Teaching Statement - Ryo Suzuki

1. Teaching Philosophy and Experience

Teaching Philosophy: Teaching is not merely about providing information. As an educator and instructor, I place great emphasis on hands-on practical experiences over one-directional lectures. Classroom lectures provide a unique opportunity to help students gain experiences together to apply their acquired knowledge to practical problems. Thus, I believe in the importance of *learning by doing* approach, as it allows students to gain a deep understanding through hands-on practices. Based on this teaching philosophy, my goal is to provide engaging learning experiences that cannot be replaced with passive or online learning.

Teaching Experience: At the University of Calgary, I have designed and taught three senior undergraduate HCI courses. As an assistant professor, I regularly teach these three courses every year (two semesters).
1. CPSC 581 Human-Computer Interaction II: With over 60 students enrolled, this course offers practical training in human-computer interaction. It aims to provide both theoretical understanding and hands-on experience in key HCI methodologies, such as sketching, concept development, video production, visual communication, and rapid prototyping. Throughout the semester, students engage in four comprehensive projects, which are designed to acquire various interface design skills, including interactive web programming, smartphone interaction design, ML-driven user interaction, and hardware prototyping.
2. CPSC 599 Design of Mixed Reality Apps: This project-oriented course provides both a theoretical foundation of mixed reality research as well as hands-on experience in XR prototyping. With over 40 student enrollments, students first learn the history and the state-of-the-art XR research. We also provide hands-on programming sessions of WebXR and Unity, allowing students to learn how to design, prototype, and develop mixed reality applications.
3. CPSC 584 Human-Robot Interaction: The goal of this course is to design and prototype human-robot interaction. We provide students with various robots, such as robotic arms, robot dogs, robot vacuum cleaners, tabletop swarm robots, and social robots. As a group, students design and implement novel human-robot interaction by using these robots, then write a paper to report their findings.
4. Teaching Experience During My PhD: During my PhD at CU Boulder, I also gained teaching experience as a teaching assistant for Prof. Shaun Kane's *CSCI 3002 Fundamentals of Human-Computer Interaction* and Prof. Mark Gross's *CSCI 5002 Soft Robotics* classes. In particular, Soft Robotics course was unique in the way that we developed new soft robots and inflatable interfaces during the class. Leveraging my expertise, I helped with students' prototyping through my hands-on technical support.

Evidence of Teaching Excellence: The feedback from students on my courses has been very positive. For example, I received an average rating of **4.9 out of 5.0** for instructional quality at RateMyProfessors [1]. I also received overall ratings **from 5.9 to 6.6 out of 7.0** for *CPSC 581 HCI II* courses. In addition, my performance as a teaching assistant was also well-received, with a high rating of **4.6 out of 5.0** in my sessions, based on the Faculty Course Questionnaire (FCQ). Students strongly agreed with the course's usefulness (4.2 out of 5) and expressed high regard for my supportive and respectful approach (4.4 out of 5). Furthermore, several classroom projects have turned into peer-reviewed publications [4, 5, 6].

Curriculum Design Experience: At the University of Calgary, I had the opportunity to develop both a novel course and a new graduate program. I led the curriculum design of *CPSC 381 Creative User Interface Programming*, targeted as a new HCI course for first-year or second-year undergraduate students. In addition, I was involved in the new professional master's program of *Game Production and Immersive Technologies* at the University of Calgary. As one of the founding members of this program, I contributed to designing this new program, which is set to launch in 2025.

Towards AI-Enabled Education: A recent breakthrough in AI technologies like ChatGPT has sparked a complex debate about classroom use and its implications. In my personal view, it is important to harness the benefits of AI tools rather than excluding them. In fact, the quality of projects in my HCI courses has been significantly improved with ChatGPT, allowing them to focus more on important questions like *what should we make?*, rather than *how to make it?* As a researcher, I also actively explore the use of AI to enhance various aspects of education like presentations [6], interactive materials [2], and personalized feedback [3, 7]. I believe the appropriate integration of AI will significantly improve classroom education.

