Teaching Statement  
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Education is a process of perfecting the mind’s ability to separate facts from illusions. It reveals the reality of the world beyond what we can perceive through our senses, our prior experiences, and our expectations. In a time when people are divided in the name of nationality, race, gender, and beliefs, the true essence of education can help us see through all these illusions. This is my mission in research and teaching. I consider myself fortunate to be in touch with so many vibrant minds as an instructor, mentor, community worker, teammate, and fellow researcher, and I have always tried to spread the joy of learning. This spectrum of experiences has enriched me by offering opportunities to motivate students, triggering their curiosity in research, and leading them to follow independent ideas, and in turn, strengthening my resolve to take up teaching as a profession. It is an immense pleasure by itself to train new minds to live up to the challenges, to encourage them, and to watch them grow with time. This is what I want to do for the rest of my life.

Teaching in class:

The success in teaching cannot be achieved only by delivering the course content; rather, it requires continuous interaction with students and understanding the challenges from their perspective. As a teaching assistant, I always stayed true to this philosophy and gradually tried to improve my teaching skills. Here, I would like to mention some courses that have enriched me as a mentor and a teacher.

The first course that I worked as a teaching assistant was *Algorithmic Design*. This was an introductory computer science course in which I led one of the computer programming labs of 60 students twice every week. Working with such a large number of students was equally exciting and challenging for me. Since a majority of the students in this course were non-CS students (more than 62%) with no prior experience in computer science, it was a rewarding experience to introduce the power of computer programming to them. At the same time, I had to figure out how to explain the core CS programming concepts using real-life examples, especially to those students who had no prior experience in coding in C++ and Java. In addition, there were three students from the neighboring community who were more than 60 years old and had little to no experience in using computers. I spent additional time after the lab hours to explain every assignment to those students in such a way so that they could clearly understand the problem before they could try to find the solution.

My initial experience as a teaching assistant helped me in many ways to be a successful teaching assistant for the User Interface Design course at UIUC. This course is one of the most popular courses at CS, UIUC. More than 200 students register this course every semester, which works as an introduction to Human-Computer Interaction. As a teaching assistant for this course, I had the opportunity to lead 10 students’ groups each semester. Each of these groups had to complete a semester-long design project where many of these projects were closely related to my own research. I helped each group step-by-step to formulate project idea, make early low-fidelity prototype, perform heuristic evaluation, prepare high-fidelity prototype, implement the design on a physical device, and finally perform multiple rounds of user testing. The goal was to foster an environment where failure was not frowned upon, rather recovery was encouraged through multiple iterations based on feedback. Since each group had both CS and non-CS students, often, it was challenging to provide feedback. To make my feedback more actionable, I divided my feedback into two parts: 1) feedback on interface design, and 2) feedback on the back-end system development. This strategy allowed both CS and non-CS students to contribute equally to the project. At the end of each semester, each group had to present their project to a wider audience during a poster session. Each semester, I used to organize a tutorial on Android programming, which later helped my groups to prepare their working demos for the poster session.

Through my teaching experience, I have realized that the best way to engage students is to periodically provide them constructive and complementary feedback. I always tried to remember the students of my groups by name and provided them with personalized feedback as much as possible. This approach allowed students to improve their work through multiple iterations instead of feeling pressurized to get everything correct in the first place.

Apart from working as a teaching assistant, I was invited to present a guest lecture on my research on the effect of crowdfunding campaigns on socially stigmatized topics in the Social Visualization course (CS 467). This lecture...
provided me a unique opportunity to learn how to prepare course material from the latest findings of research projects.

End semester evaluations, live-audience demos, and poster sessions, and guest lecture made it evident that my approaches and strategies were successful in teaching students. I am interested in applying these teaching techniques in class as a professor, and I am also open to adopting innovations in teaching that are happening worldwide.

Mentoring:
As a senior doctoral student, I also had the pleasure to mentor several brilliant graduate students both at UIUC and outside. They all started working with me in one of my ongoing work and tried to gain familiarity with HCI approaches and theories. I spent time with them to understand their strengths and weaknesses. Later, this knowledge helped me to clarify their queries in a way so that they could think independently and develop their own ideas. Next, I briefly describe my mentorship experience with a few students.

I mentored Ziang Xiao, a third year Ph.D. candidate, in designing a sketching tool that can be used to measure users’ visuospatial skills. I was able to provide him constructive suggestions and useful pointers on the core challenges of building an online sketching tool. Based on my feedback, Ziang built several low-fidelity prototypes and, finally, came up with the design of a tool appropriate for our requirement. I actively helped him in preparing the web tool that he later used to conduct a large scale user study. Ziang did an excellent job in this project that led to a long-term collaborative project and a submission to the Annual Conference of the American Society of Engineering Education.

