

## Prof. RYO KURAZUME, PhD

Faculty of Information Science and Electrical Engineering, Kyushu University  
744 Motoooka Nishi-ku Fukuoka Japan  
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Email kurazume@ait.kyushu-u.ac.jp  
<http://robotics.ait.kyushu-u.ac.jp/~kurazume/index-e.html>

### EDUCATION

Tokyo Institute of Technology, Japan 12/31/1998  
Ph.D. Department of Mechanical Engineering Science  
"Study on Cooperative Positioning System"

Tokyo Institute of Technology, Japan 4/1/1989-3/31/1991  
M.Eng. Department of Mechanical Engineering Science  
"Motion Control of Free Flying Robot with Dual-Arms"

### WORK HISTORY

Vice Dean, Faculty of Information Science and Electrical Engineering, Kyushu University 4/1/2016-3/31/2018

Professor, Faculty of Information Science and Electrical Engineering, Kyushu University 4/1/2007-PRESENT

Associate Professor, Faculty of Information Science and Electrical Engineering, Kyushu University 4/1/2002-3/31/2007

Research Scientist, Institute of Industrial Science, University of Tokyo 10/1/2000-3/31/2002

Research Associate, Department of Mechanical Engineering Science Tokyo Institute of Technology 1/1/1995-9/30/2000

Researcher 4/1/1991-12/31/1994  
Fujitsu Laboratories LTD

### SOCIETIES and ACTIVITIES

The Robotics Society of Japan 1989-PRESENT  
The Japan Society of Mechanical Engineers 1995-PRESENT  
The Information Processing Society of Japan 2001-PRESENT  
The Society of Instrument and Control Engineers 2004-PRESENT  
The Institute of Electronics, Information and Communication Engineers 2006-PRESENT

IEEE-RAS

2006-PRESENT

Vice Chairman of the Robotics and Mechatronics Division, The Japan Society of Mechanical Engineers (JSME)	4/1/2018
Director of the Robotics Society of Japan (RSJ)	4/1/2013-3/31/2015
Director of the Society of Instrument and Control Engineers (SICE)	4/1/2013-3/31/2015
Director of the Robotics Society of Japan (RSJ)	4/1/2009-3/31/2011

Editorial and Administrative activities

Associate Editor IROS 07, ICRA 08, ICRA 09, ICRA 10, ICRA 11, AIM 12, IROS 13

Editor SII 12, IROS 17, Advanced Robotics

Reviewer ICRA 07, IROS 07, IROS 08, ICRA 09, IROS 09, ICRA 10, IROS 10, IROS 11, ICRA 12, AIM 12, IROS 12, SII 2012, ICRA 13, ICRA 14, AIM 2014, IROS 14, ICRA 15, IROS15, SII 2015, ICRA 16, IROS 16, ICRA 17, T-RO, RA-L, Advanced Robotics

## AWARDS and HONORS

JSME Education Award	4/18/2019
JSME Robotics and Mechatronics Division, Certificate of Merit for ROBOMECH Outstanding Research Activity	6/6/2019
IEEE Senior Member	12/28/2018
Fellow of JSME	2/18/2018
SICE System Integration Division Academic Achievement Award	12/21/2017
Finalist of Best Service Robotics Paper Award, ICRA 2017	6/1/2017
Fellow of RSJ	9/8/2016
SICE System Integration Division Research Award	12/15/2015
EST 2014 Best Paper in the Machine Vision Workshop	9/11/2014
RSJ Best Paper Award	10/2/2014
14th Symposium on Construction Robotics in Japan Best Paper Award	8/28/2014
JSME Robotics and Mechatronics Academic Achievement Award	5/28/2012
Best Paper Award Candidate in Robotics Symposia	3/15/2010
IEEE ROBIO T.J.Tarn Best Paper in Robotics	12/19/2010
EST 2010 Best Paper Award	9/6/2010
JSME Robotics and Mechatronics Award	5/25/2009
RSJ Service Award	9/10/2008
RSJ Best Paper Award	11/13/1993
JSME Hatakeyama Award	1989

