

Development of Generative Human-Interaction in Life-Size Humanoid Integrating Robot Intelligence Kernels

Masayuki INABA

(Professor, Department of Mechano-Informatics,
Graduate School of Information Science and Technology, The University of Tokyo)

【 Outline of survey 】

Humanoid is human-form robot that can walk on biped and stand up with arms if it falls down and becomes new research target where Japan leads the world in the advanced robotics field. This research aims to show the system design and implementation of life-size humanoid as the research platform for intelligent robotics by integrating the intelligent robot kernel with high level technologies such as visual auditory, distributed tactile sensing and whole-body action control, and to extend the research on its human interactive behaviors. The humanoid is designed to have functions to know where humans are through its sensors and how it generates reactions through estimating the intentions of human actions. It includes important tasks such as to perform safe and cooperative reactions against any motions that human apply directly and indirectly to the humanoid. In this research, the whole system architecture of the intelligent life-size humanoid and the implementation of the fundamental kernel systems for future humanoids are presented with experiments where they can behave around human safely and support humans interactively.

【 Expected results 】

The research result includes the total system design of the intelligent robot kernels for life-size humanoid and its implementation for the common humanoid platform developed in Humanoid Robot National Project of METI, Japan. The humanoid platform aims to support both the academic research fields and the social application fields as the common vehicle for research and development. It will help to develop not only the field of robotics but also the field of artificial intelligence and cognitive psychology where humans become research target, and the production of the intelligent robotics research originated from Japan provides the common property for the future of the world.

【 References by the principal researcher 】

M. Inaba, Developmental Processes of Humanoid, Journal of Robotics Society of Japan, Vol. 15, No. 7, pp. 964-967, 1997.

M. Inaba, S. Kagami, F. Kanehiro, H. Inoue: A Platform for Robotics Research Based on the Remote-Brained Robot Approach, The Journal of Robotics Research, Vol.19, No. 10, pp.933-954, 2000.

【 Term of project 】 F Y 2004 - 2008

【 Budget allocation 】 83,200,000 yen

【 Homepage address 】 <http://www.jsk.t.u-tokyo.ac.jp/>