



# Hong Zhang, PhD

*Professor, FIEEE, FCAE*

## Research Interests

Robotics, Computer Vision, Image Processing

## Education

- 1986–87 **PDF**, *University of Pennsylvania*, Philadelphia, Pennsylvania, USA.  
GRASP Laboratory, Department of Computer and Information Science
- 1982–86 **PhD**, *Purdue University*, West Lafayette, Indiana, USA.  
Doctor of Philosophy in Electrical Engineering  
Supervisor: Richard (Lou) Paul
- 1980–82 **BSc**, *Northeastern University*, Boston, Massachusetts, USA.  
Bachelor of Science in Electrical Engineering (with the Highest Class GPA)
- 1978–80 Beijing Polytechnic University, Beijing, China  
Bachelor of Science in Automatic Control

## Employment

- 2000–present Professor, Department of Computing Science, University of Alberta, Canada
- 2002–03 Senior Fellow, Nanyang Technological University, Singapore
- 1994–00 Associate Professor, Department of Computing Science, University of Alberta, Canada
- 1994–95 STA Fellow, Mechanical Engineering Laboratory, MITI, Japan
- 1988–94 Assistant Professor, Department of Computing Science, University of Alberta, Canada

## Adjunct Appointments

- 2015–present 100-Scholar Chair Professor, Guangdong University of Technology, China
- 2008–11 100-Scholar Chair Professor, South China University of Technology, China
- 2006–11 985 Professor, Northeast University, China
- 2002–03 Peking University, China
- 2001–04 Beijing Institute of Technology, China

## Research Chair

- 2003–17 Senior NSERC Industrial Research Chair in Intelligent Sensing Systems

## Centre Director

- 2000–17 Director, the Centre for Intelligent Mining Systems, University of Alberta

---

## Awards and Distinctions

- 2019 **Best Conference Paper**, *2019 IEEE International Conference on Robotics and Biomimetics*, Dali, China.
- 2018 **IROS Distinguished Service Award**, *IROS Awards Committee*.
- 2018 **Distinguished Visiting Scholar**, *Centre for Autonomous Systems*, University of Technology Sydney, Sydney, Australia.
- 2015 **Best Conference Paper**, *The 7th IEEE International Conference on Robotics, Automation and Mechatronics (RAM)*, Angkor Wat, Cambodia.
- 2015 **Fellow**, *Canadian Academy of Engineering*, CAE.
- 2014 **Fellow**, *Institute of Electrical and Electronic Engineering*, IEEE.
- 2009 **Best Student Paper**, *2008 IEEE International Conference on Robotics and Biomimetics*, Bangkok, Thailand.
- 2008 **Alberta Science/Technology Award**, *Syncrude/ASTech Innovation in Oil Sands Research*, ASTech Foundation, Alberta.
- 2008 **Member of the Year**, *Association of Chinese Canadian Professors*, ACCP.
- 2007 **Best Paper in Robotics**, *2007 IEEE International Conference on Mechatronics and Automation (ICMA)*, Harbin, China.
- 2006 **Award for Research Excellence and Service to the Research Community**, *Canadian Information Processing and Pattern Recognition Society*, CIPPRS.
- 2004 **Best Student Paper**, *2004 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, Shenyang, China.
- 2004 **Member of the Year**, *Association of Chinese Canadian Professors*, ACCP.
- 2003 **Best Student Paper**, *16th International Conference on Vision Interface*, Nova Scotia, Canada.
- 2002 **Award for Excellent Teaching**, *Faculty of Science*, University of Alberta.
- 2002 **Member of the Year**, *Association of Chinese Canadian Professors*, ACCP.
- 2000 **IEEE Millennium Medal**, IEEE.