## GRANT

NEDO SIP (Cross-ministerial Strategic Innovation Promotion Program) 2018-2022  
New Energy and Industrial Technology Development Organization  
Core Cooperative Researcher

JST CREST (Core Research for Evolutionary Science and Technology) Japan Society for the Promotion of Science Core Cooperative Researcher	2017-2021
JST CREST (Core Research for Evolutionary Science and Technology) Japan Society for the Promotion of Science Cooperative Researcher	2017-2019
Grant-in-Aid for Scientific Research (C) Japan Society for the Promotion of Science Cooperative Researcher	2016-2018
Grant-in-Aid for Challenging Exploratory Research Japan Society for the Promotion of Science Principal Investigator	2016-2017
Grant-in-Aid for Scientific Research (A) Japan Society for the Promotion of Science Principal Investigator	2014-2017
Grant-in-Aid for Challenging Exploratory Research Japan Society for the Promotion of Science Cooperative Researcher	2014-2015
Grant-in-Aid for Challenging Exploratory Research Japan Society for the Promotion of Science Principal Investigator	2014-2015
COI-STREAM (Center of Innovation Science and Technology based Radical Innovation and Entrepreneurship Program) Ministry of Education, Culture, Sports, Science and Technology Researcher	2013-2021
Grant-in-Aid for Challenging Exploratory Research Japan Society for the Promotion of Science Principal Investigator	2012-2013
Strategic Information and Communications R&D Promotion Programme Ministry of Internal Affairs and Communications Researcher	2012-2015
Grant-in-Aid for Scientific Research (B) Japan Society for the Promotion of Science Principal Investigator	2011-2013
Grant-in-Aid for Scientific Research (B) Japan Society for the Promotion of Science Principal Investigator	2010-2012

A-Step (Adaptable and Seamless Technology Transfer Program through Target-driven R&D) Japan Science and Technology Agency Principal Investigator	2010-2010
Grant-in-Aid for Scientific Research Investigation Japan Society for the Promotion of Science Principal Investigator	2009-2010
Grant-in-Aid for Research on Construction Technology Ministry of Land, Infrastructure, Transport and Tourism Principal Investigator	2009-2010
Project to Develop "Innovative Seeds" Japan Science and Technology Agency Principal Investigator	2008-2008
Project for Future Generation Robots New Energy and Industrial Technology Development Organization Researcher	2007-2012
Project for Intelligent Medical Robots New Energy and Industrial Technology Development Organization Researcher	2007-2010
Grant-in-Aid for Scientific Research (B) Japan Society for the Promotion of Science Principal Investigator	2007-2009
Strategic Development of Advanced Robotics Elemental Technologies New Energy and Industrial Technology Development Organization Researcher	2006-2008
Grant-in-Aid for Scientific Research (B) Japan Society for the Promotion of Science Researcher	2006-2008
Grant-in-Aid for Research and Development Fukuoka Industry, Science and Technology Foundation Principal Investigator	2006-2006
Grant-in-Aid for Scientific Research (A) Japan Society for the Promotion of Science Researcher	2005-2008
Special Coordination Funds for Promoting Science and Technology, Ministry of Education, Culture, Sports, Science and Technology	2005-2007

Researcher

Grant-in-Aid for Young Scientists (B), 2004-2005  
Japan Society for the Promotion of Science  
Principal Investigator

Strategic Information and Communications R&D Promotion Programme, 2003-2005  
Ministry of Internal Affairs and Communications  
Researcher

Grant-in-Aid for Scientific Research (A), 2002-2004  
Japan Society for the Promotion of Science  
Researcher

Grant-in-Aid for Young Scientists , 1998-1999  
Japan Society for the Promotion of Science  
Principal Investigator

Grant-in-Aid for Young Scientists, 1996-1996  
Japan Society for the Promotion of Science  
Principal Investigator

## PUBLICATIONS

### **International Journals (35 papers)**

Fukuoka Datasets for Place Categorization

Oscar Martinez Mozos, Kazuto Nakashima, Hojung Jung, Yumi Iwashita, Ryo Kurazume  
International Journal of Robotics Research, 2019