Khan Mohammad Al Farabi, another Ph.D. candidate, began working with me on a research project where he was trying to design a better approach for explaining the outcome of neural network models. I actively worked with him to explain how he can design an empirical user study to test his models. Since his primary research domain is machine learning, he did not have prior experience in conducting such user studies. I helped him design the study conditions, guided him in preparing a Likert-scale survey, and taught him skills of semi-structured interviewing and qualitative coding. Finally, I guided him in data collection, data analyses, writing his findings for a scholarly audience. His work was published at ECMLPKDD 2019, a prestigious venue for machine learning and data mining literature.

I also mentored four undergraduate students during summer 2016 and summer 2017. Liao Yiming assisted me in building the initial prototype of the VidLyz tool. Mengqi helped me conduct the qualitative coding for the interviews of the endorsement analysis project, whereas Vikram assisted me in developing the android application for the spatial learning project. In all these projects, I worked hands-on with my mentees, taught them how to design applications and conduct a qualitative analysis, and, last but not the least, explained to them the core idea of doing research. Mengqi got inspired by my guidance and currently preparing to apply for graduate school.

In the future, I would like to build a two-way relationship with students where not only I will help them to learn new skills, but they will also inspire me to reflect on my own feedback and ideas. I aim to work closely with my students so that they can learn from examples. In sum, I want to nurture a healthy environment in my lab where students will live healthy, well-rounded lives while chasing their goals in life.

Teaching plan:
My background prepares me to teach a broad spectrum of graduate and undergraduate in the areas of Human-Computer Interaction, Social Computing, and Data Science. At the undergraduate level, I would like to teach the Introduction to Human-Computer Interaction course that will cover the fundamental concepts, principles, techniques, and open areas of development in HCI. I would be interested in teaching the undergraduate level course on User Interface Design, focusing on various types of interface design, implementation, and evaluation. In this course, students will form small groups to apply their knowledge in a semester-long project that will involve analysis of the problem domain, user tasks, iterative prototyping of interfaces to address user needs, conducting several forms of evaluation such as cognitive walkthroughs and usability tests, and finally, implementation of the final prototype. I can also teach core undergraduate classes, including Algorithms, Data Structures, and Programming.

At the graduate level, I would like to teach Advanced Topics in Social Computing, where I will primarily teach how human interaction with different types of socio-technical systems can impact their social opinion. I will teach
statistical modeling, text-data mining, machine-learning techniques, which are prominently used to analyze social-computing datasets. This course will also teach how social-computing concepts can be explained and understood using social science theories. The other graduate-level course I am particularly interested in is Models in Cognitive Process, where I will teach computational models of human behavior. In this course, I would like to provide a richer understanding of the role that computational models play in contemporary cognitive science teaching students how to fit models and how to think about the predictions it makes about human behavior.

I would also like to design a special-topic course, named Crowd Computing in Human-Computer Interaction, based on the findings of my own research. In this course, I will primarily focus on the characteristics, benefits, issues, implementation challenges, applications, and case studies of crowd computing paradigm. This will include lessons on crowd-based intelligent systems and micro-tasks development. Apart from various cognitive and socio-political cue extraction methods, it will show an array of practical objectives that can be designed for crowd workers along with methods to ensure quality-control in distributed micro-assignments. In the second half, I will teach different platforms for crowdfunding and their socio-political impact on society. This course will require students to work on projects where they will either interact with a crowdsourcing or a crowdfunding platform to understand the contribution of these platforms in human-centric research. This course will also have an appeal to professionals interested in crowdsourced data collection and analysis. Therefore, beyond classroom teaching, I am interested in developing a MOOC version of this course so that it can reach to a broad audience.

Community and outreach:

I believe that innovation can be successful only when its benefit reaches to the community. With this belief, I joined the K12 Outreach initiative run by UIUC Computer Science department. As part of this program, I worked with high school students from the neighboring community. I ran daylong workshops to make them familiar with the Computer Science department. These workshops provided me the unique opportunity to present my research projects to high school students. I used live demos and visualizations of my research projects to explain the practical implications of graduate research. I discussed the milestones and impact of graduate research to inspire them to join the graduate program in the future.

In addition, I have closely worked with Women in Computer Science (WCS) student club at UIUC. I regularly contributed to their mentoring program, where I assisted freshman and transfer students for their professional and academic development. In their biweekly seminar series, I participated to reflect on the scopes and opportunities in pursuing graduate studies in Human-Computer Interaction and Graphics domain.

In conclusion, I believe teaching and mentoring are great opportunities to train a diverse set of next-generation young minds. As a faculty member, I will stay committed to this great responsibility.