Statement of Mentoring Philosophy

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Research is different. It diverges significantly from traditional schooling. I often jest that less than 10% of what I know was learned from lectures; the rest came from hands-on experience and especially from making mistakes. Yet, trial and error alone is insufficient in research. Indeed, I developed nearly 100% of my research skills and mindset through the guidance of my PhD advisor and senior mentors who walked alongside me in my research endeavors.

Having experienced higher education in four countries across three continents, I have come to recognize a shared shortcoming across educational systems: a disconnect between course-based curricula and the competencies required to conduct research. I consider myself fortunate to have had mentors who helped me navigate the treacherous landscape of research. Because of this, I am deeply committed to supporting students as they bridge this gap.

Befriending Uncertainty. Research lacks textbooks with definitive answers or instructor-designed assignments accompanied by step-by-step tutorials. It offers maximal intellectual freedom, but this freedom is inseparable from uncertainty. Fortunately, in fields such as computer science and engineering, we study subjects largely designed by humans (e.g., data structures, operating systems, the Internet) and thus have some degree of control: general design principles and experimental methods provide structure. However, uncertainty remains fundamental: no one (not even the professors) can predict the outcome of a meaningful research question. What sets experienced researchers apart is not certainty but the ability to proceed effectively amid the unknown. This skill is seldom explicitly documented and is *not* intuition (which has failed me repeatedly); it is acquired through years of immersion and reflection. Thus, unguided trial and error rarely suffices, and mentorship becomes indispensable.

At the same time, this uncertainty is what draws me to research. It compels me to think deeply and engage fully; it is the most exciting form of active learning. For me, the core purpose of research is not innovation for its own sake, but understanding: of the problem, of the methods, and of myself. When mentees come to me and say, “Nothing worked,” I often respond, “That’s progress! Now you know what doesn’t work, and why.” Embracing uncertainty and transforming it into insight is central to success in research.

Aligning Objectives. Uncertainty often leads to setbacks and failures; progress can be slow and non-linear. Success in research requires a sustained investment of time and energy. To navigate this, you must begin by defining what success looks like and aligning that vision with your mentor.

Unclear or mismatched expectations are most likely to create friction during challenging phases of a project. For example, a student once spent two months exploring a novel research idea, only to discover that the approach did not yield publishable results. They were deeply disappointed, having hoped to submit a paper to a conference the following month. I was not surprised by the experimental outcome but the student’s goal. Had I known their objective in advance (e.g., applying to grad school with a submitted paper), I would have recommended joining an ongoing project and adjusted their expectations accordingly given the short time frame. Avoiding such misunderstandings requires transparency and proactive communication. There is no “correct”

reason to pursue research, whether it is curiosity, personal growth, or professional advancement.

Clearly articulated and feasible goals are also essential for time management. When research falls off your schedule, it's not just a time issue; it's a priority issue. That's understandable, since coursework and other commitments compete for your attention. Still, meaningful research outcomes demand proportionate time investment. Estimating this investment often requires experience, which is why early conversations about goals and capacity are so critical. I expect my mentees to be candid about their intentions so I can help them manage their time wisely.

For You. Some students worry that asking too many questions might make them appear uninformed. This is a misconception. The real danger lies in pretending to understand when you do not. I encourage my mentees to ask questions freely and unapologetically, as long as they have made a sincere effort to find answers on their own first. The opposite attitude can be equally harmful. Some students believe that meetings are unnecessary and that the only way to make progress is to sit at a desk and run experiments all day. Mentors are signposts along the often-treacherous research journey, and you will miss them if you walk with your head down. I trust your ability to work hard, but sometimes the key is to fight the right battle.

My role as a mentor is to support your growth and help you achieve your objectives. I serve as a resource for both research and career development. Specifically, I will help you develop research mindset and methodology, formulate and refine research questions, design experiments, and troubleshoot technical challenges. Beyond research, I will draw on my experience and professional network to advise you on career decisions such as internship applications and graduate school admissions.

Every student is unique, and I will tailor my mentorship style accordingly. That might mean taking a more hands-on or hands-off approach, providing regular feedback, or using anonymized forms when helpful. Above all, remember this: I am here for you.

By You. The unparalleled freedom in research comes with an equal demand for autonomy and independence. While I serve as a resource at your disposal, I expect you to take full ownership of your research. This means thinking independently about problems, organizing and communicating regular progress updates, and actively proposing next steps. Initiative is not optional; it is essential. You do not report to me, because you are your own boss. You do not need to write formal reports or show me every plot from your experiments just to prove your effort. However, if you choose to share results, I will be extra-critical, because I expect you to have reflected on your findings.

It is crucial not to rely blindly on intuition but to *be critical about your own results*. Does this figure even make sense, and why (not)? Are these methods compared fairly? Doing so will not only make our discussions more effective but also help you become more productive.

Research requires resilience, discipline, access to resources, thoughtful mentorship, and a sustained sense of purpose. Ultimately, it is driven by you, and I am here to help you along the way.