

JIUN-YIH KUAN

Media Lab, E14-274, Amherst Street, Cambridge, MA 02139, USA

Tel: 617-784-7620 E-mail: kuan525@mit.edu Website: <http://sites.google.com/site/kuan909>**EDUCATION**

Massachusetts Institute of Technology (MIT) Ph.D. student, Department of Mechanical Engineering Advisor: Prof. Hugh Herr (Biomechatronics Group, Media Lab)	Cambridge, USA 09/2010 – present
National Taiwan University (NTU) Master of Science in Mechanical Engineering, System and Control Division Master's Thesis: "Development of an Integrated System for a Humanoid Robot Arm" Advisor: Prof. Han-Pang Huang (Robotics Laboratory)	Taipei, Taiwan 09/2006 – 06/2008
Southern Illinois University in Carbondale (SIUC) "Leadership Workshop and Course of Advanced Communication and American Culture" Program	Illinois, USA 07/2006 – 08/2006
National Cheng Kung University (NCKU) "Leadership Program for the Future Elites" Program	Tainan, Taiwan 11/2005 – 05/2006
National Cheng Kung University (NCKU) Bachelor of Science in Mechanical Engineering	Tainan, Taiwan 09/2002 – 06/2006

RESEARCH EXPERIENCE

National Taiwan University, Dept. of Mechanical Engineering, Taipei, Taiwan Research Assistant (08/2008 – 07/2010)	08/2006 – 07/2010
<ul style="list-style-type: none"> - Developed a variable stiffness rehabilitation and assistive robotic system with EMG signal feedback - Design, control, planning of a 6-DOF humanoid robot arm system - Design, control, planning of an 8-DOF dual humanoid robot arm system with two grippers 	
Graduate Research Assistant (09/2006 – 07/2008)	
<ul style="list-style-type: none"> - Developed a new coupled elastic approach for physical human-robot interaction - Design, control, analysis of a new adaptive coupled elastic actuator - Design of a 14-DOF dual humanoid robot arm system with two grippers - Developed independent joint sliding mode based controllers of humanoid robot arm systems - Developed a trajectory planning method for a humanoid robot arm 	
National Cheng Kung University, Dept. of Mechanical Engineering, Tainan, Taiwan Undergraduate Research Assistant (07/2005 – 02/2006)	07/2005 – 02/2006
<ul style="list-style-type: none"> - Developed force sensorless control applied to a power assisted revolving door system - Mechanical design of a power assisted revolving door system without any force sensors 	

HONORS AND AWARDS

- Studying Abroad Scholarship, Ministry of Education, Taiwan, 2010
- 1st Place, the 8th Virtual Instrumentation Paper Contest, National Instruments, Taiwan, 2009
- Excellent Award, the 8th Virtual Instrumentation Paper Contest, National Instruments, Taiwan, 2009
- Championship, National Robot Contest "HIWIN Intelligent Robot Arm Contest," Taiwan, 2009
- Honorary Member of the Phi Tau Phi Scholastic Honor Society, 2006
- Award of Outstanding Student for Academic Achievement in 2004-05 school year, NCKU, 2005
- Award of Outstanding Student for Academic Achievement in 2003-04 school year, NCKU, 2004
- Excellent Award, National Creative Engineering Competition of Leadwell Foundation, Taiwan, 2004
- Scholarship, Dr. Keh-Rang Li, NCKU, 2005, 2006
- Scholarship, TSMC Education and Culture Foundation, 2005
- Scholarship, SAN SHING FASTECH CORP., 2005
- Scholarship, SANYANG INDUSTRY CO., LTD., 2005

PUBLICATIONS AND PRESENTATIONS

Journal Papers

- [1] Jiun-Yih Kuan, Tz-How Huang, Han-Pang Huang, and Yen-Tsung Chen, "Adaptive Coupled Elastic Actuator Developed for Physical Human-Robot Interaction," *Advanced Robotics*, Accepted.
- [2] Jiun-Yih Kuan, Tz-How Huang, and Han-Pang Huang, "CEBOT—Coupled Elastic Robotic Systems: Design and Application for Active-Passive Elbow Rehabilitation," *IEEE/ASME Transactions on Mechatronics*, in revision.
- [3] Jiun-Yih Kuan and Han-Pang Huang, "New Force Shaping Compliant Actuation Development for Physical Human-Robot Interaction", in preparation.

