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Teaching Statement  
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## Teaching Philosophy

My uncle tried to teach me how to count in binary as soon as I learned my twos multiplication table. He verbally told me about ones and zeros and how they applied to the multiplication table I just memorized. I was lost, but my younger sister immediately started counting in binary. Then he drew some pictures for me and I slowly started understanding it. Finally, he had my family stand in a line and assigned us each a number that was a power of two. We took turns raising our hands and calling out our assigned power of two number. Binary counting clicked for me while participating in this exercise. For the next few weeks, I excitedly taught my classmates how to count to 31 on one hand.

This is one of many experiences that has shaped my philosophy of teaching. Everyone has a preferred learning style - my goal is to combine teaching styles that cater to the visual, active learner like myself and the verbal, global learner like my sister with techniques recommended by researchers [2]. My classes will begin with high level goals for the class period and then have a mix of lectures with visually exciting examples and periods of reflection, discussion, or an application of technology by programming. My examples will draw from cutting edge research in the area to show students how research and education coexist.

## Class Structure

I have created many presentations for laboratory exercises and classes while I was a teacher assistant and student. In both cases, the professors appreciated the visual examples I created and asked permission to use the presentations in future classes. Research has shown that students retain more information about a topic when they actively apply the concept learned [1]. I will engage the class in a discussion about concepts, use technology such as voting remotes (e.g. EInstruction) to see how the class understands the material, or use shared editors, such as GrewpEdit [3], to program examples in groups. These mini interactive sessions can help students collaborate and learn more information together [4].

My class assignments will teach students how to identify and create abstractions while emphasizing problem solving. I will design assignments during the course of the semester that give equal opportunity for students who are strong in theory or systems to shine. For example, in a computing theory course I took, we had an equal mix of theory and programming assignments (e.g. create a program that reads an input string and automata description and tells the user if the string is accepted by the automata). I would also like to define modular coding assignments where students program a small part of an assignment and then trade their code with another student to finish the assignment. I think learning how to comment code, write documentation, and read other people's code are important skills for computer scientists.

Each advanced undergraduate and graduate class will have a large project where I can teach students how to do research, where to look for articles, how to read articles, decide on metrics, and evaluate results. Students will work on their collaboration, written, and oral skills. Undergraduate

research is very important because it can motivate students to actively explore a subject area on their own. It is also a great way to get students interested in advanced degrees in computing.

## Diversity and Outreach

I would also like to continue my work in outreach programs and diversifying computing. I strive to not only make myself a better researcher and teacher, but also make my community (computing, local, and national) a better place. I have been actively involved with the ACM's Java Engagement for Teacher Training (JETT) Program at Indiana University for the last three years [6]. JETT is a two-day workshop for high school teachers to learn about Java, pedagogy, and diversity. I led sessions about diversity in computing for the first two years. My sessions were always highly favored in reviews by program participants.

I am one of the founding members of the Women in Computing group at Indiana University - Bloomington (WIC@IU), a group that provides support and information to further enhance the education of women in computing at Indiana University. Underrepresented groups, such as women, need to know that they are not alone in their major despite perhaps being the only woman in their class. To this end, I have organized WIC social events, additional undergraduate advising meetings, and recruiting events.

In addition, I co-created *Just Be* - an interactive presentation sponsored by WIC@IU. The goal of *Just Be* is to help break common stereotypes about people in computing and teach K-12 students about exciting fields in computing [5]. I am currently collaborating with faculty members at Purdue University to create a presentation similar to *Just Be* to target Indiana high schools.

## Classes

I would be interested in teaching courses in the following areas:

- *Usability and Field Study Methods* - a course that teaches students about how to conduct usability studies in laboratory settings and in situ. Students will practice mock studies in each environment with example software. This course will include my research work about user studies in non-traditional environments.
- *Assistive and Performance Support Systems* - a course that explores the design and development process of assistive and performance support systems. Students will develop a system for a specific user group.
- *Big Ideas in Computing* - a course for first year students. Many undergraduate students major in computing without knowing what they can do with their degree or knowledge base. This course will give students some insight into the possibilities of computing and emphasize the skill sets needed to specialize in these fields.
- *Diversity in Computing* - a course for undergraduate students where students learn about why diversity in computing is needed and what methods have worked for recruiting and retaining students in underrepresented groups. Students will design and create an outreach project for K-12 students and evaluate their project in local schools.

In addition to teaching the core computer science classes, I would like to teach introductory courses in HCI, interface design, and ubiquitous computing.

## References

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