Teaching Statement

Teaching and mentoring are core components of being a professor, which I find enjoyable and rewarding. In the future, I aim to create an **interactive and inspiring** environment for my students. Throughout my years as a PhD student at Columbia, I have gained substantial experiences in teaching and mentoring, which has shaped my philosophy as a teacher and a mentor.

1 Teaching

Teaching experience. I have served as a co-instructor and a teaching assistant (TA) for *Conversational AI* (COMS 6998) at Columbia, a seminar course on cutting-edge dialogue research. I have also been a TA for *Advanced Software Engineering* (COMS 4156) at Columbia, a graduate class with 100+ students. Besides, I have been invited as a guest lecturer on dialogue systems for *Introduction to Natural Language Processing* (COMS 4705) at Columbia, a large undergraduate course on various NLP topics.

As a TA, a co-instructor and a guest lecturer, I designed the syllabus and assignments, prepared slides for the lectures, led discussions during class, held office hours, graded assignments, and shared feedback with students on their group projects during the semester. Through these rewarding experiences, I have developed my teaching philosophy.

Teaching philosophy. I have always believed that a good teacher should not only help students acquire knowledge but also inspire interest in their field of research.

1. *Explain with examples*. I find the most effective way to explain concepts is through examples. As one student commented, "*(Weiyan's) office hours were amazing. She was always able to explain difficult concepts with concrete examples... This helped me gain a much better understanding of the material.*" In the future, I will continue using examples and interactive demos to explain concepts during lectures.

2. *Encourage learning via teaching*. I believe one of the best ways to learn knowledge is to teach others about it. For example, in our *Conversational AI* course, students will present a paper to the class and answer questions. This encourages them to research related areas beforehand. Most students find this process helps them understand the topic more deeply. As a professor, I plan to organize small study groups within the class so students can help each other review challenging topics.

3. *Motivate with everyday applications*. Another good way to motivate students is through exciting applications. For instance, in the *Conversational AI* course, we introduced students to various dialogue applications such as recommendation and emotional support chatbots. They also need to build a dialogue application with what they have learned. This process engages them, as one student said, " *(Weiyan) teaches us about how our class material could be applied in the real world. This helped me select a unique and interesting project idea which really deepened my understanding of Conversational AI.* " In the future, I will design mini-projects about everyday NLP applications as assignments and a final open-ended project to help students learn by applying the knowledge.

2 Mentoring

Mentoring experience. So far, I have mentored three undergraduate students, four master's students, and two junior PhD students from diverse backgrounds. As a mentor, I set up research plans according to their interests, meet with them weekly to manage their progress, and provide feedback to unblock them whenever they have questions. It is rewarding to introduce students to the field, help them develop their own interests and recommend them to people to continue the research journey. So far, we have published many joint works at top-tier AI conferences [1–9]. I recommend one of my mentees, Evan to a different lab project and he has published his second paper as a junior undergraduate student. My other mentee, Ryan, has also become a key member in a big project on education chatbots. One mentee commented that, "*(Weiyan) did an incredible job of introducing me to the process of doing research and NLP in general. Coming into the field with minimal knowledge, I never realized how many amazing opportunities were out there before getting the chance to work with her. I couldn't have asked for a better mentor!*"

Mentoring philosophy. Through my mentoring experience, I have developed the following philosophy.

1. *Show the problem-solving process*. I believe it is more important to show how to solve a problem than just giving the solution. For example, I mentored Xuewei, an undergraduate intern in our lab, on donation persuasion dialogues. The paper was initially rejected because the annotation scheme was not actionable to the reviewers. At first, we were unsure how to re-design the annotation scheme. So I suggested reviewing the literature on both dialogues and persuasion theory. Later I identified that our scheme was too broad, and not grounded in the dialogue setting, so we had to introduce dialogue-specific acts. Then we re-designed the scheme, re-annotated and re-analyzed the data, and rewrote the paper. The revised paper received the best paper nomination at ACL 2019 [9]. She told me that this problem-solving process taught her how to approach research problems independently.

2. *Personalize the research plans*. Students have different interests and backgrounds, and I always tailor their projects accordingly. For example, I worked with Evan and Chelsea on a privacy-related NLP project. At that time, Evan was more interested in privacy attacks, and Chelsea was interested in dialogues. So I assigned Evan to review the literature on privacy attacks, and shared papers and code on dialogue simulation with Chelsea. Finally, we combined our work into a paper [6], which was accepted by NAACL, a top-tier NLP conference. Students enjoy such a personalized plan. As one of my mentees commented, "*(Weiyan) always tried to make sure that the research aligned with my interests. I remember her specifically asking me about my interests before helping figure out a research plan which was amazing! made me excited to learn more about NLP. One of the best research experiences I've ever had! "*

3. *Mentor beyond research*. Being a mentor is also about supporting the students beyond research. For example, Chelsea asked me about the difference between being a PhD student and working full-time, and I gave her career advice based on my personal experience. In addition, during the pandemic, one of my students was living by herself and feeling depressed, so I invited her on a day trip and organized regular virtual social gatherings for people to share their daily life and support each other. Ryan also mentioned that "*I always felt like I could come to (Weiyan) for help if I needed it.*"

Group Structure. During my PhD, I greatly benefit from my supportive labmates. When setting up my own research group I also aim for an inclusive research environment with two initiatives: besides standard group meetings and research talks, I will organize 1) feedback sessions before paper deadlines so people can learn from each other, and 2) mentoring sessions within students so that senior students can gain more mentoring experiences and junior students can adapt themselves to PhD life more quickly.

3 Future courses

I am also excited to teach and develop courses. Given my background in NLP and dialogue systems, I am particularly excited to teach courses in these areas.

- *Natural Language Processing*: This course will be for senior and graduate students, including traditional NLP topics and recent neutral-based and prompting-based methods. Students will engage in lectures, guest lectures, homework, mini projects, and exams.
- *Dialogue Systems*: This will be an advanced course for graduate students, covering spoken dialogue systems, text-based task-oriented, open-domain and social influence dialogue systems, and state-of-the-art dialogue system building methods. Students will engage in lectures, paper reading, paper presentations, in-class discussions, and group projects.

Besides, I am also interested in (co-)developing a new course on *Interactive Learning*, which connects machine learning, NLP, and human-computer interaction to build next-generation NLP models with the ability to evolve. I am also interested in teaching other NLP-related courses and general courses such as *Machine Learning* and *Introduction to Programming*.

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