---

## Plenaries, Keynote Speeches and Invited Talks

- 2019 **Invited Talk**, *The Society of Instrument and Control Engineers (SICE) Lunch*, IROS 2019, Macau, China, November 6, 2019.  
**Invited Talk**, *1st International Forum on Frontiers of Automation and Artificial Intelligence*, (FAAI 2019), Shenyang, China, July 23, 2019.
- 2018 **Invited Talk**, *Centre for Autonomous Systems*, Sydney, Australia, November 20, 2018.
- 2017 **Keynote**, *Greater Bay Area Summit (GBAS) on Robotics and Artificial Intelligence*, Shenzhen, China, December 2, 2017.  
**Invited Talk**, *Ryerson Graduate Seminar Series*, Department of Electrical and Computer Engineering, Ryerson University, Toronto, April 17, 2017.
- 2016 **Invited Talk**, *13th Conference on Computer and Robot Vision*, Victoria, June 1, 2016.  
**Keynote**, *International Robotic Technology and Industry Summit*, Foshan, China, September 29, 2016.  
**Keynote**, *World Robot Conference*, Beijing, China, October 23, 2016.
- 2015 **Keynote**, *2015 IEEE International Conference on Robotics and Biomimetics*, Zhuhai, China, December 8, 2015.  
**Keynote**, *World Robot Conference*, Beijing, China, November 23, 2015.  
**Keynote**, *2015 Int'l Conference on Real-Time Computing and Robotics*, Changsha, China, June 26, 2015.
- 2014 **Semi-Plenary**, *The 13th International Conference on Control, Automation, Robotics and Vision (ICARCV)*, Singapore, December 11, 2014.

1443 Herring-Cooper Way, Edmonton, Alberta – Canada

✉ [hzhang@ualberta.ca](mailto:hzhang@ualberta.ca) • 🌐 [www.cs.ualberta.ca/~zhang](http://www.cs.ualberta.ca/~zhang)

- Plenary**, *The 4th Annual IEEE International Conference on Cyber Technologies in Automation, Robotics and Intelligent Systems (CYBER)*, Hong Kong, June 7, 2014.
- 2013 **Invited Talk**, *IFAC ICONS Workshop*, Chengdu, China, September 2, 2013.
- 2011 **Plenary**, *CVR 2011 International Vision Conference*, York University, Canada. June 15-18, 2011
- 2010 **Panelist**, *2010 IEEE International Conference on Robotics and Biomimetics*, Tianjin, China, December 2010.
- Invited Talk**, *Institute of Robotics and Intelligent Information Processing*, Shanghai Jiaotong University, Shanghai, China, December, 2010.
- Invited Talk**, *2nd Int'l Workshop on Recent Trends in Computer Vision*, Tokyo, Japan, September 2010.
- Invited Talk**, *Computer Vision Workshop, Beijing University*, Beijing, China, July 2009.
- 2009 **Plenary**, *7th International Conference on Advances in Pattern Recognition*, Calcutta, India, February 6th, 2009.
- 2007 **Plenary**, *Chinese Process Control Conference*, Anshan, China, August 2007.
- Public Talk**, *iCORE Lecture*, Calgary, Canada, February 23, 2005.
- 2004 **Plenary**, *2004 International Conference on Intelligent Mechatronics and Automation*, Chengdu, China, August 31, 2004.
- Plenary**, *First Canadian Conference and Computer and Robot Vision*, London, Canada, June 2004.
- Keynote**, *Canadian Conference on Artificial Intelligence, Workshop on Agents Meet Robots*, London, Canada, June 2004.
- Plenary**, *First International Conference on Information Acquisition*, Hefei, China, June 2004.
- 2003 **Plenary**, *International Conference on Control Science and Engineering*, Harbin, China, December 2003.
- 2001 **Invited Talk**, *AI Seminar*, Department of Computing Science, University of Alberta, October 19, 2001.
- Keynote**, *2001 International Workshop on Bio-Robotics and Tele-operation*, Beijing, China, May 30, 2001.
- 1998 **Invited Talk**, *Robotics Department, MEL-MITI*, Japan, June 10, 1998.
- 1995 **Distinguished Lecture**, *Department of Computing Science*, University of Alberta, November 21, 1995.
- Invited Talk**, *IEEE Robotics and Automation Society, Tokyo Chapter*, Tokyo, Japan, January 12, 1995.
- 1994 **Invited Talk**, *Electrotechnical Laboratory (ETL)*, Tsukuba, Japan, December 14, 1994.

