

Study on Manipulation of Human Body

Ownership Using a Robot Technology

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Abstract

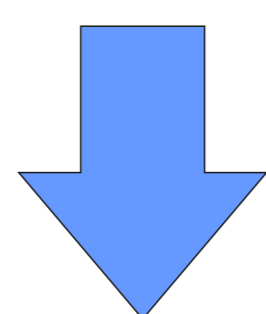
The Sense of Body Ownership perception that own body belongs to oneself. Usually, the sense is robust. But experience of such watching own body from the outside is reported in special circumstances. Also, similar experience often is reported by patients with damage to the brain. Therefore, the experience can be related to brain function. Recent studies have been successful in causing experience similar to the patient. However, mechanism of the experience is not fully understood. In this study, using robot technology, we examine the mechanism.

Introduction

Sense of Body Ownership

Feeling that your body is yours

→ By visual and tactile stimuli,
artificially possible operation



By experiments with the new conditions in the engineering approach, to verify the mechanism of the Sense of Body Ownership.

Applications

- Phantom limb pain, Hemiplegia, Comfortable prosthetic hand
- Operation feeling improvement of device
- Entertainment (Game, Movie)

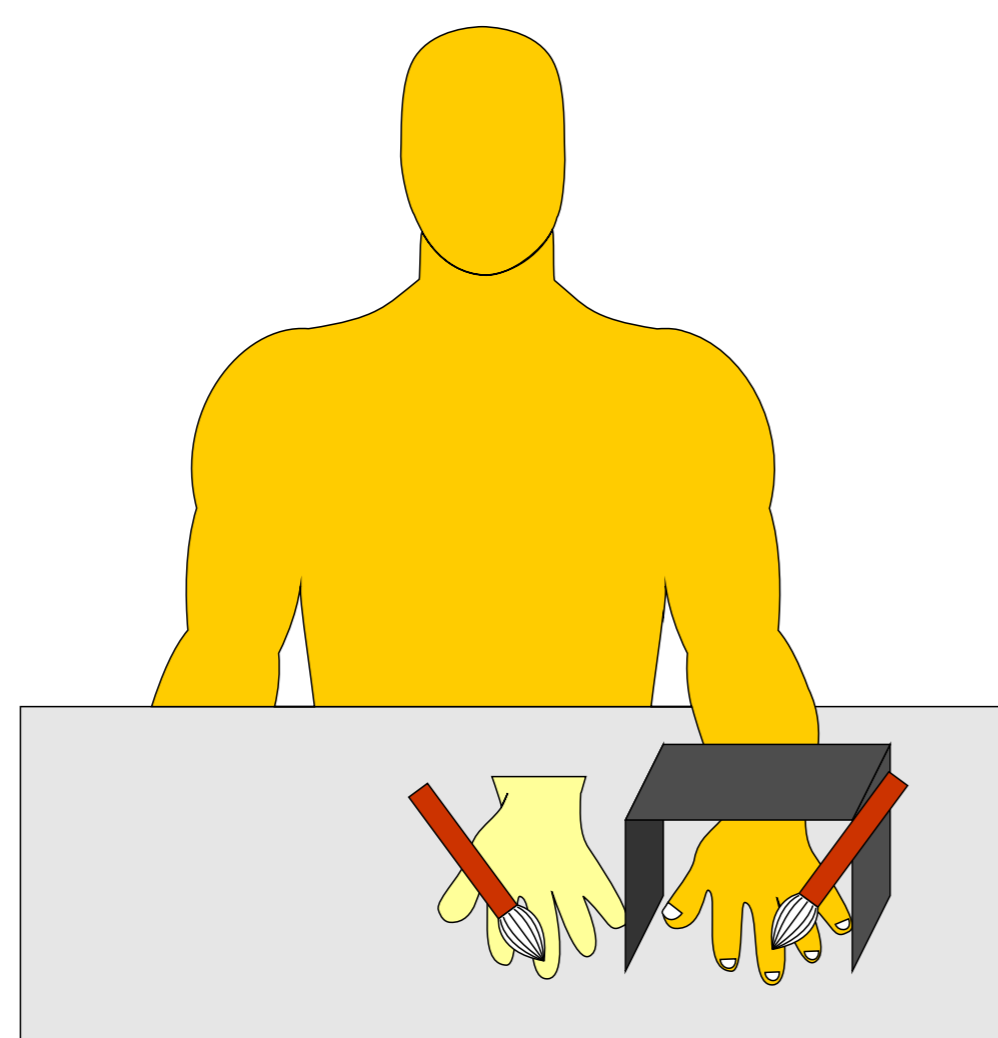


<http://home.hiroshima-u.ac.jp/urology/whatsnew-davinci.html>



http://www.kotaku.jp/2013/06/omni_vr_device.html

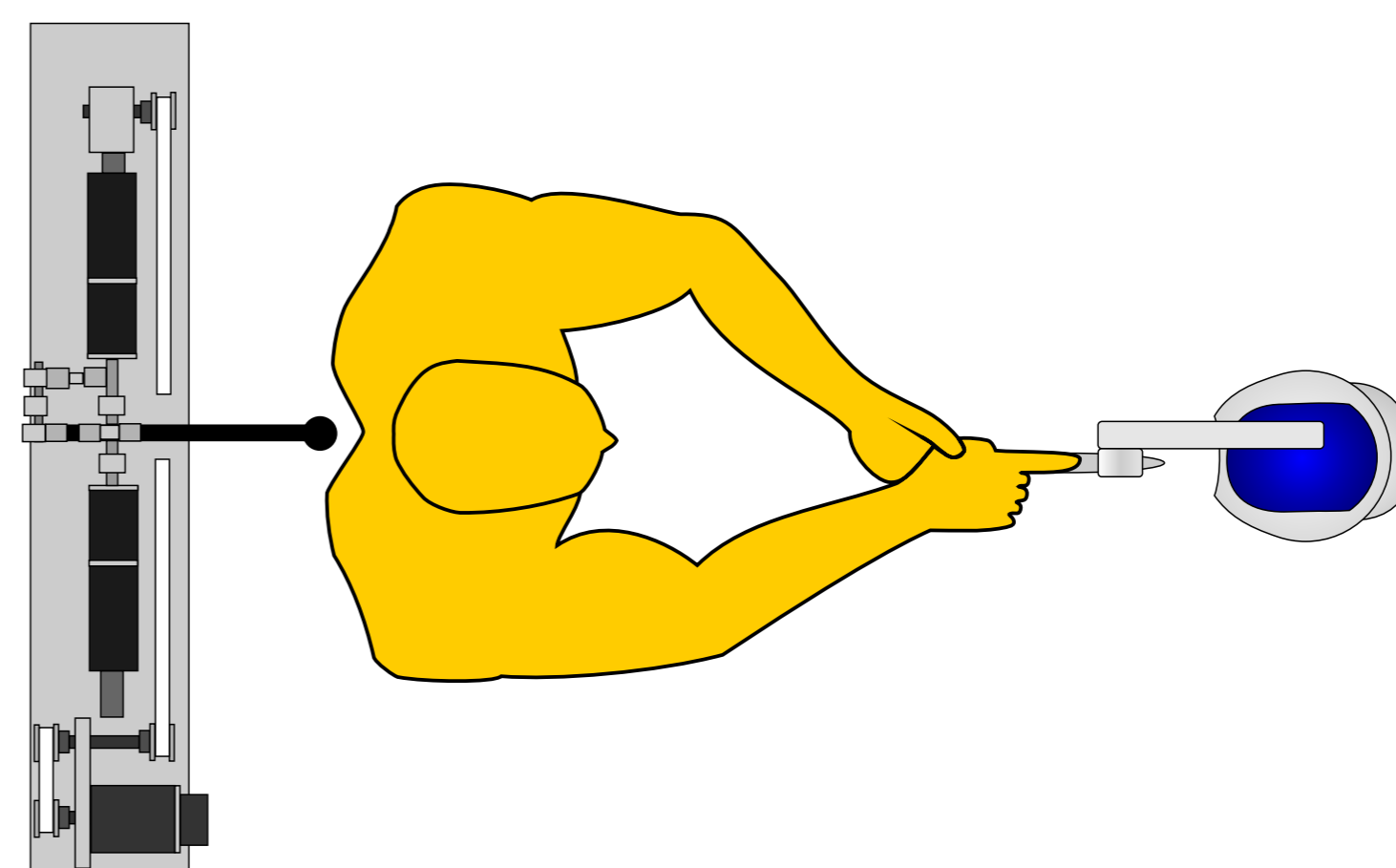
Previous study 1



We put a fake hand next to participant hand. At this time, he can't see own hands. And it gives at the same time stimulus from the outside to hands. Then, Sense of Body Ownership moves to fake hand.

Botvinick M, Cohen J (1998) Rubber hands "feel" touch that eyes see. Nature 391:756.

Previous study 2



Participant operates the master device, slave device to stimulate participants back in the time difference. Then, he feel the sign of life behind.

Olaf Blanke (2014). Neurological and Robot-Controlled indication of an apparition. Current Biology 24, 2681-2686, November 17, 2014