

Gan Ma

JSPS Postdoctoral Fellow in Robotics at Waseda University

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CAREER

Waseda University, Tokyo — JSPS Postdoctoral Fellow

July 2015 - PRESENT

- Focused on the research of fall protection for a humanoid robot by controlling the compliance of its arms;
- Implemented compliance control of the robotic arm in simulation.

EDUCATION

Udacity, USA — Robotics Nanodegree

September 2017 - Present

- Studying robotics via online learning
- Website: <https://udacity.com/robotics>

Beijing Institute of Technology, China — Ph. D

September 2009 - June 2015

- Focused on the research of Human-robot interaction

Sichuan University, China — Bachelor

September 2005 - June 2009

- Major: Mechanical Designing Manufacturing and Automation

PROJECTS

Follow Me

- Trained a deep neural network to identify and track a target using a drone;
- Simulation results show the drone can follow a target person well.

Human-robot friendly interaction of a humanoid robot

- Implemented the system integration (both hardware and software) of a human-sized humanoid robot;
- Designed a whole-body motion planner for human-robot interaction;
- The robot can communicate with humans using a combination of verbal, facial and body motion.

Compliance Control of a 6-DOF Manipulator

- Implemented kinematics, inverse kinematics, Jacobian, and trajectory planning in real-time control system for a 6-DOF manipulator;
- Turned admittance control and impedance control into real-time C code;
- The robotic arm can perform the task of autonomous grasp.

SKILLS

Academic Skills

Robotics, 6-DOF manipulator, Humanoid Robot, Fall Protection, Compliance Control

Professional Skills

ROS, Deep Learning, V-REP, Adams, Solidworks, AutoCAD, Protel DXP, CANopen, EtherCAT

Computer Skills

Linux, C, Python, Lua, MATLAB

AWARDS

Japan Society for the Promotion of Science (JSPS) Fellowship for Overseas Researchers

Grant No. 15F15702

Technological Innovation Funding from Beijing Institute of Technology

Grant No. 2012CX10009

Excellent Graduate of Beijing

Grant No. 201510007y110

LANGUAGES

English — Business Level

Chinese — Native Level

Japanese — Elementary Level

PUBLICATIONS

Journals

- Gan Ma, Junyao Gao, Zhangguo Yu, et al., “Development of a Socially Interactive System with Whole-body Movements for BHR-4,” *International Journal of Social Robotics*, vol. 8, no. 2, pp. 183-192, 2016.
- Gan Ma, Zhihong Jiang, Hui Li, et al., “Hand-eye Servo and Impedance Control for Manipulator Arm to Capture Target Satellite Safely,” *Robotica*, vol. 33, no. 4, pp. 848-864, 2015.
- Zhangguo Yu, Gan Ma, Qiang Huang, “Modeling and Design of a Humanoid Robotic Face Based on an Active Drive Points Model,” *Advanced Robotics*, vol. 28, no. 6, pp. 379-388, 2014.
- Zhangguo Yu, Qiang Huang, Gan Ma, et al., “Design and Development of the Humanoid Robot BHR-5,” *Advances in Mechanical Engineering*, 2014.

Conferences

- Gan Ma, Kenji Hashimoto, Qiang Huang, Atsuo Takanishi, “Effect of the “Arm Flexible Landing Strategy” for Safe Falling of a Biped Humanoid Robot,” *Australasian Conference on Robotics and Automation (ACRA)*, Brisbane, Australia, 2016.
- Gan Ma, Qiang Huang, Zhangguo Yu, et al., “Bio-inspired Falling Motion Control for a Biped Humanoid Robot,” *IEEE International Conference on Humanoid Robots (HUMANOIDS)*, pp. 850-855, Madrid, Spain, 2014.
- Gan Ma, Qiang Huang, Zhangguo Yu, et al., “Effect of the “Torso Protective Strategy” for Safe Falling of a Biped Humanoid Robot,” *IEEE International Conference on Robotics and Biomimetics*, pp. 1284-1289, Bali, Indonesia, 2014.
- Gan Ma, Qiang Huang, Zhangguo Yu, et al., “A New Flexible Controller for a Humanoid Robot That Considers Visual and Force Information Interaction,” *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 1036-1041, Hong Kong, 2014.
- Gan Ma, Qiang Huang, Zhangguo Yu, et al., “Experiments of a Human-robot Social Interactive System with Whole-body Movements,” *CISM-IFTOMM Symposium on Theory and Practice of Robots and Manipulators*, pp. 501-508, Moscow, Russia, 2014.
- Gan Ma, Qiang Huang, Zhangguo Yu, et al., “Hand-eye Servo and Flexible Control of an Anthropomorphic Arm,” *IEEE International Conference on Robotics and Biomimetics*, pp. 1432-1437, Shenzhen, China, 2013.
- Gan Ma, Qiang Huang, Zhangguo Yu, et al., “Design and Admittance Control for a Humanoid Manipulator to Adapt to Environment,” *3rd IFTOMM International Symposium on Robotics and Mechatronics*, pp. 678-687, Singapore, 2013.

PATENTS

Granted

- Qiang Huang, Gan Ma, Jing Li, Xuechao Chen, Zhangguo Yu, Weimin Zhang, Si Zhang. A method for anti-humanoid robot the ability to determine the disturbance. (CN103042525B)
- Zhangguo Yu, Qiang Huang, Gan Ma, Xuechao Chen, Jing Li, Si Zhang, Weimin Zhang. An acceleration optimization of humanoid robot controller based on inverse dynamics. (CN103019096B)
- Zhangguo Yu, Chenglong Tang, Xinran Guo, Qiang Huang, Gan Ma, Xuechao Chen. A method and apparatus for table tennis robot trajectory prediction. (CN103389738B)

Pending

- Qiang Huang, Libo Meng, Zhangguo Yu, Xuechao Chen, Gan Ma, Weimin Zhang, Junyao Gao. Hand, leg and eye servo control device and method for humanoid robot. (CN104656676A)