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USE OF MULTIPLE PLAYER REAL-TIME VOICE COMMUNICATIONS ON A GAMING DEVICE

RELATED APPLICATIONS

This is a divisional application of U.S. Ser. No. 10/147,578, which was filed on May 16, 2002, now U.S. Pat. No. 6,935,959, and the benefit of the filing date thereof is hereby claimed under 35 U.S.C. § 120.

FIELD OF THE INVENTION

The present invention generally relates to communication between players of an electronic game; and more specifically, pertains to a multiplayer electronic game system that facilitates voice communication between players using one or more multiplayer electronic gaming devices, including voice communication over a network that conveys data between the multiplayer electronic gaming devices that are coupled together to enable the player to participate in a game.

BACKGROUND OF THE INVENTION

When playing a non-electronic game with one or more other people, for example, a card game such as bridge, the social interaction arising through verbal communication between the players during the game typically adds much to the enjoyment of the game. Verbal communication is also often an element of game play, since comments made by a player to an opponent during a game can have the effect of causing the opponent to lose concentration and perform poorly, while comments made to team members can provide encouragement, thereby improving their quality of play. Verbal communication between persons playing games is thus clearly an important element of the gaming experience.

The verbal repartee between players that is so important to game play was initially missing when players first began to play electronic games over the Internet and other network links. Players at different sites were generally not able to communicate with each other, because their personal computers (PCs) only communicated data related to the play of a game over the network. The loss of the verbal communication and related social interaction that is such an important aspect of games played by people at the same location thus caused games played over the Internet to be less interesting. To address this problem, hardware and software solutions were developed that support voice communications between PCs over the Internet or other network during game play. At about the same time, techniques were developed to convey voice over the Internet or other networks (i.e., voice over IP) to enable communications between parties connected by the network without incurring the cost of conventional telephone long distance calls. This work resulted in the creation of various protocols supporting voice over IP communication, including the H.323 specification, Session Initiation Protocol (SIP), and Media Gateway Control Protocol/Media Gateway Controller (MGCP/MEGACO) specification. The techniques developed for voice over IP are generally applicable to and have been used in schemes to enable verbal communications between players of PC electronic games over a network. Examples of systems that provide voice communication between connected PCs during game play include Microsoft Corporation's SIDE WINDER GAME VOICE™, Mindmaker, Inc.'s GAME COMMANDER 2™ device and software, TEAMSOUND™ software, GameSpy

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Industries' ROGER WILCO™ software, and Alienware Technology's FIRST CONTACT™ software. The voice communication provided by these products greatly adds to the enjoyment of playing games on PCs that are connected over the Internet or other networks. Some of these systems operate in peer-to-peer mode, in which voice data are transferred over the network directly between PCs, while others require a voice server that receives the voice data from one game player's PC and forwards the voice data over the network to one or more other PCs that are connected to the network for playing the game.

Since these systems provide communication for only one player per PC, each PC produces its own network stream of voice data, and this network stream is directed to other PC of each other player (or to the voice server, which then directs the voice data to the PC of each other player). This approach thus produces a substantial network data overhead.

Currently, none of the prior art systems for PC game voice communication enable multiple players per PC in a game played over the Internet or other network and therefore, the prior art does not support multiplayer-per-PC voice communication functionality. Also, if such multiplayer PC systems were developed using existing voice communication protocols for several players on a PC, they would likely require an excessive amount of computational resources. Allocating the required resources to voice communication for all players of the game on a PC might well have an adverse effect on the quality of game play, unless the PC had a very fast processor, lots of memory, and a fast video driver card.

In contrast to PCs, dedicated game consoles often do not have the processing power and available memory of a powerful PC, so this problem is of even greater concern in developing a scheme to support voice communications by multiple players on each game console. It would be desirable to allocate a fixed level to the requirements for memory and other computer resources needed for voice communication, independent of the number of players who are capable of voice communication on the game console, as appropriate for the game functionality and design, so that the resources required for voice processing are not allowed to increase beyond a defined limit as the number of players participating in voice communication changes. It would also be advantageous to enable voice communications between multiple players for each instance of a game at a site, and to enable each player to control with whom the player verbally communicates (both speaking and listening), and to combine all of the voice data from that instance of the game into a single network data stream in order to reduce the network bandwidth required for voice communications between multiplayer game consoles. It would further be desirable to share certain resources, such as a voice data encoder or decoder, between multiple players for a single game instance at a site.

As the quality of game graphics improves, it becomes more important to maintain other features relating to realism. One such feature is the ability to provide lip sync or other viseme (lip position) information with the voice data during game play, to enable the lips of a graphic character displayed in a game to move in synchronization with the words of a player who is represented by and controlling the graphic character in the game display. However, existing voice communication systems typically do not convey data to enable lip sync, and as a result, the player receiving the voice communication will not see the lips of the character in the game corresponding to the player who is speaking move in sync with the speaker's words.