Mentoring Philosophy and Practices

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One of the reasons that I love being a member of the Graduate Faculty at Pitt is that I get to work on fascinating research problems with interested and excited students, particularly doctoral students. As a doctoral mentor, I strive to actively play a role in creating opportunities for student growth and success. I believe that my responsibilities to doctoral students are multi-faceted, ranging from fostering the acquisition of disciplinary expertise and the ability to create new disciplinary knowledge, to fostering the acquisition of professional skills and the ability to work both independently and as part of a team, to providing a supportive and inclusive work environment where communication is highly valued.

My training philosophy is based upon a scaffolding model with the ultimate goal of student independence. That is, I initially use supportive strategies to help students reach higher levels of achievement than they would likely achieve without any support. These strategies are then gradually removed, with responsibility increasingly shifted to the student over time. For example, with beginning students I provide relatively well-defined research projects and close supervision. However, even at this early stage I establish expectations for independent discovery and learning. I try to support students' development by making judgments about exactly what kinds of support each student needs, and what kinds of challenges they are ready to tackle on their own. By the time students reach their final years in my lab they have become full collaborators to programs of research: they influence the new directions the lab takes, they make contributions to grant proposals, they supervise and mentor junior students, and they establish their own research identity through publications, presentations, and professional service.

Because entering into a doctoral advisor/advisee relationship is an enormous commitment, with many factors contributing to the relationship's ultimate success, I always work with students for one or more semesters before agreeing to be their advisor. I take advantage of my department's required first year doctoral research experience course, independent study courses in later semesters, and my own grant-funded research assistantships, to trial all potential advisor/advisee relationships. I maintain a mentoring philosophy and practices document, which I provide to all potential advisees to encourage communication and to align expectations about doctoral mentoring. I update this document each year, to help me continually articulate and reflect on my role as a mentor.

After entering into a mentoring relationship, I meet individually with each doctoral student at regularly scheduled weekly meetings. To facilitate productive communication, I ask students to share a document with me in advance of each meeting. This document minimally includes a high-level summary of the student's research progress since our last meeting, along with pointers to detailed supporting materials (e.g., tables of new experimental results, a first or revised draft of a paper being prepared for publication, reviews of any papers read from the literature, etc.). The

document may also include any other topics that the student wishes to discuss (e.g., strategies for time management, issues with undergraduate student supervision, setting and achieving summer or post-degree employment goals, etc.). At the meeting, we discuss the student's weekly report, evaluate whether the prior week's goals were met, and set goals for our next meeting.

In addition to one-on-one interaction, I feel that it is very important for students to feel that they are part of a larger intellectual community, and to have opportunities to learn from one another as well as from other faculty. First, I hold weekly group meetings for all of the students in my research lab (http://people.cs.pitt.edu/~litman/itspoke.html). Since my students are individually involved in different research projects, bringing all of my lab together once a week provides a broader perspective on the more general research area of my lab, and also facilitates shared professional development experiences. During these lab meetings students report their progress to the group and any other relevant news. Every student leads a research progress discussion at least once, but possibly more, per semester. Lab meetings are also used to review conferences that people have attended, to discuss research papers from the literature, to review summer internship experiences, and to practice talks (e.g., before a conference presentation or a job interview). Second, each of my projects involving other faculty investigators also holds weekly group meetings. My co-PIs are not only in the School of Computing and Information but also in other schools at Pitt (e.g., Education, Arts and Sciences) as well as at other universities (e.g., Purdue). Unlike my one-on-one and lab meetings, these project meetings provide opportunities for students to learn how to effectively communicate and collaborate in the context of larger and often inter-disciplinary research teams, as well as provide opportunities for students to acquire additional faculty mentors (and for me to mentor students beyond my own set of advisees). Third, in 2002, I and other faculty colleagues in Computer Science co-founded the Pitt Natural Language Processing (NLP) Laboratory. These on-demand meetings, which are open to anyone interested in natural language processing at Pitt, have provided a forum for hosting external visitors, for teaching disciplinary research methods (e.g., ``how to give a NLP talk''), for hosting internal peer reviewing sessions before external NLP paper submission deadlines, and for presenting student research in an informal and welcoming NLP setting beyond an individual faculty's lab.

An important aspect of my mentoring philosophy that is incorporated into all of the student interaction opportunities noted above is that I strive to mentor my students with respect to both disciplinary skills as well as professional skills that transcend particular types of disciplinary expertise (e.g., thinking critically, reading and reviewing primary sources, working collaboratively, writing papers, making oral presentations, etc.). I strive to incorporate similar types of doctoral mentoring into my graduate teaching as well. For example, I have students read and review recent conference papers to enhance the coverage of the text. For each paper, some students lead a class discussion, while the rest submit a short written critique. Many of my graduate courses also have significant group research projects. These activities not only help students increase their technical expertise (e.g., by applying and supplementing their textbook knowledge with state of the art research), but also provide students with further exposure to research skills (e.g., working in a team, producing written and oral communications). Many of my course research projects have led

to co-authored publications and further mentoring relationships with doctoral students who are otherwise advised by a different faculty member.

I also aim to promote and support diversity in my doctoral mentoring activities, both at Pitt and in my wider professional community. My lab has always been very diverse along a variety of dimensions. For example, my doctoral advisees have included numerous female students (an underrepresented group in Computer Science), as well as students from Bangladesh, China, Egypt, Iran, Italy, Romania, USA, and Vietnam. Students in my lab have varied with respect to age (e.g., freshly minted undergraduates versus a middle-aged returning student), family situation (e.g., parent or not), personality (e.g., introvert versus extrovert), working style (e.g., procrastinator or not), technical skill (e.g., theoretical versus applied), etc. I recognize that identifying and positively leveraging differences offers challenges but also opportunities for creating successful research collaborations (with students one-on-one as well as in teams) and for creating an inclusive lab environment more generally. To enhance my existing mentoring skill set, this semester I participated in Pitt's Center for Mentoring and the Mentoring Academy workshop series, which included a session on equity and inclusion. Outside of Pitt, I have actively supported activities aimed at broadening the participation of women and other underrepresented groups in Computer Science. I have been an invited speaker/participant at the CRA-W's (Computer Research Association's Committee on the Status of Women in Computing Research) Graduate Cohort Workshop, which aims to build and mentor national communities of graduate women in Computer Science. I have also served on the program committee for the Widening Natural Language Processing Workshop series, which has the goal of promoting and supporting inclusivity for women and underrepresented minorities in NLP. I encourage my doctoral mentees to participate in these and similar events such as the Grace Hopper Celebration of Women in Computing, and have successfully nominated them for financial scholarships.

Finally, I take a very active role in promoting professional development and facilitating networking activities that help students join their community at large. I encourage students to meet with visiting seminar speakers and faculty candidates, and help introduce students to my colleagues at professional meetings. When students first-author a paper that has been accepted for presentation at such meetings, I fully fund them to attend and present the paper. I also alert students to many types of volunteer as well as nominated opportunities, e.g., joining student workshop committees, applying for summer research internships or academic year fellowships, finding a postdoctoral mentor, etc.

In sum, doctoral mentoring is one of the most rewarding aspects of being a professor at Pitt. Every advisor/advisee relationship is different, which helps me to continually grow as a mentor and as a person. I find it to be an enjoyable challenge to tailor and expand my mentoring practices based on the needs of a diverse set of students. It is also intellectually exciting for me to be able to jointly create research results and insights with students, as often my research gets taken to places where I would not have gone working by myself. I look forward to many more years of both mentoring and learning from doctoral students.