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Title: Development of Cross Network Real-Time Multiplayer Games and/or Distributed Applications: How Early in the Curriculum?

Abstract: Because life is short every topic in a curriculum should be taught as early as possible—but not earlier. Attend this session if you are currently involved (or contemplating getting involved) in teaching the development of real-time multiplayer games and/or distributed applications. The goal is to determine the smallest set of prerequisites for such a class, perhaps as a function of the platform and/or language used. Although we want to impart some of our successful experience, discussion is meant to roam freely across various platforms and/or languages, directly reflecting the background and interests of the participants.

Significance and Relevance of the Topic: Game development is a complex activity that may require considerable knowledge from many different directions of specialization in computer science: graphics, visualization, operating systems and inter-process cooperation and communication, networking, simulation, artificial intelligence etc. Because it can tap into so many directions, game design could also serve as an introduction to each one of them. Although designing individual games is a natural starting point, one is eventually led to the notion of *types* of games, which subsequently leads into the more productive type of activity that deals with the creation of game *engines*. A game engine is to a game what a compiler or interpreter is to a program written in the language defined by that compiler or interpreter. As is the case with compilers and interpreters there

are various levels of complexity and purpose on which one can approach the teaching and development of game engines. Our involvment[1] in the construction of a curriculum for the undergraduate certificate in new media and interactive storytelling in the Department of Telecommunications at Indiana University in Bloomington between the academic years 2000-01 and 2003-04 has led us to a conclusion that deserves to be brought up during this meeting: it is possible to teach game engine design as a CS1 and CS2 sequence, and it is possible to successfully and effectively introduce the concept of remote method invocation (which leads into the notion of distributed real-time application) at the end of a first semester of programming. There is a growing list of schools[2] that offer degrees or certificates in game design, but we are nowhere near saturation point. Part of this is due to the fact that game design is a difficult discipline, one that requires much more besides computer science: other departments, such as art, literature, theater and drama, psychology, and so on, also need to pitch in. Still, computer science remains the discipline that makes this synergy possible and sooner or later game- and game-engine design will unavoidably be a part of the standard CSCI curriculum. We want to share our succesful experience as much as we want to hear what others have to say about it along with (or compared to) any alternative approaches they might be curently considering or may have implemented already in their curricula.

Expected Audience: An audience between 10 and 30 would be ideal.

Discussion Leader(s): As indicated above.

Special Requirements: We are requesting one projector. We don't need any wireless or Internet connection, but we anticipate the need to illustrate some of the points on our laptop, through a projector. Obviously if wireless/Internet connection is available we can make good use of it.

[1] http://www.mime.indiana.edu/faculty.html
[2] http://www.gamecareerguide.com/schools/