

## Video games, from scratch

**UMBC is helping students find worlds of virtual daring -- and a job**

By Chris Emery, Sun reporter

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**Eric Jordan, a game developer for BreakAway, does a demonstration with UMBC student Maria Aliprando. (Sun photo by Gene Sweeney Jr. / April 8, 2008)**

Once upon a time, in the countryside west of Baltimore, a council of elders issued a challenge to a motley crew of apprentice conjurers. In just five weeks, they would have to master battle strategy, hand-to-hand combat and dragon-hunting. Learned well, these skills would help them best their adversaries in their quest for the ultimate treasure:

A career developing video games.

"This is a very competitive industry," Eric Jordan told the students gathered in a classroom at the University of Maryland, Baltimore County. "There are lots of smart, energetic people looking for jobs."

Jordan, a game developer at BreakAway Inc. in Hunt Valley, was guest lecturer in Anatomy of a Video Game, a class UMBC offers as part of a formal academic track in video game development that started in the fall.

With yearly game sales rivaling those of movies and music, many undergraduate institutions now take the discipline seriously. Nearly 400 U.S. colleges -- including MIT and Carnegie Mellon -- offer formal training in game development, from elective courses to full-blown degree programs, says Game Career Guide, a Web site for aspiring developers.

Making a living by creating video games -- virtual worlds inhabited by wizards and warriors -- may sound like a 13-year-old's pipe dream.

But as computers, Xboxes, PlayStations and Nintendo game consoles proliferate and grow more complex, game development calls for teams of dozens of producers, programmers and artists.

That has created lucrative job opportunities for college grads; the average developer's salary was \$73,000 last year, a survey released this month by Game Developer magazine showed. And the industry is growing fast. Computer and video games sales in the United States reached \$9.5 billion last year, triple what they were in 1996, according to the Entertainment Software Association.

The UMBC program bridges the gap between right brain and left -- teaching computer science and visual art majors alike the arcane techniques used to create virtual worlds.

"Using SLERP on quaternions is the best way to avoid gimble lock," Jordan advised at one point, referring to complex algorithms and equations -- drawing knowing nods from the computer jocks and baffled stares from the artists in the room.

In the past, game producers relied on a few grizzled gaming gurus (if anyone can be described as grizzled at 25) to teach apprentices, said Jason Della Rocca, executive director of the International Game Developers Association. But as consoles and computers have evolved, publishers have scrambled to find talent to match.

"Twenty years ago, a game was made by one guy, or two or three people," he said. "There were no books, there were no Web sites, there were no degree programs. But the mentor model doesn't produce enough new talent. The games you see now take up to 200 people to make. You need a more institutionalized pipeline of training developers."

Although vocational schools lead the way in issuing certificates in game development, universities have decided it's their turn to play.

"Students are demanding these types of programs, and schools are listening," Della Rocca said. "These classes do well in terms of filling classrooms."

In many ways, creating a video game is like making a movie. Development teams include designers, producers, artists, programmers and sound engineers.

The game designer acts much like a scriptwriter, generating the idea behind the game and developing its story line.

Producers manage the day-to-day creation of games based on the designer's vision.

Artists and programmers do the brunt of the work, with a typical ratio of two artists for each programmer. The artists serve as set and wardrobe designers. They shape, shade and texture the characters and their environment.

The programmers are choreographers, setting forth algorithmic code that breathes life and movement into

the artist's creations.

Another Hunt Valley game company, Firaxis Games, employs about 25 programmers and 40 artists. Its success is based on Civilization, a popular franchise developed in 1991 by Sid Meier, the company's creative director and a gaming legend.

"When guys like Sid got started, it was something they did as a hobby," said Barry Caudill, Firaxis' executive producer. "As the games get more complex and more real looking, it takes a lot more artists to sell it to audiences."

Marc Olano, a computer science professor at UMBC, said the school's gaming classes are designed to augment broad-based training in visual arts and computer science. "Even if they don't end up working in the game industry," he said, "they get a solid education."



**Katie Hirsch, 26, head instructor for the "Anatomy of a Video Game" class at UMBC, started at BreakAway as an artist but has since moved to the programming side. (Sun photo by Gene Sweeney Jr. / April 8, 2008)**

The program has separate tracks for artists and coders, echoing the division of labor in modern video game companies.

Katie Hirsch, 26, head instructor for the Anatomy of a Video Game class at UMBC, is the rare developer who straddles both fields.

Her interest in video games stemmed from a middle-school fascination with drawing cartoons. "I wanted to be the next Charles Schulz," she said, referring to the creator of the Peanuts strip.

She earned dual bachelor's degrees in computer science and visual arts from UMBC by combining her animation skills with an aptitude for math.

BreakAway hired her as an artist in 2005, but she has since moved to the programming side. She has

worked on a range of games, notably Rise of the Witch King, based on J.R.R. Tolkien's Lord of the Rings epic, and an expansion pack for Command & Conquer, a popular military strategy game. She teaches at UMBC on the side.

During the class at which Eric Jordan was the guest instructor, she assigned the students -- 12 men and 5 women -- their final projects. They would team up to create three styles of games: a single-combat fighting game, a strategic battle game and a dragon-hunting role-playing game.

Maria Aliprando, 21, of Ellicott City, led the group working on the fighting game. She entered UMBC hoping to focus on film animation but has since decided to work on electronic games. "I've been playing games for as long as I can remember and I've always been good at art," she said, during a break.



**Eric Jordan demonstrates different figure compositions that can be accomplished using different camera techniques in a video game. (Sun photo by Gene Sweeney Jr. / April 8, 2008)**

As team leader, she had to bridge the geek-artist cultural divide separating the programmers and animators. Trying to find common ground, they discussed the relative merits of various titles, including Tekken, Guilty Gear, and Brawl, a game in the Smash Brother's series designed for the Nintendo Wii.

"Are we going to do instant kills like Smash Brothers?" Aliprando asked the group.

"That's a hard animation," replied Megan Zlock, another animator.

"Is there anything on the programming side that you think is going to be mind-boggling?" Aliprando asked the two computer science majors in the group.

"The camera is going to be hard," said David Thornabene.

That's where guest lecturer Eric Jordan stepped in. The UMBC graduate had volunteered to teach the class about "game cameras," a concept used to describe what players see on-screen during a game.

Fighting games, for example, often display combat from the side, the way a boxing match might be viewed.

Role-playing games typically follow players' avatars from above or behind as they explore the digital landscape.

Newer games often provide a variety of perspectives.

Justin Boswell, another developer at BreakAway, was also on hand to provide insight. When design software the instructors were hoping to demonstrate refused to boot up, he took a tip from fantasy role-playing and suggested the computer gods needed to be appeased.

"Anybody have a goat?" he asked. "We need a sacrifice."

"Or a freshman," Jordan added coolly, scanning the room for a volunteer. "We could use one of those, too."

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