

Teaching Statement

Gopalakrishna Reddy Tadiparthi

I enjoy teaching computer science because I am excited to share and discuss the several exciting innovations in computer science.

Teaching Philosophy

I strongly believe in empowering the students with the skills necessary to understand and do research in computer science. Figure 1 illustrates a proposed learning model based on my experiences as a student, a teacher, and a researcher. There are four different stages of pedagogy that I refer to when teaching a course in computer science.

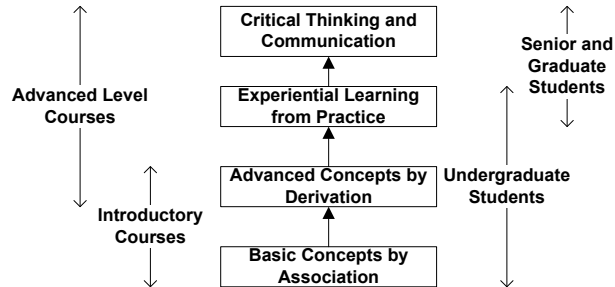


Figure 1: A bottom-up approach for learning process

Firstly, as a student, I learnt the fundamental concepts by associating with a known metaphor. The following is an example of a situation that occurred during one of the lectures I gave to a Social Systems Modeling and Simulation class. I introduced the concept of Queueing theory with the metaphor of a local grocery store (Smiths). This approach proved to be effective as I later found that the students were able to grasp the standard Kendall's notation in Queueing theory quickly by visualizing the supermarket.

Secondly, as a student, I solved complex problems by analyzing simpler solutions. I have used this technique to train my students. For example, when teaching formal proofs in an Automata Theory lecture, I taught the students to systematically break down a mathematical induction proving technique. As a result, the students, who were earlier wary of proof by induction, enjoyed the technique of proving by mathematical induction.

Thirdly, as a teacher, I believe experiential learning increases the problem-solving skills of a student. For example, when explaining an Iterated Prisoner's Dilemma (IPD) problem, I encouraged all students to participate in a repeated IPD game. I recorded each student's strategy and showed the cumulative payoff table on the display board for the whole class to view. The students were at awe to look at the convergence of a particular strategy (Tit-For-Tat) of the whole group. After the lecture, many students personally mentioned that they preferred such a teaching style.

Finally, as a researcher, I believe that critical thinking and communication are necessary for innovation. I implement this practice in my class by encouraging the students to publish a paper in a prestigious conference proceeding or a journal instead of a term-paper. In future classes, I plan to introduce the students to articles in ACM/IEEE transactions.

Experience

Please refer to <http://www.nmt.edu/~gopal/SSMS> for a sample course website. I have taught two courses to undergraduate and graduate students: "Social Systems Modeling and Simulation" and "Applications of Artificial Intelligence techniques to business."

I have been a teaching assistant for core computer science courses such as Formal Languages and Automata, Computer Architecture, and Operating Systems Lab.

Future Teaching Plans

I plan to develop two courses related artificial intelligence and multi-agent systems. The first course will be a fundamentals course that will present both undergraduate and graduate students with a good understanding of the basic concepts in AI.

The second course will present the latest research trends in multi-agent learning. At graduate level, I would be interested in teaching social systems modeling and simulation. I am equally interested in designing a graduate seminar on topics in advanced artificial intelligence techniques, which will cover issues related to *data mining*, soft computing, machine learning, multi-agent systems, and *information security*.