2. Mentoring Philosophy and Experience

Mentoring Experience: As an assistant professor at the University of Calgary, I have supervised and co-supervised **8 master's students, 22 undergraduate students, and 14 visiting students** in my lab. Note that all master's students are engaged in fully funded, research-oriented programs. In Canada, the graduate program typically spans 2 years for a master's degree and 3-4 years for a PhD, closely paralleling the 5-6 year PhD trajectory in the U.S. system. In addition, during my PhD, I also provided mentorship to 10 students across various universities. My mentorship covered all aspects of HCI research. In the *ideation phase*, I helped students in shaping compelling and feasible research questions through literature review and concept making. During the *prototyping phase*, I guided them in developing a *minimum viable product* for feasibility testing. In the *documentation phase*, my support extended to revising their papers and creating effective figures and videos.

Mentoring Philosophy: These efforts have resulted in highly successful outcomes. Since I became an assistant professor in 2020, my guidance has enabled students to publish **13 full conference papers** in prestigious venues. Notably, **8 of these are my last-author papers**, with all being led by undergraduate and master's students. These experiences have helped me formulate the following mentoring principles:
1. Give Concrete and Actionable Advice: Abstract and high-level advice is important, but can often leave students feeling lost and unsure of what to do next. In particular, junior students, like master's or 1st-year PhD students, often get stuck without concrete suggestions. Therefore, I always try to make my advice concrete and actionable, so that it can effectively guide their next steps and facilitate continuous progress.
2. Set a Clear Goal at the Beginning: Students can often lose their way without a clearly defined goal. To avoid this, we usually do the following two things at the very beginning: 1) drafting an initial paper to define the project's vision and contributions, and 2) creating a concept figure and video to visually illustrate the ideas. These steps are taken *before* any prototyping begins. This approach sets a concrete, visible goal that acts as a guiding star for the project, helping students stay focused on their desired goal. It also encourages the mindset of thinking, *"what would the ideal outcome look like if everything goes perfectly?"* This early stage of envisioning and planning enables us to sift through and prioritize our ideas effectively, avoiding the trap of investing time in less promising concepts.
3. Demonstrate, Rather Than Just Instruct: In my mentoring role, I emphasize practical demonstration over mere verbal instruction. This involves actively showing students the processes they should follow, such as the ways to revise a paper, techniques for shooting a video, methods to generate ideas, and strategies for rapid prototyping. Students can then learn effectively by observing the differences between their initial attempts and the methods I demonstrate. As their skills develop, I progressively step back, allowing them more autonomy to reach their objectives independently.
4. Encourage Them to Think Both Visions and Execution Plans: Ambitious visions are vital, but they can sometimes overwhelm students with their scope. On the other hand, students might become too myopic in immediate projects, losing the broader implications beyond the individual project. To address these challenges, I tailor my guidance to fit each specific situation. In the former situation, I often help them break down their ambitious goal into actionable steps for execution. Alternatively, when students are too focused on immediate problems, I encourage them to take a step back and consider the larger objectives. This is because I strongly believe that having both a high-level, grand vision and concrete execution plans are equally important. I train my students to have both of these elements, equipping them to thrive as independent researchers.

3. Proposed Courses

In addition to my current teaching portfolio, which includes *Human-Computer Interaction, Mixed Reality, and Human-Robot Interaction* courses, I am prepared to broaden my instructional scope to the following:
1. Creative Web Programming (Undergrad): Create interactive and creative interfaces with web technologies.
2. Physical Computing (Undergrad): Develop hardware prototypes with physical and tangible computing.
3. AR and AI (Grad): Explore and develop AR interfaces by leveraging state-of-the-art AI technologies.
4. Human-AI Interaction (Grad): Design human-AI interactions based on a survey of AI and HCI research.
5. Technical HCI Research Methods (Grad): Teach research methodologies for writing technical HCI papers.

References

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