

KENTA SUZUKI

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■ JOB TARGET

Researcher / Postdoctoral Researcher position that fully utilizes my education and research experience on Cybernetics, which covers mechatronics, robotics, physiology and medical engineering, informatics, electronics, physics and mathematics.

■ PROFILE

- **Ph.D. candidate** in Cybernetics expected as early as 2007.
- 5 years research experience in the Cybernetics field as a Ph.D. program student.
- Master of Engineering with department of intelligent interaction technologies among human, machine and information.
- **SICE Young Authors Awards** from The Society of Instrument and Control Engineers in 2007.
- Presentation experience at national and international conferences; excellent reputation among the conference committee and audiences.
- Development team member for “**Robot Suit HAL**” (see Fig. 1 (a)) to win **The 2005 World Technology Award (IT Hardware division)**.
- Development team member for HAL that has been offered on **clinical trials for spinal-cord-injury and polio patients** (see Fig. 1 (b)).
- Development of “Cybernetic shoes” with intelligent reaction force sensors.
- Successful completion of numerous projects, e.g. “Alpine climbing project” by a paraplegia patient, and clinical testings both in Japan and overseas for our robot suits.
- **RA** (Research Assistant) in CYBERDYNE Inc. for new types of HAL.
- **TA** (Teaching Assistant) for teaching **CAD/CAE/CAM** for graduate students and **system control theory/engineering** for university students.
- Tutor on natural science, physics and mathematics for high school and junior high school students.
- A solid performance in software development and computer programming.

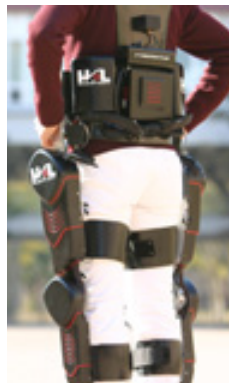
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- Advanced computer and Internet skills; Windows, Macintosh and working knowledge of Unix and Linux operating environments.
- Able to complete given missions with a strong sense of responsibility.
- Self-motivated and able to accomplish valuable results with vitality and creativity even if any assignments are not provided.
- Hard-working; willing to work overtime.
- High capacity for multi tasking.
- Proficient in English, some German and Korean.
- Excellent presentation and communication skills.
- Strong interpersonal and teamwork skills.



(a) HAL-5



(b) Medical version



(c) Demo. in the prime minister's office

Figure 1. Robot Suit HAL. (c): We demonstrated to the prime minister at that time and his cabinet members in Council for Science and Technology Policy. The person shown at right is the former prime minister Mr. Koizumi.

■ TECHNICAL SKILLS

Satisfactory trainings on physics, mathematics, electronics, robotics and so on through 5 years of the research experience as a Ph.D. program student and 4 years of the undergraduate education.

Expertise includes:

- Mathematics (linear algebra, complex analysis, numerical mathematics)
- Physics (mechanics, electromagnetics, material mechanics)
- Electronics
- Mechatronics

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- Robotics
- System control theory/engineering
- Biomedical engineering
- Analog/Digital circuit design
- Signal processing
- Computer programming (C/C++, Java)
- Data analysis technology
- 3D CAD (SolidWorks)
- CAE (COSMOSWorks, MSC.visualNastran 4D)
- CAM, MC (Machining Center) and NC (Numerical Control) machine operation
- Rapid Prototyping

■ EDUCATION

UNIVERSITY OF TSUKUBA, Ibaraki, Japan

- Ph.D. in Cybernetics[†] expected as early as 2007.
- Master of Engineering in man-machine systems and robotics, March 2005.
- Bachelor of Engineering in robotics, March 2003.

[†] Cybernetics is a pioneering academic field to explore the relationship among human, machine and information. The research on Cybernetics is based on Cybernetics, but it extends to interdisciplinary studies that cover mechatronics, robotics, physiology and medical engineering, informatics, electronics, physics and mathematics.