## Research Grants – Individual

2019-20	<i>Object Detection/Environment Perception with Polarized Imaging</i> , UAHJIC	<b>\$116,000</b>
2017-18	<i>Motion Capture System and Mobile Robot Vehicle for Indoor Autonomous Navigation Research</i> , NSERC Research Tools and Infrastructure (RTI)	<b>\$36,604</b>
2016-19	<i>Oilsand Shurry Image and Video Analysis</i> , Syncrude Canada Ltd. Collaborative Research and Development	<b>\$150,000</b>
2016-19	<i>Oilsand Shurry Image and Video Analysis</i> , NSERC Collaborative Research and Development (CRD)	<b>\$290,970</b>
2016-21	<i>Developing Robot Autonomy via Invariant Representations</i> NSERC Discovery Grant	<b>\$230,000</b>
2011-16	<i>Scalable Appearance-Based Robot Navigation</i> , NSERC Discovery Grant Program	<b>\$120,000</b>
2010-15	<i>Intelligent Sensing Systems</i> , NSERC Industrial Research Chair Program	<b>\$735,035</b>

2010-15	<i>Intelligent Sensing Systems</i> , Syncrude Canada Ltd., Industrial Research Chair	<b>\$750,000</b>
2009-14	<i>Intelligent Sensing Systems</i> , Alberta Innovates Technology Future Industrial Chair Establishment Program	<b>\$750,000</b>
2006-11	<i>Collective Robotics</i> , NSERC Discovery Grant Program	<b>\$195,000</b>
2003-08	<i>Intelligent Sensing Systems</i> , NSERC Industrial Research Chair Program	<b>\$806,045</b>
2003-08	<i>Intelligent Sensing Systems</i> , Syncrude Canada Ltd., Industrial Research Chair	<b>\$500,000</b>
2003-08	<i>Intelligent Sensing Systems</i> , Matrikon, Industrial Research Chair	<b>\$250,000</b>
2003-08	<i>Intelligent Sensing Systems</i> , iCORE Industrial Chair Establishment Program	<b>\$750,000</b>
2003-04	<i>Experimental Testbed for Multi-Robot System Research</i> , NSERC Research Tools and Instruments (RTI)	<b>\$44,602</b>
2001-06	<i>Cooperative Multi-Robot Systems</i> , NSERC Research Grant	<b>\$189,900</b>
2000-02	<i>Sensing Large Lumps in the Hydrotransport System</i> , NSERC Collaborative Research and Development Grant	<b>\$53,800</b>
2000-01	<i>Mobile Robot for Experimental Research</i> , NSERC Equipment Grant	<b>\$28,785</b>
1999-01	<i>Oil Sand Lump Size Estimation (LSE) by 3-D Sensing</i> , Syncrude Canada Ltd. Research Grant	<b>\$27,000</b>
1999-01	<i>Oil Sand Lump Size Estimation (LSE) by 3-D Sensing</i> , COURSE University Research Program (Alberta), Research Grants	<b>\$120,000</b>
1999-00	<i>Wireless Ethernet Link for Robotics Research</i> , NSERC Equipment Grant	<b>\$11,659</b>
1999-00	<i>Hybrid Tactile Sensing</i> , Foundation for Promotion of Advanced Automation Technology (FANUC), Japan	<b>\$8,741</b>
1998-99	<i>Intelligent Sensing and Pattern Recognition for Measuring Gas Liquid Ratio in Two Phase Flow</i> , Precarn/Alberta Research Council	<b>\$25,387</b>
1997-01	<i>Robot Dextrous Manipulation: Planning, Sensing, and Control</i> NSERC Research Grant	<b>\$97,020</b>
1995-96	<i>Dextrous Robot Hand and Its Controller</i> , NSERC Equipment Grant	<b>\$44,260</b>
1993-97	<i>Tactile Sensing in Robot Manipulation and Robot Sensor Planning</i> NSERC Operating Grant	<b>\$72,000</b>
1993-94	<i>Collective Robotics</i> , Central Research Fund, University of Alberta	<b>\$4,500</b>
1993-94	<i>Neural Network Based Control of Active Suspension</i> , Dendronic Decisions Limited	<b>\$28,750</b>
1993-94	<i>Torque Control of Robot Joints</i> , Kajima Foundation, Japan	<b>\$7,800</b>
1992-95	<i>Travel Grants</i> , Central Research Fund, University of Alberta	<b>\$5,000</b>
1992-93	<i>Sensorized Gripper for Robotic Object Manipulation</i> , NSERC Equipment Grant	<b>\$19,922</b>
1991-93	<i>Tactile-guided robot fine manipulation</i> , Foundation for Promotion of Advanced Automation Technology (FANUC), Japan	<b>\$21,252</b>
1991-92	<i>An Experimental Teaching Methodology for an Undergraduate Robotics Course</i> , University of Alberta Teaching Research Fund	<b>\$7,400</b>
1991-92	<i>Control of Robot Joints</i> , Central Research Fund, University of Alberta	<b>\$1,800</b>
1990-93	<i>Force Control of Robot Manipulators</i> , NSERC Operating Grant	<b>\$48,000</b>
1989-90	<i>Robust Compliant Motion of Robot Manipulators</i> , Central Research Fund University of Alberta	<b>\$2,179</b>
1988-89	<i>A Sun/Unix Based Robot Control System</i> , Central Research Fund University of Alberta	<b>\$9,000</b>

