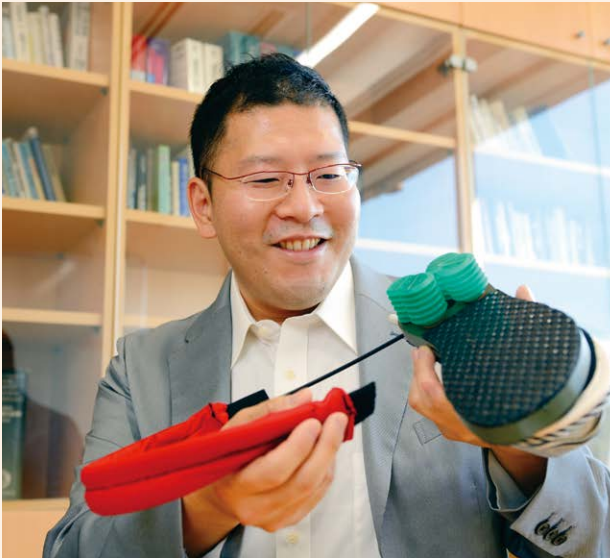


To fulfill its mission as one of Japan's nucleus universities, Hiroshima University pursues studies covering a wide spectrum, from fundamental science to advanced research, aiming at the development of human resources who will take the lead in each field.

Promoting the development of interfaces to extend human functions

Interview with Researcher **2**



Yuichi Kurita

Associate Professor, Institute of Engineering

PROFILE

Associate Prof. Kurita completed the doctoral course of the Graduate School of Information Science, Nara Institute of Science and Technology. Associate Prof. Kurita has been in his present position since 2011, and his field of expertise is the development of assist technologies for supporting and extending human motion and sensory functions. He promotes joint research with business enterprises including Mazda and Kobelco Construction Machinery, and the development of equipment for assisting minimally invasive surgery.

Technologies that closely support human senses

My research theme is human interfaces, aimed at developing machinery that leverages human motion and sensory systems and is therefore easy to operate by humans. Performance of machinery is constantly advancing in line with progress in technology. It has been a typical approach that humans acquire skills for operating advanced machinery to utilize the machinery's complex functions. However, technology for producing high-spec machinery must be followed by the addition of sensory value, such as "easy-to-use" and "exciting" for humans. To this end, it is necessary to understand human motion and sensory functions. How do human physical functions react to and perceive a certain force or stimulation? We formulate models for predicting human senses based on experimental data, and utilize them for making innovations.

Assist devices that offer the joy of moving a human body

It is expected that humans will move their bodies less and less in their lives as computer technology continues to develop. However, humans basically feel joy in moving their bodies. Many people will keep hoping to move their body as they like in their daily life, and enjoy sports to the full. Therefore, we have promoted the development of wearable devices that support and extend human motion and sensory functions, and succeeded in developing a powered suit that does not need a power supply, using artificial muscle that can be moved with a small amount of pressure, and leveraging ground reaction force while walking. This powered suit reduces muscle load while walking by approximately 10 per cent, and is expected to support walking by people with lower muscle strength and to extend motor functions during sports. Through our research, we will continue aiming at a society where machinery closely assists humans.

[Field of Biomedicine]

Promoting state-of-the-art research toward the elimination of viral hepatitis

We are seeking to elucidate the causes of viral hepatitis and the liver cancer that sometimes results, by analyzing genes both human and viral genes in order to identify therapeutic targets for these diseases. We prepare chimeric mice by eliminating mouse liver cells and replacing them with transplanted human liver cells, thereby making it possible to infect these chimeric mice with hepatitis viruses. Experiments using these chimeric mice involve state-of-the-art research available only at Hiroshima University. We have also proactively promoted joint research with international

researchers and have made some notable achievements including elucidation of the pathology of viral hepatitis, the effects and side effects of antiviral drugs, and identification of genes involved in the onset of liver cancer from hepatitis C. We intend to continue making progress toward the elimination of the hepatitis viruses.

Kazuaki Chayama
Professor, Institute of Biomedical & Health Sciences
Head, Liver Research Project Center in Hiroshima

