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Summary

This report provides feedback on the Academic Days conference. A personal introduction is given for context, followed by a discussion of what my conference expectations were and what I believe the conference provided. Specific topics/people are highlighted for their contribution in order to offer insight into some conference highlights and specifics. The report concludes with a set of outcomes I have taken from the conference that are intended to enhance the use of computer games and etc. as part of my department instruction.

Introduction

I work as an Instructor in the Dept. of Computer Science. My role is to teach three courses per semester, primarily undergraduate classes, including C++, C#, Java, data structures & algorithms, OS Design, Software Engineering, graduate computer graphics and whatever else the dept. sees fit for me to teach. In my own time, I am active in Genetic Programming research. I view my role, in part, to engage the interest students have in Computer Science while at the same time providing foundational technical skills. An important challenge I face is providing reasons why such and such technique is relevant and necessary to learn, I am tired of talking about “business” applications.

My interest in computer games is deeply rooted. As a young child, my parents bought a pong home machine for the family and this tradition continues to the present with my recent XBox 360 purchase. The first programs I wrote were on a TRS 80, the best attempts a 12 year old kid could make a writing computer games. I'm still fascinated with the technology surrounding game development and for that specific reason, I teach GPU programming in my advanced computer graphics course. I love computer games!

It was natural for me to jump at the chance to attend this conference, the sun and fun in January didn't hurt either. My personal intention was to absorb information about other's experiences in using computer games to capture student attention and motivate learning. To some extent this was achieved, however, not entirely. The remainder of this report provides a discussion of my thoughts regarding the various aspects of the conference.

It is probably worth noting that my knowledge of the games industry is not reflective of the typical academic attending this conference as a non-speaker. I have attended three GDC conferences, 1998 through 2000, stay current with the technical aspects of game middle-ware, in particular graphics rendering technology, daily visit game fan sites and play a wealth of console and PC games on a regular basis. As I interacted with other attendees, it was clear I am a fan of computer games and the industry in a way that isn't typical of many other academic participants. This is noted because my discussion below is reflective of my particular background.

What I Thought I Was Attending

Based upon the invitation my impression was that the conference would have a focus on presenters discussing how they used computer games in their curriculum to recruit, motivate and retain students; a group of case studies presented. This was a thought that aligned nearly perfectly with my personal thinking, accordingly, my interest was piqued. Based upon the agenda I received, I also expected to hear a fair bit of technical information and some insight into how Microsoft views its role and cooperation with Academia.

What I Actually Attended

A conference that brought together an interesting collection of speakers, topics and audience. The topics ranged from the thought provoking and challenging Second Life, the politically correct discussion of Women in Gaming and Computer Science in general, industry view of academia, academic view of computer games and and a special highlight of seeing the Unreal 3 Engine technology!

The conference was excellent and executed in a first class manner in nearly every area I can think, minor and insignificant complaints, nothing worth noting. The organization of the hotel, bus transfers, speaker selection, topic selection and time spent each day was excellent.

On the other hand, I don't actually recall hearing any presentation that specifically discussed the primary factor about the conference I thought I was attending, anecdotal evidence regarding recruitment, motivation and retention of students. John Laird made some comments about using game structures as references for things like stacks and queues, but I don't think specifically addressed the general concept. I have no memory of someone giving a talk that summarized, "Our department facilitated students to utilize computer game projects and such and such were the results." The group I ate dinner with made early note of the fact that there weren't presentations discussing personal experiences relating to how the use of computer games in classes recruited, motivated or retained students.

Specific Thoughts

These are highlights, I could write more but am trying to keep this from getting longer than it already is. No meaning should be implied from the order

Colleen Wheeler McCreary – Excellent presentation, exactly the kind of information needed by universities. The most important slide she presented and highlighted was the laundry list of skills she would like to see students develop during their degree...it was exactly what we teach at our university. It's important to note that most Computer Science departments don't want to create a game degree. If we can convince that our "hard" classes in parallel and distributed computing are relevant to game development, perhaps an enhanced student interest can be developed. I know what a hardship and self-sacrifice it was for her to come on the cru..., I mean, the conference, please let her know it is appreciated.

Mark Rein – Outspoken, but outspoken based upon experience. He comes off as arrogant, maybe he is, but I think he is more approachable and reasonable that he allows himself to appear. He has helped Epic make very, very good business decisions with their model to build a licensable game engine and tool set. From the very beginning I took note of what they were doing and knew they were settling in for the long term and would succeed where others would

fail. I like Mark, he speaks from experience, not from pontificating, even if his words aren't palatable to some. His demonstration of the Unreal engine and tool set was another strong, strong highlight of the conference. These kinds of demonstrations are important because I go back and rattle off to my students the exciting things taking place, how amazing the technical details are, how amazing the tool set is and how cool the games look and play...all things that can help capture my students attention and interest.