Conference Proceedings (All Oral Presentation)

- [1] Jiun-Yih Kuan, Tz-How Huang, and Han-Pang Huang, "Human Intention Estimation Method for a New Compliant Rehabilitation and Assistive Robot," *Proc. of the 2010 SICE Ann. Conf.*, 2010.
- [2] Jiun-Yih Kuan, Han-Pang Huang, and Yen-Tsung Chen, "Coupled Elastic Actuation Development for Robots as an Intrinsic Compromise between Performance and Safety," *Proc. of the 2009 IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics*, pp.445-450, 2009.
- [3] Jiun-Yih Kuan and Han-Pang Huang, "Independent Joint Dynamic Sliding Mode Control of a Humanoid Robot Arm," *Proc. of the 2008 IEEE Int. Conf. on Robotics and Biomimetics*, pp. 602-607, 2009.
- [4] Chen-Tien Chang, Han-Pang Huang, and Jiun-Yih Kuan, "Independent Joint Sliding Mode Control of a Humanoid Robot Arm," *Proc. of the Ann. Conf. of the IEEE Indus. Electronics Society*, pp. 2754-2759, 2007.
- [5] Jiun-Yih Kuan, Chih-Peng Liu, and Han-Pang Huang, "A New Time-efficient Trajectory Planning Solution for Humanoid Robot Arms," *Proc. of the 2007 IEEE Int. Conf. on Robotics and Biomimetics*, pp. 312-317, 2007.
- [6] Wu-Sung Yao, Jiun-Yih Kuan, and Mi-Ching Tsai, "Force Sensorless Control Applied to a Power Assisted Revolving Door," *Proc. of the 2006 Int. Conf. on Electrical Machines and Systems*, 2006.
- [7] Jiun-Yih Kuan, Wu-Sung Yao, and Mi-Ching Tsai, "Control System Design of a Power Assisted Revolving Door," *Proc. of the 14th National Workshop on Automation Technology*, 2006. (in Chinese)

Other Selected Publications

- [1] Jiun-Yih Kuan, Tz-How Huang, Yen-Tsung Chen, Shin-Wei Lin, and Han-Pang Huang, "An Active-Passive Coupled Elastic Rehabilitation Robotic System Integrating with EMG Signals," *the 8th Virtual Instrumentation Paper Contest, National Instruments*, Taiwan, 2009. (in Chinese to be published in the *Mechatronics Magazine*)
- [2] Yen-Tsung Chen, Jiun-Yih Kuan, Shin-Wei Lin, and Han-Pang Huang, "A Humanoid Robot Arm Control Platform Using NI sbRIO," *Mechatronics Magazine*, vol. 139, pp. 125-132, 2010. (in Chinese)
- [3] Jiun-Yih Kuan, "Development of an Integrated System for a Humanoid Robot Arm," *Master Thesis*, Department of Mechanical Engineering, National Taiwan University, 2008.
- [4] Yi-Ming Lin, Jiun-Yih Kuan, and Chi-Ming Tsai, "Design and Fabrication of a Competition Robot: Ganbare Goemon," *Collected papers of the 8th Taiwan's Creative Robot Contest*, 2004. (in Chinese)

PATENTS

- [1] Jiun-Yih Kuan and Han-Pang Huang, "Adjusting Device for Adjusting Output Force Characteristics," R.O.C. patent and USA patent pending.
- [2] Jiun-Yih Kuan and Han-Pang Huang, "Force-controllable Adaptive Coupled Elastic Actuator for Safety Interaction and a Large Load Capacity," R.O.C. patent pending.
- [3] Han-Pang Huang, Hung-Ta Lin, and Jiun-Yih Kuan, "7 Degrees of Freedom Humanoid Robot Arm (including a gripper)," R.O.C. patent pending.

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

- Presenter in the 2009 IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics, Singapore, 2009
- Presenter in the 2008 IEEE Int. Conf. on Robotics and Biomimetics, Thailand, 2009
- Presenter in the 2007 IEEE Int. Conf. on Robotics and Biomimetics, China, 2007
- Presenter in the 2006 Int. Conf. on Electrical Machines and Systems, Japan, 2006
- Presenter in National Workshop on Automation Technology, Taiwan, 2006
- Laboratory Manager, Robotics Laboratory, NTU, 02/2007 – 02/2008
- Initiator and 1st President, Delicious Food Club, NCKU, 09/2003 – 08/2004