---

## Research Grants – Group

2018-24	<i>Centre for Autonomous Systems in Strengthening Future Communities</i>	<b>\$7,141,000</b>
---------	--	--------------------

	Alberta Economic Development and Trade 10 PI's (Tony Qiu, Hong Zhang, <i>et al.</i> )	
2018-22	NSERC Canadian Robotics Network Strategic Grant, NSERC Gregory Dudek (PI) and 13 co-PI's (\$258,250 being my allocation)	<b>\$5,500,000</b>
2012-17	NSERC Canadian Field Robotics Network Strategic Grant, NSERC Gregory Dudek (PI) and 9 co-PI's (\$239,356 being my allocation)	<b>\$5,000,000</b>
2008-10	Collaborative Research with Beijing Genomics Institute - Shenzhen, China Institute Grant, University of Alberta Gane Ka-Shu Wong (PI) and 4 co-PI's	<b>\$129,446</b>
1998-99	Laboratory for Advanced Visualization and Multimedia Research NSERC Major Installation Grant Mark Green (PI) and 8 co-PI's	<b>\$430,000</b>
1998-99	Imaging Systems Equipment for Collaborative Multimedia Projects University of Alberta AECD Internal Allocation Committee Anup Basu (PI)	<b>\$140,000</b>
1997-98	Panoramic Viewing for Telepresence, NSERC Collaborative Research and Development (CRD), Anup Basu (PI) and 1 co-PI	<b>\$50,000</b>
1994-97	Experimental Computing Research Group, NSERC Infrastructure Xiaobo Li (PI) and 8 co-PI's	<b>\$120,000</b>
1993-94	Robots in Hazardous Environments under Poor Visibility, NSERC CRD Anup Basu (PI)	<b>\$87,000</b>
1991-94	Artificial Intelligence - Robotics - Vision Group, NSERC Infrastructure Randy Goebel (PI) and 8 co-PI's	<b>\$135,000</b>
1990-91	Multiprocessor CPU and File/Backup Server Replacement, NSERC Major Equipment, Tony Marsland (PI) and 26 co-PI's	<b>\$194,300</b>
1990-91	Artificial Intelligence - Robotics - Vision Group, NSERC Infrastructure, Renee Elio (PI)	<b>\$45,000</b>
1990-91	Artificial Intelligence Research Laboratory/Robotics Research Laboratory, NSERC Equipment, Randy Goebel (PI) and 5 co-PI's	<b>\$36,984</b>
1990-91	Network File Server, NSERC Equipment, Tony Marsland (PI) and 1 co-PI	<b>\$21,279</b>