Development of ROS-TMS 5.0 for Informationally Structured Environment

Junya Sakamoto, Kouhei Kiyoyama, Kohei Matsumoto, Yoonseok Pyo, Akihiro Kawamura, Ryo Kurazume

ROBOMECH Journal, Vol.5, No.24, 2018, DOI: 10.1186/s40648-018-0123-9

Ancient Pelvis Reconstruction From Collapsed Component Bones Using Statistical Shape Models

Ken'ichi Morooka, Ryota Matsubara, Shoko Miyauchi, Takaichi Fukuda, Takeshi Sugii, Ryo Kurazume

Machine Vision and Applications, 2018, DOI: 10.1007/s00138-018-0972-5

Learning Geometric and Photometric Features from Panoramic LiDAR scans for Outdoor Place Categorization

Kazuto Nakashima, Hojung Jung, Yuki Oto, Yumi Iwashita, Ryo Kurazume, Oscar Martinez Mozos

Advanced Robotics, Volume 32, Issue 14, pp.750-765, 2018, doi:10.1080/01691864.2018.1501279

Fast modified Self-organizing Deformable Model: Geometrical feature-preserving mapping of organ models onto target surfaces with various shapes and topologies

Shoko Miyauchi, Ken'ichi Morooka, Tokuo Tsuji, Yasushi Miyagi, Takaichi Fukuda, Ryo Kurazume  
Computer Methods and Programs in Biomedicine, Vol.157, pp.237--250, 2018

Automatic large-scale three dimensional modeling using cooperative multiple robots

Ryo Kurazume, Souichiro Oshima, Shingo Nagakura, Yongjin Jeong, Yumi Iwashita  
Computer Vision and Image Understanding, Vol. 157, pp. 25--42, April 2017

Local N-ary Patterns: a local multi-modal descriptor for place categorization

Hojung Jung, Oscar Martinez Mozos, Yumi Iwashita, Ryo Kurazume

Advanced Robotics, Vol. 30, No. 6, pp. 402--415, 2016, doi:10.1080/01691864.2015.1120242

Service Robot System with an Informationally Structured Environment

Yoonseok Pyo, Kouhei Nakashima, Shunya Kuwahata, Ryo Kurazume, Tokuo Tsuji, Ken'ichi Morooka, Tsutomu Hasegawa

Robotics and Autonomous Systems, Vol.74, No.Part A, pp. 148--165, 2015, doi:10.1016/j.robot.2015.07.010

The Informationally Structured Room for Robotic Assistance

Tokuo Tsuji, Oscar Martinez Mozos, Hyunuk Chae, YoonSeok Pyo, Kazuya Kusaka, Tsutomu Hasegawa, Ken'ichi Morooka, Ryo Kurazume

Sensors, Vol.15, No.4, pp.9438--9465, 2015, doi:10.3390/s150409438

Manual/Automatic Colorization for Three-Dimensional Geometric Models utilizing Laser Reflectivity

Shuji Oishi, Ryo Kurazume

Advanced Robotics, Vol.28, No.24, pp.1617--1635, 2014, doi:10.1080/01691864.2014.968616

Identification of people walking along curved trajectories

Yumi Iwashita, Koichi Ogawara, Ryo Kurazume

Pattern Recognition Letters, Vol.48, No.15, pp.60--69, 2014, doi:10.1016/j.patrec.2014.04.004

Floor Sensing System using Laser Reflectivity for Localizing Everyday Objects and Robot

Yoonseok Pyo, Tsutomu Hasegawa, Tokuo Tsuji, Ryo Kurazume, Ken'ichi Morooka

Sensors, Vol.14, No.4, pp. 7524--7540, 2014, doi:10.3390/s140407524

Gait-based person identification robust to changes in appearance

Yumi Iwashita, Koji Uchino, Ryo Kurazume

Sensors, Vol.13, No.6, pp.7884--7901, 2013, doi:10.3390/s130607884

Categorization of Indoor Places by Combining Local Binary Pattern Histograms of Range and Reflectance Data from Laser Range Finders

