

People should be able to use their feet just as freely in a virtual environment as they do in the real world. Wearable interfaces should not cause psychological and/or physical discomforts. This slipper-like multi-modal interface is based on those two assumptions. It features a slipper interface with cyber-worlds. Each foot's movement is measured in real time with an optical motion capture system, and feedback signals are transmitted to the soles. Phantom sensations elicited by multiple tactile stimuli allow transmission of complicated feedback information such as objects moving around the feet. Optical markers for motion capture and vibrators for tactile stimulation are installed in the slippers. Players interact with virtual objects projected onto a floor screen, sense them, and use them to play games. The system runs on a single PC.

**Yuichiro Kume**

Tokyo Institute of Polytechnics  
1583 Iiyama,  
Atsugi, Kanagawa 243-0297 Japan  
kume@photo.t-kougei.ac.jp  
laplace.photo.t-kougei.ac.jp/

*Collaborators*

**Akihiko Shirai**  
**Masaru Sato**  
**Yuichiro Kume**  
**Machiko Kusahara**