## Service – Conference Organization

- 2020-2022 **Editor-in-Chief**, IROS, Conference Paper Review Board.
- 2019 **Senior Program Committee (SPC) Member**, 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
- 2019 **Senior Program Committee (SPC) Member**, 2019 IEEE International Conference on Robotics and Automation (ICRA).
- 2019 **Travel Award Chair**, 2019 IEEE International Conference on Robotics and Automation (ICRA).
- 2018 **Senior Program Committee (SPC) Member**, 2018 IEEE International Conference on Intelligent Robots and Systems (IROS).
- 2018 **General Chair**, 2018 IEEE International Conference on Robotics and Biomimetics (ROBIO).
- 2017 **General Chair**, 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
- 2016 **Senior Program Committee (SPC) Member**, 2016 IEEE/RSJ International Conference on Intelligent Robots Systems (IROS).
- 2015 **Program Chair**, 2015 IEEE International Conference on Cyber Technologies in Automation, Robotics and Intelligent Systems.
- 2015 **Awards Co-Chair**, 2015 IEEE/RSJ International Conference on Robots and Intelligent Systems (IROS).



- 2015 **Awards Chair**, 2015 *IEEE International Conference on Mechatronics and Automation (ICMA)*.
- 2014 **Awards Co-Chair**, 2014 *IEEE International Conference on Robotics and Automation (ICRA)*.
- 2013 **Senior Program Committee (SPC) Member**, 2013 *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2012 **General Chair**, 2012 *IEEE International Conference on Robotics and Biomimetics (ROBIO)*.
- 2011 **Video Chair**, 2011 *IEEE International Conference on Robotics and Automation (ICRA)*.
- 2011 **Area Chair**, 2011 *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*.
- 2011 **Awards Committee Chair**, 2011 *IEEE International Conference on Control and Logistics (ICAL)*.
- 2011 **Program Co-Chair**, 2011 *IEEE International Conference on Systems, Man, and Cybernetics*.
- 2010 **General Chair**, 2010 *IEEE International Conference on Mechatronics and Automation (ICMA)*.
- 2010 **Video Co-Chair**, 2010 *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2010 **Area Chair**, 2010 *Asian Conference on Computer Visios (ACCV)*.
- 2009 **General Chair**, 2009 *IEEE International Conference on Information and Automation (ICIA)*.
- 2009 **Award Committee Chair**, 2009 *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2009 **Area Chair**, 2009 *Asian Conference on Computer Visios (ACCV)*.
- 2008 **Award Committee Chair**, 2008 *IEEE International Conference on Automation and Logistics (ICAL)*.
- 2008 **Award Committee Chair**, 2008 *IEEE International Conference on Information Acquisition*.
- 2008 **Program Co-Chair**, 2008 *World Congress on Intelligent Control and Automation*.
- 2007 **Program Co-Chair**, 2007 *IEEE International Conference on Automation and Logistics*.
- 2006 **General Chair**, 2006 *IEEE International Conference on Robotics and Biomimetics*.
- 2006 **Workshop/Tutorial Chair**, 2006 *IEEE/RSJ International Conference on Intelligent Robots and Systems*.
- 2005 **Program Chair**, 2005 *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2005 **General Co-Chair**, 2005 *IEEE International Conference on Robotics and Biomimetics*.
- 2004 **Program Co-Chair**, 2004 *IEEE International Conference on Information Acquisition*.
- 2004 **Invited Sessions Chair**, 2004 *IEEE International Conference on Robotics and Biomimetics*.
- 2003 **Tutorial and Workshop Co-Chair**, 2003 *CIRA*.
- 2003 **Publication Chair**, *RISSP 2003*.
- 2002 **Program Co-Chair**, *Vision Interface 2002*.
- 2001 **Program Chair**, 2001 *IEEE International Symposium on Computational Intelligence in Robotics and Automation*.
- 1999 **Local Arrangement Chair**, 1999 *IEEE Canadian Conference on Electrical and Computer Engineering*.

