Ohta, Yuji

The Natural/Applied Sciences Division /
Department of Human-Environmental Science

http://www.eng.ocha.ac.jp/biomedeng/index.html

HUMAN ENVIRONMENTAL SCIENCE

Biomedical engineering

■ **Researcher information**

Contact

Email: ohta.yuji@ocha.ac.jp ／TEL: 03-5978-5739 ／FAX: 03-5978-5899

Major

Biomedical engineering,

■ **Research topics**

Assistive technologies

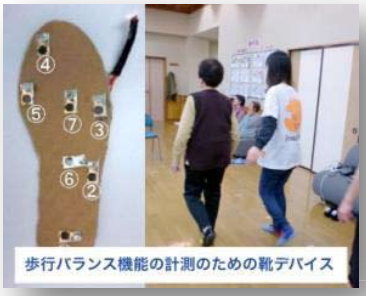
Keywords

Neuro-rehabilitation, Fall prevention, Pressure ulcer, Heart rate monitor, Ubiquitous computing house

Contents

We have been studying on the various assistive technologies for the elderly and the disabled people . Current research themes are listed below.

■ It is well recognized that muscle stretching and repetitive passive joint movement is effective for the reduction of the spasticity and joint contracture which is commonly appears following stroke and spinal cord injury. We developed the device which enable not only to make a passive ankle joint motion but also to quantitatively measure the ankle joint torque and stretch reflex responses.



■ We developed a novel device, integrated into a shoe, to monitor plantar pressure under real life conditions by reducing the spatial and temporal resolution. The device consists of a shoe insole with seven pressure-sensitive conductive rubber sensors and a wireless data transmission unit incorporated into a smaller measurement unit.

■ Heart rate measurement based on a time-lapse image. Using the time-lapse image acquired from a CCD camera, we have developed a non-contact and non-invasive device which could measure both the respiratory and pulse rate simultaneously.

■ Pressure ulcer measurement. To detect rubor (initial pressure sore) at an earlier stage, which was curable in a short term, we examined the detection method by using bioelectrical impedance analysis (BIA).

■ We proposed a new non-invasive gait monitoring technique as a healthcare application and installed it in the experimental house (Ocha house). Several accelerometers were fixed on the floor of the house, and the floor vibration was measured when the subject walked along the accelerometers.

Intellectual properties (Patents, computer programs), productization, publications and social/industrial contributions

Patent/JP : P2005−218507A

Potential of social/industrial contribution

■ Joint research/ licensing / technical consulting / knowledge sharing