Game Development in Computer Science Education: From Outcast to Mainstream

Guest Editor's Introduction

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When I started teaching and research in game development in 1993 I could see enormous potential, but I wasn't really surprised that my colleagues at the University of North Texas didn't see things the same way. To be honest, I knew that I was a few years ahead of the cresting wave. I didn't realize that I was over a decade ahead. Whereas back then there were no conferences or journals devoted to game development and the traditional ones rejected game development papers with scorn and derision, now I am delighted to see a multitude of game dev conferences and this, the first academic journal.

After the success of the first Microsoft Academic Days on Game Development in Computer Science Education in February 2006, I was one of several academics invited to serve on a Steering Committee for the planned second meeting in 2007. We suggested that the 2007 workshop should include an academic track with refereed papers and a published proceedings, unlike the 2006 workshop which featured only invited speakers from academia and industry.

A Program Committee was formed, and a Call for Papers was issued. Of 71 submissions received and reviewed, 20 were accepted for presentation and publication in the proceedings. As Chair of the Program Committee, I was invited by the *Journal of Game Development* to select four of the accepted papers for this Special Issue. My choice was made difficult by the fact that there were many excellent papers accepted by the Program Committee, enough for several journal Special Issues. After deliberation I chose the following papers as representative of the event.

"The Effects of Games in CS1-CS3" by Jessica D. Bayliss of the Rochester Institute of Technology examines the use of game development in early undergraduate Computer Science education. Her description of the RAPT program and its effect on CS students should serve as a model for similar endeavors at other universities.

"Teaching Game Design through Cross-Disciplinary Content and Individualized Student Deliverables" by Ursula Wolz, Christopher Ault, and Teresa Marrin Nakra of the College of New Jersey investigates the interdisciplinary nature of game development in CS education beyond the obvious collaboration with art to the inclusion of theater and sound.

"Engaging Students in Advanced Computer Science Education Using Game Segments" by G. Michael Youngblood of UNC Charlotte addresses game development in an upper-level AI class. His paper is an excellent example of the use of game development in the

upper division of undergraduate CS education, counterpointing Jessica Bayliss' paper described above.

"A Soft Approach to Computer Science: Designing & Developing Computer Games for and with Senior Citizens" by Vero Vanden Abeele, Jelle Husson, Luc Vandeurzen, and Stef Desmet of the Leuven Engineering School in Belgium describes the experience of sending Computer Science students out into the community to collaborate with their target audience. I find this use of game development to break down the geek equivalent of the "third wall" between programmers and the audience of consumers particularly innovative and evocative.

I would like to take this opportunity to invite you to attend the third Microsoft Academic Days on Game Development in Computer Science Education in 2008, which is even now in the planning stage. The hallmark of the workshop will be a panoply of invited and refereed talks on game dev in CS, once again presented in the delightful ambiance of a cruise ship, subsidized by generous funds from Microsoft Corporation.

In conclusion, I would like to call for more research on the use and effect of game development in the Computer Science curriculum, particularly since universities and colleges worldwide are hurrying to add game dev classes, tracks, majors, programs, and degrees to their curricula, in some cases without regard to the experience garnered over the last decade as to what works and what doesn't. Now that there are venues for this research, there are fewer barriers to publication.

With this in mind, I would like to take this opportunity to pass along a few words of advice to prospective authors.
- It is not enough just to have plans. These plans need to be implemented before publication is justified.
- The existing literature must be cited and your contributions must be shown to be original and innovative. Above all, remember that game development in Computer Science education is not in itself a new concept.
- The effect of game development in class should be evaluated. For example, how does it affect recruitment, retention, grades, comprehension, motivation, graduation rates, and employment rates? How does it impact traditional students, mature students, women, and minorities?
- Finally, the effects should be backed up by figures, those figures should be statistically significant, and that significance should be verified by traditional statistical tests.

We are embarking on an exciting era in Computer Science education, invigorated by the prospect of game development enabling us to engage well-motivated students in academically rigorous activities. The papers in this Special Issue chronicle the first step on this journey. The projects described therein are in their initial stages and the results, while worthwhile reporting, are preliminary. The next step is up to you.