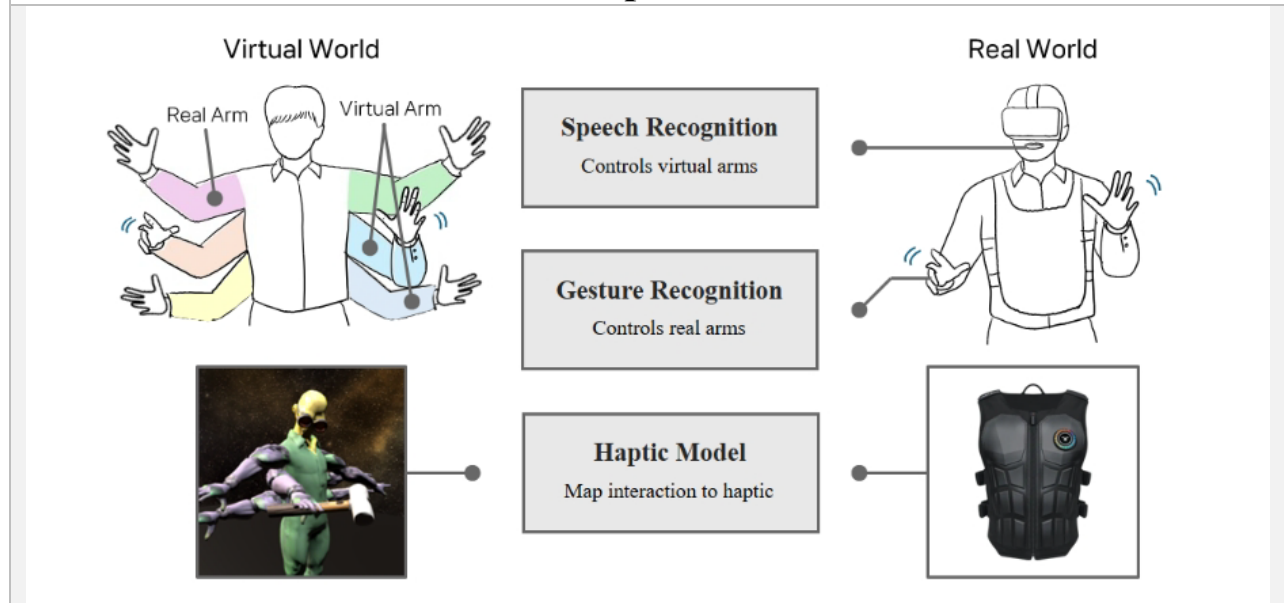


“Dr. Octopus” Arms: Enhancing Body Ownership Through Haptic Feedback in the Control of Multiple Virtual Arms



Summary: Humans naturally use two arms to interact with their environment, but virtual environments enable actions beyond real-world constraints. Adding extra virtual arms can increase interaction possibilities and improve multitasking capabilities. Previous research mainly focused on mapping up to two virtual arms to real limbs. Effective control of additional arms requires users to feel ownership over them. Haptic feedback is essential to create this sense of embodiment, making virtual limbs feel like part of the body. This study introduces synchronized haptic feedback to control extra virtual arms and investigates how tactile cues affect body ownership and agency during multitasking with combined real and virtual arms.