Anupam Guha aguha@cs.umd.edu
http://www.cs.umd.edu/~aguha • Department of Computer Science, University of Maryland, College Park, MD 20742

Teaching Statement

Over the last five years of being a Teaching Assistant, mentoring undergrad students in their research, and counselling undergrad students for their careers, especially when it comes to graduate study, I have come to the conclusion that it feels good to make someone who doesn't know anything about my research, to be interested in research. This realisation has a lot to do with my decision to join academia. I would like to be an effective teacher not just because I like teaching (I do!) but also because I want to inspire many undergraduates to take up research, to find the love of doing science like I did.

Experiences as a mentor

In my second year of PhD at University of Maryland, my advisor Dr. Yiannis Aloimonos invited me to co-mentor along with him and another graduate student, a group of five undergraduate students as a part of the Gemstone Program. Gemstone is a four year multidisciplinary research program for undergraduates here, and feeling intrigued I accepted. The five undergraduates, Emily Cheung, Chris Lim, Sharise Marshall, Chris Purdy, and Christina Winkler, were a mix of psychology and computer science majors who wanted to make a computer game to help parents learn parenting techniques. For me this work was a lot more than being an advisor-collaborator, it was also an enjoyable learning experience. I would mull ideas, help them code, point out new developments in the field, help them with academic writing (and that is a skill best taught early), organise logistics for them, and finally helped them write their thesis. Over the years, I grew as a mentor and learned many skills. I am honoured that even after graduating these five people have stayed in contact with me. One person among the five even decided to go for a PhD degree.

Experiences as a Teaching Assistant

In my PhD till date I have led recitations in nine courses, generally as a teaching TA as opposed to a grading one. I have taught both basic level courses (Java, C), intermediate courses (Image Processing), and one graduate level course. My teaching has substantially improved over time. When I started teaching in my first year, it was challenging as the cultural differences in teaching between my home country and here were stark, for example, there was no concept of "attendance" or roll call, and no compulsion on the students to even listen to what you are saying. My first year was a growing experience and I'm glad I started with teaching instead of grading. I learnt in that time how to hold the attention of students, how to make interesting drawings or use animations to keep them engaged (I generally do not like bland text heavy slides), how to frame problems in pop culture (Game of Thrones always seems to work) to make them respond, etc. I learnt to be an active rather than a passive instructor who would challenge students to come up with their own solutions. As a TA, I had to spend a considerable time meeting the students one-on-one in office hours. And these office hours were a great learning experience for me. In time it becomes possible to discern which students are eager to learn and who just want to conveniently get answers, and moreover how to make them learn too. Students are also very different, each learns in their own manner, and makes their own kinds of mistake, and I learnt how to account for that. Some students think visually and some do not and it is important to present concepts to them with clarity. Often students will not ask you for help even as they struggle and it is important to catch these signs early. Also, in many office hours sessions students would ask me advice about their future, if they should think about graduate studies, etc. Some would ask me about what I work on. The evaluations I got from my students are in Table 1.

	CMSC131 Fall '15	CMSC426 Fall '14	CMSC132 Spring '14	CMSC132 Spring '13	CMSC131 Fall '12	CMSC216 Fall '11
TA treated students with respect.	3.31	3.41	3.27	2.53	3.48	2.94
TA was well-prepared for class.	3.31	3.28	3.27	2.63	3.48	2.53
TA was an effective teacher.	3.38	3.21	2.67	2.21	3.40	2.18

Table 1: My student evaluations as a TA (on a scale of 0-4)

I think researchers should keep on teaching for their entire career. For me the languages I had forgotten to code in over time became sharp again as I was forced to teach them, and learn new languages/technologies too, my code

whose style had gotten sloppy in research again had to look perfect, because I was setting an example, and moreover I relearned patience, the most important quality as a researcher. I think the sign of a good academic is one who can describe their work to a first year undergrad in simple sentences.

Outreach

I, being the first student from my alma mater to do a PhD outside India, was invited by them in 2014 to give a talk to hundreds of undergraduates on the potential of an academic life, in which I explained to them what research entails, how can they go about finding out their favourite sub areas, how they can find academic papers to read, and what resources exist for them to learn. I was invited again there to give a talk on AI and introductory machine learning, and after I was done I was inundated with emails. I am glad to say that in the next two years many students from there went for graduate programs, some of whom I closely helped to choose their research projects. I intend to keep doing this as time allows and help as many undergrads possible to explore the possibilities of a future in academia.

Plans

I would like to use my area interests and the skills learnt as a TA to teach an undergraduate and a graduate course in either AI or computational linguistics, whichever is offered. As I have taught both low and mid level courses I have an idea of the requirements in course material such a course need. I would also like to create, if a course like that doesn't exist a graduate course which combines computer vision and computational linguistics as I think this is the direction future AI researchers should think about, an interdisciplinary broad view of AI. In that course I would like to incubate research which combines low level vision and high level knowledge from NLP, and the course would be designed around research projects which allow students to submit a conference paper by the end of the semester.