

Fun and Games, University of Chicago Style

New Game Construction Class a Rousing Success

Fun and games were in the air this spring in Computer Science Professor John Reppy's class, Game Construction, a new class teaching software engineering through computer games. The CSPP/College course offered upper-level computer science students the opportunity to turn their knowledge of graphics, physics, networking and AI into a playable computer game in one short quarter, bringing in field experts such as Alex Seropian, creator of Halo and founder of Wideload Games to demonstrate their work in related topics.

How did games end up in the curriculum at the school where fun comes to die? Prof. Reppy points to the high level of sophistication and complication involved in computer games.

"Computer games from a computer science point of view are interesting software artifacts because they embody a lot of cutting edge products like, graphics, AI, and networking databases. So the computer gaming course was designed to be a software engineering course, but the topic is one that students find interesting and fun," he says. "We could come up with a boring computer engineering course. But gaming provides room for imagination."

Says Peter Thorson, "This class really helps you take all the individual things you've learned, and work with a group of other people and build it into a large project which you have to design together and work together without killing each other. And, this software engineering brings you closer to building real systems."

The class required such a high level of programming sophistication that originally, Prof. Reppy only intended the course to be for CSPP masters students, but eventually backed off and decided to co-list the class and include undergraduate students. Recently graduated student Patrick Lange commented glibly, "I think that he's planning on upping the pre-reqs for the class."

The 15 CSPP and Computer Science undergraduates teamed up in groups of five to program a racing game. The entire class wrote and shared certain elements of the code, for example, the parts representing the racetracks, but for the most part, the students retained control and responsibility for their games. "Sometimes in CS to fit everything in a quarter, they give you 90%. In this, besides the libraries, it was all written by us from the ground up and we had something that worked because it was written that way."

In addition to the group project, the students also undertook an individual project further exploring a gaming-related topic that they found interesting. Some students looked at pathfinding, AI, or networking, while others took a more light-hearted approach: one student worked on developing AI for robot brains to use for robo-wars, a game which pits robots against each other in a fight to the death.

In class, Prof. Reppy focused his lectures on AI, physics simulation, and networking, skimming over many of the graphics topics because most of the students had previously taken his course on the subject.

In addition to the normal class lectures, four guest lecturers presented talks on subjects related to gaming. The headliner of the quarter was Alex Seropian(S.B. 91) of Wideload Games, and more famously, the developer of Halo, who returned to his Alma mater to demonstrate his newest-then unreleased-game Hail to the Chimp and discuss his game design strategies. Other lectures discussed Python scripting language, how to scale up multigame players, and audio work.

For Prof. Reppy, this was a chance to have a participative and interactive classroom. "The idea was to have the students participate much more in the class. Most CS classes have been lecture style; I was trying to get away from that," he said. "We had a lot of presentations by the students...the idea was to have lot of opportunities to have the students say this is where we are, this is what we're working on and try and foster participation. On the whole I think that worked well. I expect to teach it again and I'll try and do [student presentations] more on a more regular schedule."

Students agreed with Prof. Reppy's assessment that the class went well. Says recently graduated Peter Thorson, "It was fabulously fun. This class was basically like a playground to use a lot of the networking, a lot of software construction, and AI we learned from other classes. And, we can show our friends. They're not so impressed by the router they build in networking."

Prof. Reppy's favorite part, he says, was "Watching the students give demos. The first time, they spontaneously started showing stuff. I hadn't expected anything. This was early, a few weeks into the course, and already they had visuals on the screen. The demos were a lot of fun, that's where we could see the enthusiasm."

Peter Thorson said that the real joy in the demos was the relief that it worked. "Just seeing the thing work at the end was enjoyable. Seeing it at the end, and it was playable. "