# TEACHING STATEMENT

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I regard teaching and advising students as an indispensable part of my academic career because: (a) I have lots of passion and feel enjoyable to share knowledge with students, which is meaningful; (b) As an educator, it is my responsibility to foster students' interests in computer science and cultivate the next generation of scientists and practitioners in the field, which is impactful; (c) Teaching and advising process can provide me with new insights in research through interactions, discussions, and collaborations with students, which is highly rewarding.

During my graduate study, I have served as a guest lecture or teaching assistant for several courses. I have given numerous talks and presentations at conferences, universities, and industry companies. I have also mentored a number of students in research. My background and experience make me well qualified and suitable for teaching a number of computer science courses and advising students of different levels. In the following sections, I will outline my teaching experience, mentoring experience, and potential courses to teach.

## Teaching Experience

My teaching experience started in Rutgers University where I was a teaching assistant for a number of computer science courses (e.g., Data Structures, Introduction to Computers and Their Applications). I worked on creating assignments, teaching in recitations, holding office hours for Q&A, etc. After entering University of Notre Dame, I took many opportunities to practise my teaching and presentation skills, including being a guest lecture of advanced computer science courses (e.g., Advanced Topics in Machine Learning) in our department, joining reading seminars in our research lab, presenting papers in conferences (e.g., KDD, AAAI, SDM), and giving invited talks in industry companies (e.g., Microsoft Research, NEC Labs America). In addition, I will also deliver a tutorial at SDM 2020 to introduce the comprehensive overview of a research area for researchers and practitioners in my research field. As an experienced teacher, I pay attention to the following major issues in teaching from different aspects.

(1) **Well prepared materials**. It is basic and essential for lecturer to carefully prepare lecture materials (e.g., slides, notes, codes). In all of my teaching experiences, I made slides contain right amount of well-organized content, which helps me convey the content effectively and audiences grasp the knowledge comprehensively. In addition, I like to share necessary materials online as convenient and useful references for students and peers. This is what I have done for a while since I always made my paper materials (e.g., slides, posters, codes) public in personal webpage. I received many thanks emails for this sharing behavior and feel happy to help many people in the field.

(2) **Hand-on experiences**. The hand-on experiences are important in computer science as most of topics are related to practition through programming. I would like to design some individual/group projects of the course to help students understand the content better and apply the learned knowledge to solve real-world problems. In addition, those hand-on experiences indeed improve students' problem solving abilities. Moreover, students learn to collaborate with others through those projects.

(3) **Interactive class**. An interactive class creates positive loop between the teacher and students. During lecture, I like to raise questions about ongoing content and collect feedbacks from students to adjust my pace, which in turn makes students digest the knowledge in time. For example, when I taught in advanced machine learning course, I always checked that everyone in the class understands the current content before going to the next part.

(4) **Online tools/resources**. Besides the in-class performance, learning out of lecture (e.g., homework) is critical for students. I encourage students to solve problems by themselves before asking others for help. I would encourage them to actively use online tools/resources for good purposes, such as Stack Overflow for raising technical questions, Coursera for studying related courses.

## Mentoring Experience

In the past few years, I have had the pleasure of mentoring and working with a number of students, including one undergraduate student, three M.S. students, and two junior Ph.D. students, for different research projects ranging from complex networks to recommender systems to network representation learning. These collaborations have resulted in several papers in prestigious computer science conferences and scientific journals. As a productive mentor, I believe the following principles in advising students from begin to end.

(a) **Provide freedom and flexibility**. The freedom and flexibility are important requirements to stimulate students' creativity and passion. I encourage students to do research projects which are interesting for them and make necessary adjustments to fit their strengths. I believe that students feel lots of passion in doing what they are interested in and suitable for, which further boosts their innovation and improves their work efficiency. It is my honor to work with some students for different topics and be productive.

(b) **Share knowledge and experience**. As an advisor, it is basic for me to share what I have learned with students. Students with little experience are likely to make mistakes or have no idea to move forward. I would like to provide hand-on guidance for those students and share my knowledge and experience with them during the entire project.

(c) **Participate in the entire process**. The full participation lets me know the technical detail and progress of the on-going project. It is essential for the advisor to provide students with necessary help and guidance during the entire project. In all of my mentoring experiences, I actively participated in the entire process including selecting topics, developing ideas, designing experiments, and writing papers.

(d) **Be the best support**. The road to success in research is full of stress, failure, and frustration. I would be the best support for students along the way. Most of my mentoring students met confusions in selecting topics or challenges in solving technical problems or rejections in paper submissions. Regardless of those setbacks, all of them eventually got papers accepted or offers from graduate schools for Ph.D. study.

## Potential Courses To Teach

Since my research involves knowledge in multiple areas of computer science, I am well-suited for teaching courses at different levels, ranging from introductory undergraduate courses to advanced undergraduate and graduate courses to graduate seminars, as illustrated by follows.

- **Data Structures and Algorithms**. (undergraduate) This is an important introductory course of computer science, which covers the basic data structures and algorithms. Students learn principles in designing data structure and computer algorithms, and practice their programming skills to solve various computational problems.
- **Data Science**. (undergraduate & graduate) This is a project-based advanced course which includes the main content of data science techniques. Students learn theories, methods, and applications of data science, and work on real-world data science problems through a number of projects.
- **Deep Learning**. (undergraduate & graduate) This is a project-based advanced course which includes main content of deep learning techniques. Students learn methods and applications of deep learning, be familiar with deep learning tools, and solve real-world problems by deep learning techniques in a number of projects.
- **Advanced Topics in Network Science**. (graduate) This is a seminar course which covers the major techniques and recent advances in network science research. The topics include: community detection, link prediction, information diffusion, recommendation, network embedding, graph neural network, etc. Students read literature, make presentation, and work on related projects. Students can better conduct network science research after this course.
- **Advanced Topics in Recommender Systems**. (graduate) This is a seminar course which covers the major techniques and recent advances in recommender systems research. The topics include: neighborhood based recommendation, factorization models for recommendation, deep learning models for recommendation, heterogeneous network/knowledge graph based recommendation, etc. Students read literature, make presentation, and work on related projects. Students can better conduct recommender systems research after this course.