Dave Luehmann – The manager of Microsoft Game Studios at a small conference, come on, that is amazing personal access. I'm too shy to take advantage of something like that, but I certainly recognize the value of having that kind of access to a high profile personality within the industry.

Dave Remba – Clearly a knowledgeable speaker and someone who has deep technical capability and background in the graphics field. It felt beneath his capability to see him demonstrating how to use DX9 from managed code. I teach DX9 in one of my graphics courses, therefore the topic was too familiar and not compelling from my perspective. I overheard others suggest this was too familiar or not really what they were looking for. Would have preferred to hear more of a discussion of him suggesting that managed code is bigger, better, badder for the kind of work he does and that is why it is relevant to teach our students to use managed code. This was only implied by the presentations, not directly addressed.

Ken Perlin – Are you kidding me, I've held him as a personal model/hero for too many years. Each year I teach my students “Perlin Noise” and ask them to use it in interesting ways to generate content for their graphics programs. An award winning luminary in our midst. He walked onto my transfer bus the first morning and sat behind me. I wasn't too shy to introduce myself, tell him how much I admired him and his work and proceed to have an enjoyable conversation for the next 20 minutes. If that had been the end of the conference, that would have been enough!

DXFramework – An interesting framework, I can see some potential use, but not really what I am looking for. Too much time spent discussing the technical details and not enough time discussing the role and what kinds of results in terms of student recruitment, motivation and retention that have resulted from its use. I viewed this presentation as “interesting what they've done” but not a specific set of code I'd use.

Mikey Wetzel – Do not, I repeat, do **not** allow him to put together karaoke singing groups in the future! The most impressive thing I saw all conference was the PIX tool. Hands down this is the most important performance evaluation tool I've ever seen. It is important for people like me to see these kinds of tools so that I can relate to students, and others, the kinds of tools they'd have at their disposal when they are placed into an industry setting. His morning presentation was excellent as well. As someone who can't get his hands on a console dev kit, it was great to hear some of the tips and tricks that go on inside a console that provide for performance not available on the PC, and simply not possible. This presentation helped expand my mind regarding the kinds of performance ideas that exist beyond my PC experience. The only tiny criticism of his presentation was that it was, quite frankly, too short for the material he has at his fingertips to present, I would have been willing to listen to him for much longer. As a “graphics and performance guy”, I want to see more details on how techniques are put together, performance details and see more pretty pictures.

Academic Questions for Industry Panel – As I told Jason Della Rocca, “On behalf of the faculty here, let me apologize for some of the dumb questions and self-pontificating comments made during your session.” Sometimes it is embarrassing to listen to my colleagues ask questions or make comments. It comes from the fact that they sit in the offices thinking about one specific area of research for so long and not having/taking the opportunity to inform themselves about other subjects. Please forgive us! Jason should have been given 20 minutes to talk. No doubt he would have taken the opportunity to trash MS at their own expense, but maybe it is worth it to help stimulate discussion.

Quality of Life Issues – An omission from the conference was a substantive discussion of the quality of life issues for developers in the games industry. I regularly not recommend the game industry as a career to my best students, primarily because I hold a lot of concern they would be getting themselves into regular 60 to 70 (or more) hour per week jobs. Case in point, I was talking to an MS employee at the conference. He was leaving MS soon to be part of a startup game company. I asked him a lot of questions, short summary: He wasn't worried about anything, he is single, it's okay if he has to put in long hours, hop between several companies and do whatever it takes. This is not a lifestyle I can recommend to my students who want to have a family life upon graduation. I will continue to not recommend careers as a game developer if this is the typical company expectation. A future edition of this conference should have a session/panel devoted to a discussion of what the state of quality of life is like as a game developer and what both sides of the fence should build as expectations. I don't mean to judge the example I provided, if that is what developers enjoy and are willing to do, it's okay by me, honestly. On the other hand, I can only make career recommendations to my students that match their lifestyle desires.

How Can Academics and Industry Meet?

Much like Ken Perlin and Mark Rein, I have opinions about everything and sometimes I hold them to myself.

Faculty at universities want cold hard cash more than anything. They live in this self-created world where their job security depends upon how much money they generate and how many publications they are producing. This drives the insatiable appetite for pursuing money through any avenue. I suspect, in some part, that faculty are interested in computer games, not out of self interest necessarily, but out of the hope that industry will magically cough up cash without strings to support academic research. Without providing the discussion, I don't believe this is going to work in any significant way.

Industry, on the other hand, if they hand over cash to a university for research, would still like to own the IP and have the research work along specific deliverables and dates. The so-called open nature of the university doesn't allow this to work well. The need to publish research makes for a difficult environment to work on trade-secret properties. As above, I don't see this corollary working to any broad application.

