Matrix-style 'bullet-time' in multiplayer gaming

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In a strange example of the cyber-world imitating Hollywood imitating the cyber-world, Finnish researchers have developed a way to achieve the "bullet-time" effect of the movie The Matrix in real-time multiplayer games.

The effect combines slow motion with dynamic virtual-camera movement to seemingly allow a character to slow down their environment, giving them more time to respond to game events.

The challenge had been to achieve this with real-time online multiplayer games, says Jouni Smed at the University of Turku. So far the closest anyone has come to it is by speeding up the player, instead of slowing down the environment, he says. "It's not the effect one wants because the player has even less time to react."

Smed's solution is to exploit something called a local perception filter (LPF). This is software that compensates for the natural communication-time delays which occur in networked games by rendering objects and players at slightly out-of-date locations.

Strategic advantage

In locally networked games, time delays can be as much as 10 milliseconds, while transatlantic games suffer a latency of around 60 milliseconds. However, the use of LPFs means players do not notice any time lag because events are ever so slightly slowed down until the game catches up with itself.

Using a test-bench game called MaxMaze Demonstrator, Smed and colleagues found that they could also artificially introduce delays of up to a few seconds, allowing one player to slow down their environment and gain a strategic advantage, while game-time appeared normal to their opponent.

Without LPFs or similar techniques, networked games would appear more jerky, with characters jumping from one position to another as the system hangs waiting for updates, says Smed. But the downside of these conventional techniques is that sometimes characters are not where they appear to be to other players. This is why players may occasionally think they have shot an opponent in a game and are surprised when their target refuses to die, he notes.

By Duncan Graham-Rowe
NewScientist.com

Gaming

Links:

[1] http://www.tuxmachines.org/taxonomy/term/69