Oscar Martinez Mozos, Hitoshi Mizutani, Hojung Jung, Ryo Kurazume, Tsutomu Hasegawa

Advanced Robotics, Vol.27, No.18, pp.1455--1464, 2013

Range Image Smoothing and Completion utilizing Laser Intensity  
Shuji Oishi, Ryo Kurazume, Yumi Iwashita, Tsutomu Hasegawa  
Advanced Robotics, Vol.27, No.12, pp.947--958, 2013

Robust Visual Servoing for Object Manipulation against Temporary Loss of Sensory Information  
using a Multi-Fingered Hand-Arm  
Akihiro Kawamura, Kenji Tahara, Ryo Kurazume, Tsutomu Hasegawa  
Journal of Robotics and Mechatronics, Vol.25, No.1, pp.125--135, 2013

Robust global localization using laser reflectivity  
Dong Xiang ZHANG, Ryo Kurazume, Yumi Iwashita, Tsutomu Hasegawa  
Journal of Robotics and Mechatronics, Vol.25, No.1, pp.38--52, 2013

Dynamic Grasping of an Arbitrary Polyhedral Object  
Akihiro Kawamura, Kenji Tahara, Ryo Kurazume, Tsutomu Hasegawa  
Robotica, Vol.31, No.4, pp. 511--523, 2013

Development of 3D scanning system using automatic guiding total station  
Ken Endou, Takafumi Ikenoya, Ryo Kurazume  
Journal of Robotics and Mechatronics, Vol.24, No.6, pp.992--999, 2012

Gait identification using shadow biometrics  
Yumi Iwashita, Adrian Stoica, Ryo Kurazume  
Pattern Recognition Letters, Vol.33, No.16, pp.2148--2155, 2012

Categorization of Indoor Places Using the Kinect Sensor  
Oscar Martinez Mozos, Hitoshi Mizutani, Ryo Kurazume, Tsutomu Hasegawa  
Sensors, Vol.12, No.5, pp.6695--6711, 2012

Laser-based geometrical modeling of large-scale architectural structures using co-operative multiple  
robots  
Yukihiro Tobata, Ryo Kurazume, Yusuke Noda, Kai Lingemann, Yumi Iwashita, Tsutomu Hasegawa  
Autonomous Robot, Vol.32, No.1, pp. 49--62, 2012

HELIOS Tracked Robot Team: Mobile RT System for Special Urban Search and Rescue Operations  
Ryuichi Hodoshima, Michele Guarnieri, Ryo Kurazume, Hiroshi Masuda, Takao Inoh, Paulo  
Debenest, Edwardo F. Fukushima, Shigeo Hirose  
Journal of Robotics and Mechatronics, Vol.23, No.6, pp.1041--1054, 2011

Multi-Part People Detection Using 2D Range Data  
Oscar Martinez Mozos, Ryo Kurazume, Tsutomu Hasegawa  
International Journal of Social Robotics, Vol.2, No.1, pp.31--40, 2010

A Decision Method for Placement of Tactile Elements on a Sensor Glove for the Recognition of  
Grasp Types  
Kouji Murakami, Kazuya Matsuo, Tsutomu Hasegawa, and Ryo Kurazume  
IEEE/ASME Transactions on Mechatronics, Vol.15, No.1, pp.157--162, 2010

Supporting Robotic Activities in Informationally Structured Environment with Distributed Sensors and RFID Tags

Kouji Murakami, Tsutomu Hasegawa, Ryo Kurazume, and Yoshihiko Kimuro

Journal of Robotics and Mechatronics, Vol.21, No.4, pp.453--459, 2009

3D reconstruction of a femoral shape using a parametric model and two 2D fluoroscopic images

Ryo Kurazume, Kaori Nakamura, Toshiyuki Okada, Yoshinobu Sato, Nobuhiko Sugano, Tsuyoshi Koyama, Yumi Iwashita, Tsutomu Hasegawa

