TEACHING STATEMENT

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I enjoy teaching since it gives me an opportunity to have a positive impact on students' lives. This is a great responsibility and one that I look forward to taking on. My objective is to help students to succeed in their careers.

1. My Approach

My teaching philosophy is built from my own experiences, both as a student (graduate and undergraduate) and as a professional from my 8 years of working in industry. My main principle is that teaching needs to be based on real practical systems and concepts that have a practical value. I always try to create a positive and encouraging environment and consider students to be my peers. In 2017, I received a Harris Teaching Award for "Supporting Women in Computer Science" from the Computer Science Department at Purdue University.

1.1. Stimulate research and teach research skills to graduate students

Graduate-level courses are a good opportunity to invigorate research. My methodology is not only to cover the existing technologies and concepts, but also to analyze their pros and cons and to suggest students the ways to improve these technologies. This is especially useful for current hot topics, such as blockchain-based technologies, cybersecurity, and big data technologies. For example, in the "Distributed Databases" course I plan to cover blockchain-based frameworks and talk about their weak points. Research projects on improving the security and scalability of blockchain-based technologies have high potential to result in good publications and valuable job opportunities for students. I will help students to find and work on their own research problems. Since the majority of graduate students go to industry after graduation, my courses will have software development as a significant component, emphasizing best design practices from an industrial perspective. I will help students to make connections with experienced people from both academia and industry to invigorate joint research projects. It will help students to see the value of the course and will encourage them to gain skills.

I currently work with one graduate student in the research project on data privacy. My role includes clearly defining tasks, guiding research paper writing process, and helping with running experiments and debugging the source code. My goal is to help this student to publish research papers, write a good thesis, get a PhD and to have a successful career.

For the second consecutive year, I have been selected to be a mentor for the two incoming graduate students. I help them to select the research groups and projects that align with their experience and goals. I also advise them on how to fulfil the PhD program requirements in the Computer Science Department at Purdue University.

1.2. Prepare undergraduate students for successful careers

Undergraduate students may face many challenges with learning computer science subjects and time management. My goal is to encourage them, help them learn, and empower them to feel accomplished. Firstly, theoretical knowledge needs to be reinforced with projects and labs that cover each topic of the subject. Projects will be the essential components of my courses. My approach for labs and projects is to include the basic part that can be mastered by average students, and an extra part that contains challenging tasks for advanced students. During lab sessions, I help students to debug their code. In anonymous teaching evaluations, students gave very positive feedback for that. Some students from the "Databases" course, for which I was a teaching

assistant, told me that working on projects helped them with their job interviews. These are the important assessments of my success as a teacher and my commitment to deliver an excellent learning experience.

I enjoy teaching undergraduate courses and use an interactive teaching method with many live examples and code demonstrations. For example, in the database course, instead of just showing different types of SQL queries on slides, I prefer live demonstrations and ask students the questions "What will happen if we change SQL query in this way?" In addition to traditional relational databases, the course includes NoSQL databases (such as MongoDB), big data tools (such as Hadoop), and big data processing frameworks (such as Apache Spark). Knowledge of NoSQL databases and big data technologies will help students to be more competitive in the database job market. In the "Information Security" course, while explaining "Buffer Overflow" attacks, I would demonstrate the vulnerability in one of the Linux utilities and ask students to help me with fixing this vulnerability on-the-fly, rather than just explaining the concept on the slide and showing the memory layout. I believe this approach helps to keep the audience interested and motivated. It also helps me to identify capable students for my research projects.

I currently work with four undergraduate students on two research projects involving blockchain-based technology for secure data communications and targeted information propagation. My role includes clearly explaining and defining tasks, as well as writing and debugging the source code together. My goal is to prepare two of these students for a graduate school in computer science and to help them to get their first research publications. For the other two students, who do not plan to pursue a graduate degree immediately after finishing undergraduate studies, my goal is to prepare them for a successful career in a software development industry.

Teaching Experience

My first official teaching experience dates back to 2003 when I taught the "Industrial Control Systems" course for students pursuing a Master's degree at People's Friendship University in Moscow. In 2012, I joined the PhD program in Computer Science at Purdue University and became a teaching assistant in the "Cryptography" undergraduate course. I felt motivated to share with students what I was able to learn and achieve in that area. In 2015-2018, I was a teaching assistant in a graduate level course "Distributed Databases" and undergraduate courses "Information Systems", "Relational Databases", and "Data Structures and Algorithms". My responsibilities included designing, testing, and grading programming assignments and written homework, teaching lab sessions, assisting in creating and grading exams, and advising students during regular office hours and online. This experience showed me that each student learns differently and at different paces, through hands-on experience in projects and by communicating with their instructor and peer students. I have enjoyed the opportunity to teach lectures in large classrooms with more than 100 students. During my years as a teaching assistant, I always felt motivated to deliver an excellent learning experience and have had the invaluable opportunity to interact with a large number of brilliant students.

Teaching Plans

If I become a faculty member, I would love to teach the following courses, given my background and expertise:

1. Information Security
2. Databases
3. Cryptography
4. Data Structures and Algorithms
5. Information Retrieval
6. Networks

Furthermore, I can develop and teach a new course "Blockchain-based Technologies" that is missing in the curriculum at many schools. It will cover foundations of distributed systems, including concurrency control, commit protocols and failure recovery algorithms; permissionless blockchains (such as Bitcoin and Etherium); permissioned blockchains (such as Hyperledger Fabric); security and identity management in blockchain networks; and blockchain applications.