An idea my dinner group worked up was that universities and industry can work together in terms of providing talent into game companies. Let me offer an example that I used to spark this discussion.

I also do private software development and off and on I cherry pick my best students and have them work for me. This last year one of these students interviewed at Microsoft (not in MGS, but I also don't remember what area), he was not extended a job offer and I was flat out shocked. Here was one

of the brightest students I've had, someone without personal baggage (meaning, no strange social issues, just a regular guy, married and has a child), highly talented, a team player, but perhaps a bit shy...and not extended a job offer. Makes me less likely to have my other students go through the process only to be turned down. Companies have interview processes in place to ensure at least two things: they hire the best employees they can and that they don't hire any stinkers. The process isn't perfect, some excellent people are missed because they took some misstep in the interview process and the "process" eliminated them. David was eliminated by the process, not because he wouldn't have been a valuable and contributing team member.

An area where faculty can help is to provide specific recommendations into studios for qualified students. This is good for the industry in that the personal relationships with departments can help pre-select appropriate candidates, reducing recruitment costs for game studios. This is good for the university in that it helps place and track "alumni" who can be used as recruitment resources for future and current students. Let me put forth this as an area where the university and industry can meet and mutually benefit.

I don't have the sense there will be a strong, tight, cooperative relationship between universities and industry, the goals of each don't overlap enough. However, I hold optimism the relationship can be far better than it currently is.

My University Experience

We teach a sophomore/junior level course on software engineering. The course involves students working in a small teams (3 to 5 students) where they must imagine, design and implement a software project. Last semester two of the teams chose to write computer games. I was not the instructor for the course, however, the students are familiar with my interest in games and graphics and were excited to show their work to me; I was quite impressed. One game was a networked hearts game, with the environment rendered nicely in 3D, included a built in chat client and incorporated an AI that competes very well with humans. Above and beyond the course requirements, these students learned to use Direct3D on their own, learned to write sockets networking code and some Windows GUI coding. I have serious doubts the non game class projects motivated students to learn additional technical skills in the same way.

For the fall of 2005 I taught a Java course (sorry, I had too) where I allowed some of my better students to choose to write a semester project instead of taking the final exam. Several students took me up on my offer and one of them, a bright young lady, wrote a puzzle game that copied the Puzznic puzzle game. Hmm, a woman wrote a puzzle game...

Our student ACM group holds a Risk game challenge each year. Students who want to participate write a DLL that meets some functional specs and, obviously, must be capable of playing the game. Each student then goes off and writes up an AI that plays the game of Risk, at the end of the challenge, the DLLs are all placed into a tournament program where they compete against each other and a winner is revealed.

These game examples all have one thing in common...they are all initiated by our students without the prodding of the department. It stands, I believe, as further anecdotal evidence that students are motivated to learn and stay in computer science by being involved in writing computer games as part of their regular curriculum.

Outcomes From The Conference

There are several things I specifically intend to take action on based upon attending this conference.

1. Be more aggressive in thinking up game examples for lower division courses regarding why some data structures and algorithms are relevant to learn. For example, a priority queue is used to organize construction of some building, instead of talking about lining up jobs to be batch processed by a bank program at night. That trees are a natural representation of a “tech tree” in games like Age of Empires, instead of being used as an index for a database table.
2. Follow up with the software engineering course, obtain the games and reports the students prepared. Interview the game groups and summarize their experiences and choice in choosing a game project.
3. Next fall I will work with the instructor to be more aggressive in pursuing game related projects. At the end of the semester, I'll do the same interview and materials collection and continue to do so each time we teach the course. I expect to build up anecdotal evidence on whether or not students are motivated and/or retained by using game projects.
4. For all my classes develop homework assignments that incorporate more elements of game coding techniques.
5. Be more active in suggesting game related projects when courses have projects as part of the course.
6. Get involved with the ACM Risk competition to engage more students in this competition.
7. Use the materials I collect from any course projects that are game related to build up resources our department can use as recruitment tools and for the university recruiting staff.

These goals are straightforward, achievable and meaningful within my department, as a starting point. They don't conflict with our goals to develop core technical skills and analytical thinking. The intention is to have them work as a motivational tool to help achieve the goals of recruitment, motivation and retention of our students.

Closing Thoughts

In terms of initiating a dialog among a group of academics regarding the use of game topics within Computer Science departments, the conference is certainly successful. In time, however, I would like to see specific ideas developed where both industry and academics can cooperate and mutually benefit. I love the university and I love the games industry and would enjoy finding some participation in both environments. It was my intention to keep this short, so much for that, hopefully someone reads this and is able to communicate some of this information to your academic alliance members.