■ EMPLOYMENT

- RA, CYBERDYNE Inc., Japan, 2006-present.
 - Assistance in developing new types of the robot suit.
 - Development of control algorithms/programs for the robot suit.
 - Development of Cybernic shoes and the intelligent reaction force sensors.
- TA (Graduate school course experiment), Graduate School of Systems and Information Engineering, University of Tsukuba, 2006-present.
 - Assistance for professors in preparing course materials and teaching how to use the rapid prototyping machines and CAD/CAE/CAM softwares.

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- TA (Undergraduate school course experiment), College of Engineering Systems, University of Tsukuba, 2003-2005.
 - Assistance for professors in preparing course materials and teaching electronic circuit design.
 - Assistance for students in learning linear/nonlinear system control.

■ PUBLICATIONS

- “Intention-Based Walking Support for Paraplegia Patients with Robot Suit HAL”, *Advanced Robotics*, 2007 (In press).
- “Intention-Based Walking Support for Paraplegia Patient”, *Proc. of the 2005 IEEE International Conference on Systems, Man and Cybernetics (SMC2005)*, pp.2707-2713, 2005.
- “Gait Control Human and Humanoid on Irregular Terrain Considering Interaction with Environment”, *Proc. of 12th IEEE Workshop on Robot and Human Interactive Communication (ROMAN 2003)*, 2003.
- Master’s thesis: Support for Walk of Patient with Paraplegia by Robot Suit HAL, Graduate School of Systems and Information Engineering, Univ. of Tsukuba, 2004.
- Senior thesis: Analysis of human’s walk on irregular terrain for the application to a humanoid, College of Engineering Systems, Univ. of Tsukuba, 2002.

■ PRESENTATIONS

- “Intention-Based Walking Support for Paraplegia Patient”, *IEEE International Conference on Systems, Man and Cybernetics (SMC2005)*, Hawaii, 2005.
- “Walking Support for Paraplegia Patient with Robot Suit HAL”, *The 6th SICE System Integration Division Conference (SI2005)*, Kumamoto, Japan, 2005.
- “Gait Control Human and Humanoid on Irregular Terrain Considering Interaction with Environment”, *12th IEEE Workshop on Robot and Human Interactive Communication (ROMAN 2003)*, California, 2003.
- “Gait Control of Humanoid on Irregular Terrain by Applying Human’s Walk Strategy”, *The 21st Annual Conference of the Robotics Society of Japan (RSJ2003)*, Tokyo, 2003.
- “Analysis of human’s walk on irregular terrain for the application to a humanoid”, *2003 JSME Conference on Robotics and Mechatronics (ROBOMECH’03)*, Hakodate, Japan, 2003.

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- Demonstration of Robot Suit HAL in front of Dutch Minister of Health, Welfare and Sport, The Royal Netherlands Embassy in Tokyo, June 2006.
- Demonstration of Robot Suit HAL in Council for Science and Technology Policy (see Fig. 1 (c)), The prime minister’s office, May 2006.

■ AWARDS AND GRANTS

- **SICE Young Authors Awards**, The Society of Instrument and Control Engineers, 2007.
- **The 2005 World Technology Award (IT Hardware division)**, as one of development team members, 2005.
- The IEEE SMC Society Student Travel Grants, IEEE International Conference on Systems, Man and Cybernetics (SMC2005), 2005
- Japan Student Services Organization Scholarship, 1999-present.
- Tokio Marine Kagami Memorial Foundation Scholarship, 2000-2003.

■ ADDITIONAL ACTIVITIES

- Helper, Silver Care Tsuchiura, a nursing home, Tsuchiura, Japan, winter 2004.
- Medical check and bioinstrumentation for people with spinal cord injury, Ulaanbaatar, Mongol, 2004.
- Participation in study tour of Japanese NGO Cambodia Mines-remove Campaign (CMC), Cambodia, 2003.
- Captain, Triathlon club in Univ. of Tsukuba, Japan, 2001-2002. / Competitor of Ironman World Championship, Hawaii.

■ PROFESSIONAL MEMBERSHIPS

- Student member, IEEE
- Student member, The Robotics Society of Japan
- Student member, The Society of Instrument and Control Engineers
- Student member, Japan Society of Mechanical Engineers