Augmenting the Reality with 3D Sound Sources

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The Augmented Sound Reality Application

Augmented reality (AR) is not only a new type of computer entertainment, but it can also be used for serious applications. Because the user is directly involved in the virtual world, enhanced reality can be more engaging than traditional computer work. Especially for a better sound impression, AR could be a solution for many problems.The sound component is still missing in current AR applications, which combine live video and computer graphics to produce real-time visual effects.

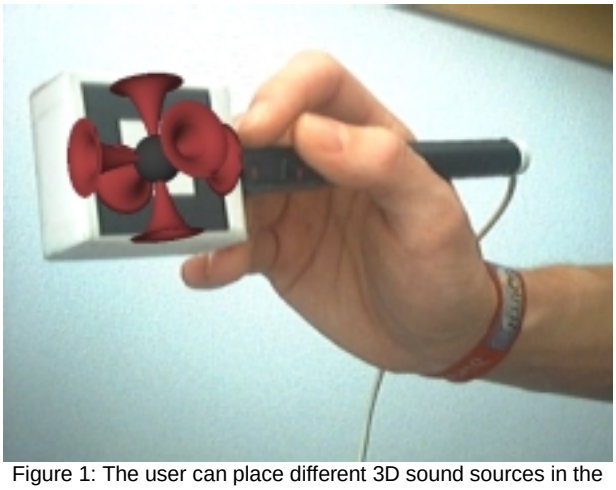

Figure 1: The user can place different 3D sound sources in the real world.

The ASR (Augmented Sound Reality) application allows the user to place and move different sound sources in the real world. Using the Augmented Reality technology the user is equipped with see through displays and a simple pen as input device places the 3D sound sources in the real world. The different sound sources are represented by 3D objects on the HMD which can be placed freely by the user. The advantage of the ASR installation is the direct integration and testing possibility of 3D sound in an Augmented Reality environment. The user can directly manipulate the 3D sound sources and observe the results immediately. Another advantage of ASR is the low cost setup (PC, webcam, i-glasses).

Future Potential

Current AR applications do not allow a direct manipulation of sound sources. ASR is the first prototype which combines sound and graphics in a AR environment and offers a wide spectrum for further applications. Especially in the authoring process for Augmented Reality applications it becomes difficult to place the sound sources using traditional 2D/3D based authoring tools. Now, the authors can place 3D sound sources in the real 3D space and they have a more intuitive experience how it really sounds. In the second application, which we are working on, the user can place virtual furniture in the room. This application will be combined with ASR, so that the user doesn't see the newly established room, but he also can hear how the radio or DVD player sounds.

Figure 2: The ASR application allows a drag and drop of sound sources.

http://webster.fhs-hagenberg.ac.at/staff/haller/projects/ws0102/asr/index.html

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