

**Research and Development on Platform of Science and Engineering
for Human Support Based on Real-World Haptics**

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【Outline of survey】

Because the working environment of conventional industrial technologies is predetermined, those technologies are basically model-dependent. On the other hand, human-support technologies are model-independent, since those depend on the record and the characteristic of each personal body. The human-support technology that flexibly adapts to personal body characteristic must be a key technology for human supports in next generation. Since the contributions of conventional industrial technologies to human support are limited, it is necessary to create an innovative technology that flexibly support humans based on “perception” and “action” of humans.

This project proposes “science and engineering for human support” focusing on personal body characteristics. The core technology is real-world haptics which deals with touching and tactile sensation. Haptics is a secret for human support by various kinds of interactive contacts of human, robot and environment in the future life. The purpose of this project is to provide a platform for human support which realizes advanced technologies for supporting physical functions of human that differ depending on each person, extraction and copy of human skills, and so on.

【Expected results】

This project creates three novel technologies, a human-support technology based on personal body characteristics and actions, a composition technology of perceptual information, and a body characteristics database technology which records and maps environmental information and body actions. In addition, a new academic field, “science and engineering for human support” is established by integrating those three technologies. It achieves adaptable human support by converting personal sensations and actions. In other words, it realizes personalization of technologies.

【References by the principal investigator】

- S. Katsura, K. Ohnishi, et. al. “Medical Mechatronics -An Application to Haptic Forceps-,” IFAC Annual Reviews in Control, Vol. 29, No. 2, pp. 237-245, November, 2005.
- S. Katsura, K. Ohnishi: “Quarry of Modal Information from Environment for Advanced Motion Control,” IEEJ Transactions on Industry Applications, Vol. 126-D, No. 4, pp. 372-378, April, 2006.

【Term of project】 FY2008—2012

【Budget allocation】

114,300,000 yen (direct cost)

【Homepage address】

<http://www-oml.sum.sd.keio.ac.jp/kaken-s.html>