

FOR IMMEDIATE RELEASE

18th June 2010

Hitachi, Ltd.

Mobility and voice recognition enhancement in the human symbiotic robot “EMIEW2”

- Able to overcome cables and uneven floor heights, and accurately recognize human voice within
background noise -

Tokyo, Japan, 18th June 2010 --- Hitachi, Ltd. (NYSE : HIT/TSE : 6501, hereafter Hitachi) today announced the development of technology enhancing the practical application of the human symbiotic robot, “EMIEW2”, for the office and other environments. The newly developed mobility and voice recognition functions, enhances the functionality of “EMIEW2”, enabling it to overcome cables or uneven floor heights as well as accurately recognize human voice within various background noises. Based on these results, Hitachi will be accelerating its research for the practical application of “EMIEW2” in providing guide or surveillance services within various environments such as offices and hospitals.

Recently, remarkable progress has been made in Robotics, with various types of humanoid robots being announced. Hitachi has been developing a human symbiotic support robot with a view of applying it to the service sector. “EMIEW2” is a light-weight compact robot, developed by Hitachi in 2007, capable of autonomous movement using a two-wheel mechanism to move at 6 km/h, about the same pace as a human walking quickly.

To ensure stable operation and appropriate control of “EMIEW2” in a actual environment such as offices or hospitals, the ability to detect unexpected obstacles such as differences in floor height due to cables, mats or thresholds and various unexpected noises such as background music or peoples’ voices, and were considered an issue.

To solve these issues and increase the practicality of “EMIEW2” in offices, etc., Hitachi developed new technology to enhance mobility and voice recognition as follows.

(1) Enhanced mobility to overcome uneven floors

Active suspension and wheel spinning control technology was built in to the leg mechanism of “EMIEW2”. Active suspension which consists of a spring and actuator, enables the impact of overcoming an obstacle to be absorbed by the spring and the actuator corrects the inclination of the robot depending on the amount of spring deformation. Wheel spinning control technology suppresses excessive rotation of the wheels which occurs when a wheel is lifted off a surface when the robot is jumping over an obstacle, and enables stable movement to continue after a wheel land back on the floor surface. These two new technologies assure stable movement despite unexpected differences in floor height or obstacles such as cables on the floor.

(2) Accurate voice recognition amidst background noise

In addition to the currently employed horizontal noise reduction technology, a vertical noise reduction technology has also been developed to enhance three-dimensional voice recognition. Further, a novel internal noise reduction technique was developed to reduce the noise generated by the robot itself.

As a result, “EMIEW2” is able to accurately recognize human voice from various background noise such as PA announcements.

The next step will be to collect data through pilot tests to further improve practicality with a view to the practical application of a human symbiotic robot which can provide guide or surveillance services in a safe symbiosis with human.

“EMIEW2” is based on new developments on technology developed as part of the New Energy Development Organization (NEDO) commissioned project on the practical application of next-generation robots (prototype development support program) for “EMIEW” in 2005.

■ Main specifications

Dimensions:	300(w) × 250(d) × 800(h) mm
Weight:	14kg
Mobility mechanism:	2/4 wheel transformable wheeled-leg-type mechanism Active suspension
Max. speed:	6km/h
Max. acceleration:	2m/s ²
Degrees of freedom:	25 (the robot has 25 joints)
Power:	Li-ion battery (approx. 1.5 hours operation/full charge)
Voice recognition:	14 channel; distant voice recognition using microphone array
Positioning:	Map generation and localization using a scanning range finder



“EMIEW2” with enhanced mobility & voice recognition functions

- Exhibit at the 100th anniversary event “Hitachi uVALUE Convention 2010”
“EMIEW2” will be on display at the Hitachi 100th anniversary event “Hitachi uVALUE Convention 2010,” to be held from 22nd to 23rd July 2010 at the Tokyo International Forum (<http://www.t-i-forum.co.jp/english/index.html>), Chiyoda-ku, Tokyo, Japan.

Official Site of "Hitachi uVALUE Convention 2010"(Japanese only) :
<http://hitachi-uvcon.com/>

- About Hitachi, Ltd.

Hitachi, Ltd., (NYSE:HIT / TSE:6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 360,000 employees worldwide. Fiscal 2009 (ended March 31, 2010) consolidated revenues totaled 8,968 billion yen (\$96.4 billion). Hitachi will focus more than ever on the Social Innovation Business, which includes information and telecommunication systems, power systems, environmental, industrial and transportation systems, and social and urban systems, as well as the sophisticated materials and key devices that support them. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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