Dongwook Yoon · Teaching Statement

Teaching is one of my primary motivations in pursuing a faculty position. As an educator, I am committed to promoting learners' intellectual development, which opens the door to life-changing opportunities for them. As a researcher, the practice of presenting basic-fundamental knowledge and working with students to master those concepts brings me back to the most fundamental and important research questions.

Education has always been an integral part of my academic career. During the four years of my undergraduate studies, I worked as a private tutor for high-school and college students and taught math, science, English, and programming languages. At Cornell University, I served as the head teaching assistant for introductory programming language courses where I have prepared myself in managing large size classes with more than 400 students. My duties as the head TA entailed leading 5 other graduate TAs and 46 undergraduate consultants, managing weekly laboratory sessions, running and grading programming assignments and three exams. I was recognized by the department with an accolade for my teaching excellence and received ***two consecutive outstanding TA awards***.

As an educational technology researcher, I also had a chance to identify practical problems in classrooms to which I provided technical solutions. For example, the major challenge of grading more than 400 programming assignments was maintaining the quality and consistency of the feedback. In order to normalize the grading criteria amongst the graders, I developed and provided the detailed grading rubrics along with an auto-grading software that generates a feedback template for assignment submissions.

Teaching

My goal in teaching is to arm the learners with the knowledge and skill sets to solve real-world problems. My curriculum integrates theory and practice, thereby enabling the learners to apply concepts to reality while understanding practical limits of the theory. The key to success is to nurture an interactive, creative, and collaborative classroom culture that eventually leads to the development of a learning community. To this end, I have mastered and applied several pedagogical methods including but not limited to the following:

Learning by doing. In my class, students get hands-on experience tinkering with code and data. In the lab session of the introductory computer science course, I have maintained the '*I don't touch your keyboard*' policy where the students have to write their own code completely on their own, and then I offer constructive feedback immediately. I found that such practices exercise their hands-on skills that they can readily utilize when facing a new problem in real world. I will apply this active learning strategy to my future courses and offer a constructive learning environment that provides students autonomy to follow their own curiosity.

Learning through interactions. I aim to establish a collaborative and critical culture that promotes interactions among students. I believe the instructor's job in peer learning is a careful curation of classroom culture to construct the sense of community among the students. For instance, in my TA office hours, students were encouraged to ask and answer questions freely with each other. I found peer learning is mutually beneficial, because the questioner gets a personalized feedback and the responder reflects on the concepts while teaching. My future class will employ a variety of interactive activities including peer feedback, class-wide discussion, and vicarious learning.

Learning from examples. Concepts learned from examples last long and stay strong, because a good example concretizes concepts into vivid reality. My instruction employs three different types of examples depending on the instructional intents. To help the learner to strengthen fundamental concepts, I provide a simple but interactive example that the student can play with and extend further; to debunk the student's misconception, I suggest a deliberatively erroneous example; to give a holistic view to the concept, I offer

a comprehensive set of examples that the student can compare and contrast with each other. To maximize the power of examples, I carefully listen to the student's inquiry to adapt the cases to the underlying instruction context and the learner comprehension.

Research Advising and Mentoring

Compared to the classroom teaching, it is more important to stimulate the intellectual curiosity of the individual students in research settings. My research mentorship is a ceaseless process of asking and answering intellectually challenging questions to the students. I have advised and mentored two highly talented and passionate students at MIT and Cornell University. Both projects I mentored were ***published as full-length research papers at top-tier human-computer interaction (HCI) conferences.*** I advised Venkatesh Sivaraman, a high school student intern at MIT-RSI, for a 3-month-long research project on designing and developing a novel transcription-based speech editing system. Impressively, as a high school student, Venkatesh's research resulted in a full paper publication at CHI 2016, a top-tier conference in HCI, with him as the first author. Furthermore, his study was elected as one of the top 8 finalists in a highly competitive research internship program called MIT-RSI. I also have mentored Ian Arawjo, a PhD student at Cornell University, for a full academic year. Ian's study on a voice commenting system for reducing speech anxiety resulted in a full paper publication at CSCW 2017, a premier venue in HCI.

Prospective Courses

As an experienced researcher, instructor, and mentor, I am a qualified candidate to teach interdisciplinary courses in both HCI and Computer Science for students with diverse backgrounds at both undergraduate and graduate levels.

Research topic classes

Interactive multimedia systems. To cover the latest research topics on multimedia contents (audio and video), platforms (interactive surfaces and virtual reality), and interaction techniques (e.g., touch, speech, and gesture). Through the lectures and class discussions, students will study theories from HCI, communication and psychology pertinent to interactive multimedia systems. In parallel, they will also design, prototype, and evaluate novel multimedia systems while practicing what they learned.

Education technology. To design, build, and deploy the core educational technologies. This project-based course will enable the students to prototype a new classroom tool, followed by evaluating the system upon deploying it to a classroom. Students are not only expected to learn the basic knowledge such as pedagogical theories, best practices, computational and methods, but also the practical matters in classroom deployments such as FERPA regulations, data privacy, and accessibility.

Introductory classes

Rich and Scalable Web Applications. To provide principles and practices of modern web technologies. After finishing the course, students will be able to design and implement interactive front-end web applications and scalable back-end applications. Topics also include web standards, accessibility, and security.

Interaction Design Studio. To understand the human-centered design process. Students will practice the iterative design process to set a design objective, explore design spaces, build rapid prototypes, and evaluate the design with users.

Research Methodology. To cover skills, theories, and best-practices of quantitative (e.g., experimental design and statistical analysis) and quantitative (e.g., sampling, observation, interview, analysis, and writing methods) research methodologies.