Teaching Statement

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Teaching is one of the most important activities of being a professor. While research lets one explore the boundary of knowledge, teaching provides a unique opportunity to share not only the knowledge and ability but also the way of thinking. I feel excited about having the privilege as a professor to bring positive changes to students and the society.

Teaching Plans

I am interested in teaching undergraduate and graduate classes in general fields of computer engineering. I am most comfortable teaching digital system and VLSI design, embedded system, and computer-aided design. I can also teach microprocessor design and computer architecture. My study and research field have prepared me well for these courses for both fundamental knowledge and cutting-edge methods. I am also interested in developing a series of non-conventional courses such as cross-layer reliability of computing system and machine learning accelerator. I feel there is need to teach classes that cross the boundaries of computing stacks as this can give students a complete picture of the computing system and the interplay of hardware and software.

Teaching and Mentoring Experience

I was a TA for Advanced Mathematics during my undergraduate. That was my first job ever. I helped the instructor prepare course materials and led several discussion sections among students. Although the tasks were relatively simple, I did feel the joy of teaching. During the graduate study in UC San Diego, I was a TA for class Microelectronic System Design for my advisor Prof. Rajesh Gupta. I designed and graded homework and projects, organized discussion sections and office hours, prepared and graded the final exam for the 40-people class.

As a senior Ph.D. student, I have been fortunate to mentor one junior Ph.D. student, one master student, and one undergraduate student, each with a different project. This has resulted in two publications and one paper in submission. During this process, I have found one of the most important things to mentor students is to keep effective communications with them. I do keep regular meetings with them but more important is to be available as much as possible with them to discuss their immediate questions and concerns. I enjoy brainstorming with students when meeting challenges and many solutions come out from this process. As a general approach, I let them take over the project gradually as they master and understand more background than me. This is also important in keeping them motivated and nurturing their ability.

Teaching Philosophy

My teaching goals are the following: I hope my students to learn not only knowledge and ability, but also the way of thinking through my teaching and mentoring.

First of all, I expect my students to obtain necessary knowledge. To this end, I need to keep them motivated and passionate about the class. EE/CS is a very practical subject, which can be linking to real-world products. I plan to tell the students what things they can do when they learn
the class well. For example, I will tell them they can design and implement a microcontroller for
the washing machine if they master the knowledge of embedded system well. In the first class of the
semester, I will provide this big picture to students and guide them towards this direction during
the semester through well-organized lectures and materials.

Apart from knowledge, I hope my students to develop self-learning ability. This is especially
important in the field of EE/CS where technology is rapidly changing. To this end, I plan to
design open-ended projects, encouraging them to explore solutions without constraints and use the
knowledge outside of the class to solve the problem. I also plan to promote the teamwork among
students by designing team-based projects. In this process, they can learn from each other and
strengthen the understanding of the knowledge by teaching each other. I will also interact with
them during the entire project phase and point out the possible materials they can learn and use.
The self-learning ability developed through this process is even more important than the knowledge
itself.

The most important thing that I would like to teach my student is critical thinking. In EE/CS,
as new technology is developed rapidly, some existing solutions might not be the optimal solution.
Thus, I will encourage my students to think critically upon learning anything new such as thinking
whether some conclusions still hold true under the new context. I will also design open problems
in the coursework and ask them to provide their opinions on the problem. The open-ended project
and coursework can also help promote their independent and critical thinking. For instance, by
asking the question of the best hardware platform to accelerate AI applications, students will learn
how to analyze and think the problems. I will also keep interacting with students and organize
discussion sections, office hours to engage in their discussion. I hope they can feel the happiness of
"discovering something new" and keep motivated.