivation, while others are visual learners who thrive on geometry. On my end, it is an engaging but fun challenge to adapt to all these different learning styles. Over time, I have honed the ability to make abstract proofs accessible to everyone.