

Teaching Statement for Theophilus Benson

I value new opinions, new points of view, and ultimately I value sharing my knowledge. It is precisely because of these values that I believe that I am a perfect candidate to pursue a career in academia. To illustrate these values, at UW-Madison, I helped create the syllabus, assignment, homework, and tutorials for an advanced graduate networking course; the first in the nation to use Software Defined Networking. Given that this is a nascent field, the task of compiling a syllabus consisted not only of presenting the students with informative ideas but often trading more concrete ideas for thought provoking ideas. The task of introducing these Software Defined platforms to the students was made even more challenging by the mine field of platform bugs and documentation inconsistencies that the students had to navigate through to become adept at using these platforms. As the TA, I had to develop ways to translate my experience with the different platforms into informative tutorials and hands on projects without trapping the students in the mine fields. In addition to designing the syllabus and grading assignments, I taught all lectures on cloud computing and data centers for this course and several other graduate level networking courses at UW-Madison. As a member of the local break dance club at UW-Madison, I held weekly classes to teach beginner students the basics of dancing. Much like designing the class on Software Defined Networking, teaching novice dancers involves breaking the dance steps down into elementary concepts and relating these to the students in parts and ultimately building on these parts.

In addition to sharing and educating, teaching provides unique opportunities to mold and nurture students through various advising techniques. Over the last few years, I have been privileged to work with and observe a great advisor and several great managers. In working with my advisor, I learned how to actively broaden a problem and ultimately its solution space by expanding the research question beyond a specific protocol or architecture to its depending systems and by looking beyond the current limitations of a network to possible future limitations. From my mentors, I learned how to enrich an idea by being an insightful sounding board that highlights parallels to related works and aggressively questions hidden assumptions. In mentoring my own students, I intend apply these techniques to guide their growth and progress.

As a member of your academic staff, I would like to redefine introductory networking courses. I have observed the introductory networking courses at several academic institutions, and I believe that while all do a fantastic job of introducing the students to networking theories and concepts, the assignments are disconnected from the concepts and offer little insight into networking theories. Sockets programming, writing an IRC-client, or developing a web-server does little to further a student's understanding of concepts such as routing or congestion control. If given the chance, I would like to redefine introductory networking courses, more specifically the assignments and projects for these classes. I believe that designing the assignments around Software Defined Networking will allow students to become intimately familiar with the inner workings of the lower layers of the protocol stack. For example, writing a simple module that controls routing for the OpenFlow platform, a software defined switch, will allow students to become reasonably familiar with ARP, MAC learning, and ultimately IP forwarding. I can easily craft similar examples to familiarize students with concepts germane to other portions of the protocol stack.

In addition to redesigning undergraduate networking, I would like to offer courses on cloud computing and on the design of the future Internet using Software Defined Networking both of which are topics that I am extremely passionate about. Aside from my personal passion, I find that both areas are extremely important to the future of networking. As such, it is essential to introduce our graduate students to the relevant research problems and to provide our undergraduates with the opportunity to craft novel applications for the different

platforms. Given the success of the Software Defined Networking course that I helped develop at UW-Madison, I believe that similar courses will be equally as successful. Finally, my academic and research background qualify me to teach other courses such as introductory programming, data structures, networking and operating systems.