Teaching Statement
Jeffrey Pang

During the course of my graduate studies at CMU, I worked as a teaching assistant for an undergraduate networking class and a graduate networking class. For these classes, I designed major class projects, regular assignments, and exams. My responsibilities also included recitation sessions, office hours, several lectures, and administrative duties such as grading. During my undergraduate studies at U.C. Berkeley, I also held regular tutoring sessions as part of the Computer Science Honor Society. I do not claim to have a wealth of teaching knowledge by any means. Nonetheless, in addition to these experiences, my numerous collaborations and talks for general, industry, and academic audiences\(^1\) have allowed me develop an ability to effectively communicate technical ideas to people other than my immediate peers.

In the future, I would enjoy teaching core programming, operating systems, and networking courses. I also have the expertise to teach more advanced topics such as wireless networking, distributed systems, mobile computing, and applied security. In particular, my unique research background enables me to teach a course on network games and systems for virtual worlds. Above all, I have a voracious appetite for learning so I expect to accumulate the knowledge and experience to teach more subjects in the future. During my experiences thus far, both as a teacher and as a student, I have identified several high-level principles that I plan to incorporate into my teaching style. I outline three of them here:

**Course design should be evolutionary.** I have been at both ends of courses that dramatically redesigned major parts of the curriculum. For example, during one of my teaching assignments, we designed a completely new, major programming project. While we were well prepared ahead of time, many students misinterpreted parts of the assignment and this went unnoticed for some time, ultimately increasing the workload for the teaching staff and the students. Sometimes significant change is necessary, but it is better to be upfront with students about its experimental nature and to partition it over multiple semesters, if possible. For example, it is sometimes permissible to let students “opt-in” to experimental (but more exciting) alternative projects, in order to gain real experience before deploying them on an entire class.

**Instructors must also practice and learn.** Though this principle is a cliché, I have been the student of many new instructors who try, and fail, to teach in an off-the-cuff manner. Though my own experiences giving talks, I have developed a standard practice routine and an ability take to heart (even encourage) harsh feedback. In addition, by listening to feedback I have learned my weaknesses — I sometimes speak too fast — and my strengths — I make good visual aids and use them well. I learn from other sources as well. For example, anonymous student feedback has improved my teaching style and I would like to incorporate it regularly in classes that I teach.

**Assignments should involve running code.** As a system builder, I believe that running code is the benchmark for success. As a teacher and a student, I believe running code helps illustrate theoretical ideas because the process of getting code to work (i.e., debugging) provides immediate feedback about incorrect mental models of algorithms and data structures. In the extreme, running code can even check theoretical proofs, giving students concrete tools to debug incorrect proofs. For example, through the programming language courses at CMU, I have developed an affinity for strictly typed functional languages such as ML because one can often read compiler errors as errors in algorithmic design. More generally, I believe in using computer assistance to help students understand theoretical ideas.

Finally, as a senior graduate student, I have enjoyed being a mentor to junior graduate students. For example, I helped guide Xinyu Zhang’s masters thesis on multiplayer game measurement and developed a role for him as a co-author in one of my SIGCOMM publications. These experiences showed me that I have a number of non-technical skills that I can also pass onto junior students, such as methods to write research papers that focus on the larger picture rather than documentary details and ways to integrate research with coursework and internships. I look forward to building my own research group.

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\(^1\)See my research statement and CV for examples.