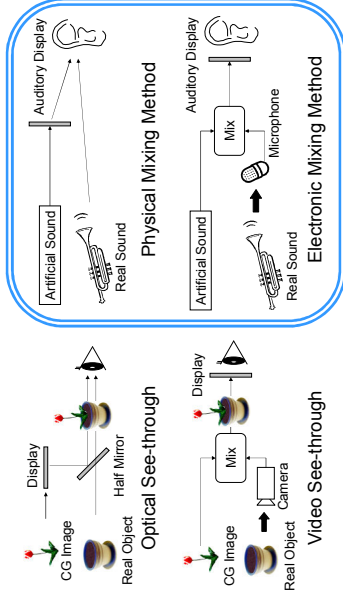


Kyota HIGA, Mai OTSUKI, Yoshio ISHIGURO, Asako KIMURA, Fumihisa SHIBATA and Hideyuki TAMURA / Ritsumeikan University, PRESTO

## 2x2 Audio-Visual Mixed Reality

- It is an MR system that merges real and virtual worlds in both audio and visual senses.
- Multi users can experience this MR system.
- We propose two mixing methods for audio MR; physical mixing and electronic mixing methods.



The user **simultaneously** and **compatibly** listens to the real and artificial sounds.

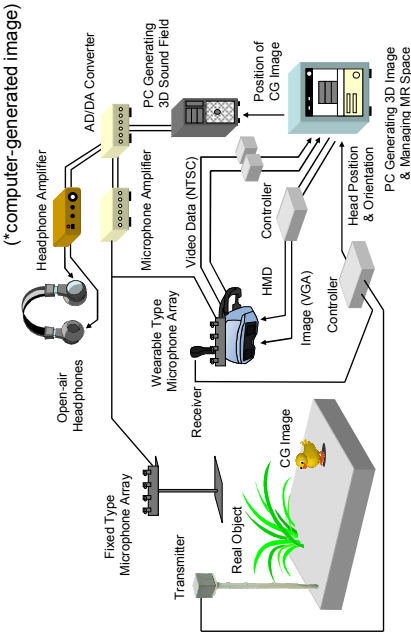
\*Oral Presentation: November 16 (Fri.), 13:40-15:00 Architecture  
 \*\*Kyota Higa, et al., A Two-by-Two Mixed Reality System that Merges Real and Virtual Worlds in Both Audio and Visual Senses, Proc. 6th Int. Symp. on Mixed and Augmented Reality, 2007.

## System Configuration

- This system is composed of two subsystems.
- 1. One is for managing a total MR space and displaying it visually.

Superimposing a **CG\*** onto the real world image in the audio sense and detecting sound events.

Generating a **3-D sound** and detecting the **direction and location** of a sound event



## RealSound Interaction

- Sound events in the real world are used as **interaction** or **input devices** with an MR space.
- Using familiar sound sources is easy to keep proper mental model.

Realizing an intuitive interaction method

- Detecting the direction and location of a variety of sound events by microphone arrays.
- Using them for more general interactive operations.

Developing general interaction methods using sound events

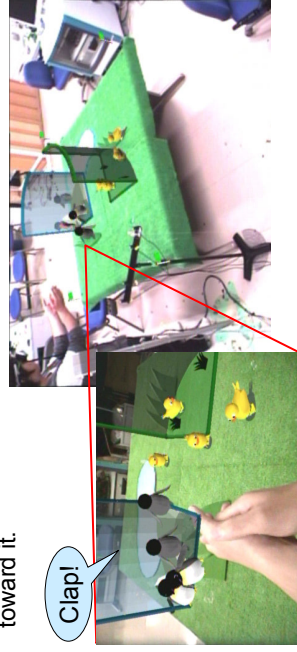


\*Mai Otsuki, et al., RealSound: interaction: a novel interaction method with mixed reality space by localizing sound events in real world, Proc. of Human-Computer Interaction 2007, pp. 663 - 662, 2007.

## Demonstration

### ② Using Direction of Sound Event

- The user can select the menu item by **generating a sound** toward it.



### ① 2x2 Audio-Visual MR

- This system presents **3-D sound**.
- It merges visual and auditory sensations.



### ③ Using Location of Sound Event

- The user can gather virtual birds walking in the MR space by **generating a sound** such as a handclap.