Computer Vision and Image Understanding, Vol.113, No.2, pp. 202--211, 2009

Hierarchical face cluster partitioning of polygonal surfaces and high-speed rendering

Tokuo Tsuji, Hongbin Zha, Tsutomu Hasegawa, Ryo Kurazume

Systems and Computers in Japan, Vol.38, No.8, pp.32--43, 2007

Fast Model-Image Registration using 2D Distance Map for Surgical Navigation System

Yumi Iwashita, Ryo Kurazume, Kozo Konishi, Masahiko Nakamoto, Naoki Aburaya, Yoshinobu Sato, Makoto Hashizume, Tsutomu Hasegawa

Advanced Robotics, Vol.21, No.7, pp751--770, 2007

The Great Buddha Project: Digitally Archiving, Restoring, and Analyzing Cultural Heritage Objects

Katsushi Ikeuchi, Takeshi Oishi, Jun Takamatsu, Ryusuke Sagawa, Atsushi Nakazawa, Ryo Kurazume, No Nishino, Mawo Kamakura

International Journal of Computer Vision, Vol.75, No.1, pp.189--208, 2007

A New Index of Serial Link Manipulator Performance Combining Dynamic Manipulability and Manipulating Force Ellipsoids

Ryo Kurazume, Tsutomu Hasegawa

IEEE Transactions on Robotics, Vol.22, No.5, pp.1022--1028, 2006

Mapping textures on 3D geometric model using reflectance image

Ryo Kurazume, Ko Nishino, Mark D. Wheeler, Katsushi Ikeuchi

Systems and Computers in Japan, Vol.36, No.13, pp.92--101, 2005

Feedforward and feedback dynamic trot gait control for quadruped walking vehicle

Ryo Kurazume, Kan Yoneda, and Shigeo Hirose

Autonomous Robots, Vol.12, No.2, pp.157--172, 2002

Development of a Cleaning Robot System with Cooperative Positioning System

Ryo Kurazume, Shigeo Hirose

Autonomous Robots, Vol.9, No.3, pp. 237--246, 2000

An Experimental Study of a Cooperative Positioning System

Ryo Kurazume, Shigeo Hirose

Autonomous Robots, Vol.8, No.1, pp. 43--52, 2000

**Domestic Journals in Japan (53 papers)**



### **Selected Refereed Conference Papers (15 papers out of 153 papers)**

Spatial change detection using voxel classification by normal distributions transform

Ukyou Katsura, Kohei Matsumoto, Akihiro Kawamura, Tomohide Ishigami, Tsukasa Okada, Ryo Kurazume

IEEE International Conference on Robotics and Automation 2019 (ICRA 2019), Montreal, Canada, 2019.5.20-24, 2019

Previewed Reality: Near-future perception system

Yuta Horikawa, Asuka Egashira, Kazuto Nakashima, Akihiro Kawamura, Ryo Kurazume

2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2017), pp.370-375, 2017

Feasibility study of IoRT platform "Big Sensor Box"

Ryo Kurazume, Yoonseok Pyo, Tokuo Tsuji, and Akihiro Kawamura

Proc. IEEE International Conference on Robotics and Automation (ICRA2017), pp. 3664-3671, 2017

Multi-modal Panoramic 3D Outdoor Datasets for Place Categorization

Hojung Jung, Yuki Oto, Oscar Mozos, Yumi Iwashita, Ryo Kurazume

Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016), pp.4545-4550, 2016

Automatic planning of laser measurements for a large-scale environment using CPS-SLAM system

Souichiro Oshima, Shingo Nagakura, Yongjin Jeong, Yumi Iwashita, Ryo Kurazume

Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2015), pp.4437-4444, 2015

Grasp Stability Evaluation based on Energy Tolerance in Potential Field

Tokuo Tsuji, Kosei Baba, Kenji Tahara, Kensuke Harada, Ken'ichi Morooka, Ryo Kurazume

Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2015), pp.2311-2316, 2015

Grasp Planning for Constricted Parts of Objects Approximated with Quadric Surfaces

