Teaching Statement of Alex Leykin

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My interests in computer vision and pattern recognition allow me to pursue insights in the cutting edge research in artificial intelligence and, at the same time, gain hands-on experience in core computer science and engineering areas such as signal processing, data structures, programming languages, and software engineering. I want students who take my classes to become enthusiastic about computer science and have a firm grasp of fundamental computer science concepts. My ultimate goal in teaching is to foster a new generation of computer science professionals who have excellent technical skills and a broader understanding of our technology-driven future.

Learning computer science is exciting, but it can be challenging. My approach to teaching depends on many factors including students background and size of the class, but as a rule I adhere to the principles of active learning. I believe that students learn better when they are able to take the initiative and establish their own pace of learning. My experiences as an associate instructor and as a lecturer taught me that even within a large classroom, when lectures are more suitable than group discussions or other learning activities, student engagement can be achieved through steady multichannel communication as well as the use of visual aids and real-world analogies that can generate quick responses from students.

In 2002-2004 I assisted in teaching several introductory classes including Mastering the Web, Introduction to Computing and Introduction to Scheme Programming Language. My responsibilities included preparing lab assignments with walkthroughs and examples, holding lab sessions, developing quizzes and short tests, providing individual help, and grading. To prepare better for my classes, I often took an effort to know more about my students and their experiences with other computer science courses. I participated in class e-forums and often engaged in discussions to help students to process the information they learned in class. I also spent a lot of time working individually with students who had no prior experience with programming. These sessions helped me to improve my translating skills, i.e., the ability to go back and forth between the highly technical computer science language and the everyday language.

The skills and experience I acquired as an assistant helped me in teaching my own courses. In 2002-2004 I have been teaching a Java programming class. I re-designed the course by adding new materials and developing new lab and test assignments. I created homework assignments so that they would be educational, challenging and entertaining. For example, one of my assignments asked students to implement a simplified game of pool. By working on this multistep assignment students were able to learn how to implement physical objects by using an abstract language, master the concepts of inheritance and event listeners in object-oriented programming, and enjoy the experience of programming something they can use and share with their friends.

Every semester I worked to improve the course structure to incorporate students feedback and new developments in the field. In addition to lecturing, administering quizzes, and holding extended office hours, I developed and maintained the course website, which served as a central information portal for the students. The website contained the most recent information about the course, links to external course materials, interesting examples and a forum for students to exchange information and ask for advice. Forum discussions allowed students to think over the information they learned, discuss it later with their peers and help each other in understanding the material. It also allowed me as instructor to clarify misunderstandings and address difficult issues in the next class. I am proud that tests demonstrate that each next semester of my teaching was better than the previous one in terms of students understanding of course material.

I consider teaching a vital part of my academic career, and I will welcome an opportunity to share my knowledge and discoveries with both undergraduate and graduate students, promote their creativity, and facilitate their understanding of computer science. I will be eager to participate in educating on core computer science subjects such as programming languages or software engineering. I will also be excited to collaborate in designing a class or to offer my own class in computer vision, image processing or artificial intelligence.