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Computer Scientist Works to Improve Games' Stories, Intelligence

FOR IMMEDIATE RELEASE

As computer game companies release their new selections for the holidays, you'll probably see role-playing games in which characters must kill a monster in order to get treasure and some clues to the next monster-guarded treasure, or to advance to the game's next skill level.

But what happens if a player doesn't like to fight, or somehow manages to avoid – but not vanquish – the monster?

Researchers in the Liquid Narrative Group, a collection of graduate and undergraduate computer science students at North Carolina State University headed by Dr. R. Michael Young, assistant professor of computer science, are investigating ways of solving this quandary. They are creating software tools that will improve the artificial intelligence (AI) of games and educational software; specifically, they are investigating ways that the software allows users to both interact with the narrative, or storyline, and feel like an active participant in the way the story unfolds.

The computer game industry is big business, now topping \$10 billion in sales yearly, leapfrogging the Hollywood movie industry. To make software more enticing to larger groups of people, some software designers are trying to provide users opportunities to wander off linear paths by enhancing the AI – making software “smarter.”

Young says better AI can tailor games to user personalities or interests, so two people who play the same game could play differently and individually enjoy the game even more. Players who would rather solve puzzles than interact with other characters, for instance, would be able to do just that.

“We want to open games up so players have more of a role in how games unfold,” Young says about his research activities. “Most types of games involve a story or storytelling. We're trying to build general software tools that can understand both what's going on in a game and what makes for an interesting game or a good story. So the software would watch what you do as you play a game, and, if you do things that are unexpected, adapt and adjust the game to get you back on track.”

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Better AI tools can also give educational software users a more personalized learning experience. A real trip to a zoo can be disappointing if the animals are sleeping or not interacting with other animals. But a trip to the zoo on the computer with software enhanced by better AI would allow visitors interested in polar bears to see how they interact with each other.

Young says AI means different things to different people.

“In academic research, AI is often defined as, ‘How do we get computers to model how people think?’ In the game industry, AI is defined as ‘How do I get characters in the game to do something a person would actually do?’”

Researchers from a number of different academic disciplines at NC State, like psychology, linguistics and film theory, are involved in computer-game study through the Center for Digital Entertainment, an informal research group. These different disciplines all bring ideas of how to tell a story, how to communicate aspects of games or to users, and how to use camerawork to best portray the unfolding action, Young says.

Game designers frequently purchase tools for complex or labor-intensive elements of the game – called middleware – to avoid reinventing the wheel when designing a game, Young says. Instead of creating computer code for certain graphics, for example, a game designer can purchase middleware that produces the desired graphic effects.

Young foresees his group’s AI tool acting similarly, seamlessly improving games and educational software behind the scenes by making the narrative more interesting – and more flexible.

Young is the recipient of the National Science Foundation Career Award, one of the NSF’s most prestigious awards for young faculty, and has been funded for \$469,000 over five years to study AI.