

TEACHING STATEMENT

Evgeny Karataev

Reflecting back at my time during my PhD studies, I realize that as much as I like to do research and develop new systems, I get no less amount of satisfaction from teaching and interacting with students. Finding new ways to explain a material to students and see them getting it is the incomparable experience.

I've had an honor to be a teacher at the University of Pittsburgh (Pitt). I taught a graduate course on database management (INFSCI 2710) in Summer 2013 and a graduate course on advanced topics in database management systems (INFSCI 2711) in Spring 2015. In addition, I was a teaching assistant for INFSCI 2710, INFSCI 2711, and three more courses (undergraduate and graduate level) throughout my 5 years at Pitt holding regular office hours, doing lectures and laboratory classes occasionally. Overall, I have interacted with 485 students. Lastly, I have developed a 3-hour lecture on storing and processing big data that was incorporated into a new data analytics class taught by a senior professor.

Besides ensuring that students understand foundational concepts and developing students' problem solving strategies, my learning goals as a teacher include (1) teaching students to work collaboratively and (2) developing their communication and presentation skills. I believe in learning through doing. In all my courses I focus on giving students the opportunity to form small teams and develop useful computer systems. While I enjoy lecturing, I believe that challenging projects inspire them to learn, make class material more interesting and let them obtain hands on experience not only on the subject matter, but also on how to be a good team member. Finally, without good communication and presentation skills students are simply not marketable. Thus, in all my classes I have a writing and oral communication assignment.

In INFSCI 2710 class, besides regular weekly individual assignments, students formed small groups of 3 people to work on a term-long project. They had to come up with a project idea (I was always there for help), develop a real system and then demonstrate it to the whole class at the end of the semester. In INFSCI 2711 class, the whole class was working on one project to develop large scale distributed system while being split into 8 teams focusing on specific part of the system. Thus, students learned how to manage a large project on a micro and macro levels. They had to learn how to communicate within their small teams and at the same time coordinate with other teams to ensure that the whole project is successful. Every lecture I devoted some time (about 10 to 15 minutes) to let students discuss their progress and bring up and resolve any issues. While at the beginning of the semester I was not sure about the successful outcome as the teams seem to be lacking good communication and integration with each other, by the end of the semester, all teams learned to coordinate and the whole class was able to demonstrate a working system.

To engage students and get them excited about learning new concept, I always bring examples on how the subject of a lecture is used in real life, e.g., which large and well known companies use that knowledge. I motivate my students by giving them challenging but interesting assignments and make them research on state-of-the-art in our field. In INFSCI 2711 class, every week a group of 3 students demonstrated a state of the art technology that they were excited about to the whole class and then held a short Q&A session on it. Thus, our lectures were structured by not only me passing textbook content to them, but also included interesting and vibrant discussions in which whole class participated.

I involve many students in my research work. I have directly supervised and mentored about 60 master students. We worked together side-by-side in a more colleague-like environment rather than supervisor-subordinate style where we learned together and from each other. Many of those students were able to get good job (e.g., in Google, Amazon, Symantec) or went for PhD studies. Here is one representative feedback from Xiaolong Xu:

“We worked together on Col*Fusion project for about half a year in 2014. I really appreciate the kind help Evgeny gave to me. At the very beginning, I had a lot of stuff related to the project need to learn and he was so patient and kind to help me and guide with all my problems. His hard work, solid technical and leadership skills helped our team and our project make progress day by day.

I’ve had several jobs here in United States, but I’ve to say Evgeny is the BEST mentor ever! I really enjoy the time I spent with him in the lab, I’ve never felt that coding hour after hour, day after day was such an interesting and happy thing! It was really unforgettable experience to work with him. And I do wish I could have a chance to work with him again in the future!”

The projects that I give to my students to work on are sometimes more difficult than what they are trained up to. However, I make sure that none of the students feel left alone, stuck and helpless. I am responsive to emails, hold regular office hours and encourage students to help each other. I use piazza online system (piazza.com) for students Q&A in which students can post their questions and answer other student’s questions. At the end of the semester the most active students get some extra credit to their grade.

I strongly believe that one of the best ways to learn something is by teaching it to somebody else. While at Pitt, we developed a novel social educational framework – Self-Adaptive Learning through Teaching (SALT) – that allows students to be actively involved in both learning and teaching processes via social interactions. As part of this learning-through-teaching approach, students learn from the content created by their peers and are directed to contribute their own content that reflects their preferences and backgrounds. SALT adapts to individual student needs based on collective learning experiences. As more learning-through-teaching experiences are accumulated in the SALT database, SALT users and content items are grouped around similar performance profiles. After that, SALT discovers the most productive learning pathways with respect to a particular group of users and their performance profiles. We evaluated SALT prototype in both undergraduate and graduate database classes at Pitt. In total there were about 660 students, who created about 490 lesslets (small lessons) in 40 different topics. Overall students left about 60,549 activity records which include information about students taking lesslets and tests, leaving comments and likes, adding each other as friends and communicating with each other. The results that we obtained were encouraging. They demonstrated the high potential of SALT as an advanced educational social network. In student evaluation also proved our impression as one of the students wrote:

“Having me create a lesson for someone else to look at was a really effective way for me to learn a subject.”

In my teaching role, I will look forward to apply the experience with SALT to new students.

Overall, I believe I am a patient, demanding and fair instructor.