Tokuo Tsuji, Soichiro Uto, Kensuke Harada, Ryo Kurazume, Tsutomu Hasegawa, Ken'ichi Morooka

2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2014), pp.2447-2453, 2014

First-Person Animal Activity Recognition from Egocentric Videos

Yumi Iwashita, Asamichi Takamine, Ryo Kurazume, Michael S. Ryoo

22nd International Conference on Pattern Recognition (ICPR 2014), pp.4310-4315, 2014

Colorization of 3D Geometric Model utilizing Laser Reflectivity

Shuji Oishi, Ryo Kurazume, Yumi Iwashita, Tsutomu Hasegawa

in Proc. IEEE International Conference on Robotics and Automation (ICPR 2013), pp.2311-2318, 2013

Iterative Learning Control for a Musculoskeletal Arm: Utilizing Multiple Space Variables to Improve the Robustness

Kenji Tahara, Yuta Kuboyama, Ryo Kurazume

Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2012), pp.4620-4625, 2012

Robust Visual Servoing for Object Manipulation with Large Time-Delays of Visual Information

Akihiro Kawamura, Kenji Tahara, Ryo Kurazume, Tsutomu Hasegawa

Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2012), pp.4797-4803, 2012

Position Tracking and Recognition of Everyday Objects by using Sensors Embedded in an Environment and Mounted on Mobile Robots

Kouji Murakami, Kazuya Matsuo, Tsutomu Hasegawa, Ryo Kurazume

in Proc. IEEE International Conference on Robotics and Automation (ICRA2012), pp., 2012

Denoising of Range Images using a Trilateral Filter and Belief Propagation

Shuji Oishi, Ryo Kurazume, Yumi Iwashita, Tsutomu Hasegawa

2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2011), pp.2020-2027, 2011

Robust Manipulation for Temporary Lack of Sensory Information by a Multi-Fingered Hand-Arm System

Akihiro Kawamura, Kenji Tahara, Ryo Kurazume, Tsutomu Hasegawa

2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2011), pp.4201-4206, 2011

Introduction to the Robot Town Project and 3-D Co-operative Geometrical Modeling Using Multiple Robots

Ryo Kurazume, Yumi Iwashita, Koji Murakami, Tsutomu Hasegawa

15th International Symposium on Robotics Research (ISRR 2011), pp., 2011

**Domestic Conference Papers in Japan (447 papers)**

**Books/Chapters (7 books/chapters)**

**Invited Journal Papers (5 papers)**

**Invited Conference Papers/Talks (18)**

## **COOPERATIVE RESEARCHS**

2018-Current     NTT DOCOMO, INC.

2018-Current     Living robot Inc.

2017                hapi-robot, Inc.

2016-Current	JATCO Ltd.
2015-Current	Panasonic Inc.
2015	KOBE STEEL LTD.
2013-2015	YASKAWA Electric Corporation
2011-2013	SEIBU Landscape Co. LTD.
2011-2012	Hitachi, Ltd.
2010	Systems Engineering Consultants Co., LTD.
2010-2012	Mitsubishi Electric Corporation
2009-2010	TOKYU CONSTRUCTION CO., LTD.

## PATENTS

Japanese Unexamined Patent Application Publication No. 2016-218534  
 Japanese Unexamined Patent Application Publication No. 2013-190272  
 Japanese Unexamined Patent Application Publication No. Hei 08-255247  
 Japanese Unexamined Patent Application Publication No. Hei 08-145714  
 Japanese Unexamined Patent Application Publication No. Hei 08-063581  
 Japanese Unexamined Patent Application Publication No. Hei 08-030327  
 Japanese Unexamined Patent Application Publication No. Hei 07-152715  
 Japanese Unexamined Patent Application Publication No. Hei 07-080790  
 Japanese Unexamined Patent Application Publication No. Hei 06-314124  
 Japanese Unexamined Patent Application Publication No. Hei 06-203166  
 Japanese Unexamined Patent Application Publication No. Hei 06-187009  
 Japanese Unexamined Patent Application Publication No. Hei 06-035510  
 Japanese Unexamined Patent Application Publication No. Hei 05-197701