---

## Service – Program Committee Members

- 2017–18 Robotics: Science and Systems (RSS)  
 2017 Annual Conference on Robot Learning (CoRL)
- 2006–11 IEEE International Conference on Robotics and Automation (ICRA)
- 2000–01 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2004–11 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

- 2005–11 IEEE International Conference on Robotics and Biomimetics (ROBIO)
- 2006, 2008 International Conference on Control, Automation, Robotics and Vision (ICARCV)
- 2006, 2008 World Congress on Intelligent Control and Automation (WCICA)
- 2005–07 IEEE International Conference on Systems, Man and Cybernetics (SMC)
- 2005 IEEE/ASME Advanced Intelligent Mechatronics (AIM)
- 2005–07 IEEE International Conference on Mechatronics and Automation (ICMA)
- 2004 IEEE International Conference on Intelligent Mechatronics and Automation
- 2004–06 International Conference on Information and Automation (ICIA)
- 2004 IEEE International Conference on Robotics, Automation and Mechatronics (RAM)
- 2004-2017 Canadian Conference on Computer and Robot Vision (CRV)
- 2004–05 Canadian Conference on Artificial Intelligence (AI)
- 2001–03 Vision Interface (VI)
- 2003 CIAC (Chinese Intelligent Automation Conference (CCC))
- 2002 IASTED International Conference on Robotics and Applications
- 2001 First International Workshop on Bio-Robotics and Teleoperation
- 2004, 2005 Canadian Conference on Artificial Intelligence
- 2000 Canadian Conference on Electrical and Computer Engineering (CCECE)
- 1999 International Conference on Advanced Robotics (ICAR)
- 1999 IEEE International Conference on Systems, Man, and Cybernetics (SMC)
- 1998 IARP Workshop on Humanoid and Human Friendly Robotics

---

## Service – Journal Editorial Boards

- 2011–present **Member of Editorial Board**, *Robotics*, MDPI.
- 2013–present **Member of Editorial Board**, *RoboMech*, Springer Open.
- 2013–present **Member of Editorial Board**, *Robotics and Biomimetics*, Springer Open.
- 2013–2017 **Associate Editor**, *IEEE Transaction on Cybernetics*, IEEE.
- 2003–13 **Associate Editor**, *IEEE Transaction on Systems, Man, and Cybernetics*, IEEE.
- 2003–12 **Member of the Editorial Board**, *International Journal of Humanoid Robotics*, World Scientific.
- 2011–present **Member of the Editorial Board**, *International Journal of Mechatronics and Automation*, Inderscience Publishers.
- 2006 **Guest Editor**, *Advanced Robotics, Volume 20, Number 11*, Taylor & Francis Online.
- 2004 **Guest Editor**, *Journal of Advanced Computational Intelligence and Intelligent Informatics, Volume 20, Number 3*, Fuji Technology Press.
- 2003 **Guest Editor**, *IEEE Transactions on Systems, Man, and Cybernetics:Part A*, “*Collective Intelligence*”, IEEE.
- 2002 **Guest Editor**, *Journal of Image and Vision Computing*, Vision Interface 2002, Elsevier.

---

## Service – Others

- 2020 **Member**, *Fellow Nomination Committee*, IEEE Robotics and Automation Society.
- 2020–2021 **Parliamentarian**, *Administrative Committee (AdCom)*, IEEE Robotics and Automation Society.
- 2018–2019 **Secretary**, *Administrative Committee (AdCom)*, IEEE Robotics and Automation Society.
- 2017–19 **Graduate Admissions Chair**, *Department of Computing Science*, University of Alberta.
- 2017–19 **Member**, *Canada Research Chair Advisory Committee*, Faculty of Science, University of Alberta.
- 2016–2020 **Member**, *Computer Science Evaluation Group, Discovery Grants Program, NSERC*.

- 2018–19 **Chair**, *IEEE Medal for Environmental and Safety Technologies Committee*.
- 2015–17 **Member**, *IEEE Medal for Environmental and Safety Technologies Committee*.
- 2014–16 **Member**, *Administrative Committee (AdCom), IEEE Robotics and Automation Society*.
- 2013–14 **Graduate Admissions Chair**, *Department of Computing Science, University of Alberta*.
- 2012–present **Founding Council Chair**, *IEEE International Conference on Mechatronics and Automation*.
- 2012 **Member**, *Conference Management Committee, IEEE Society on Systems, Man, and Cybernetics*.
- 2005–15 **Chair**, *Robotics and Intelligent Sensing Technical Committee, IEEE Society on Systems, Man, and Cybernetics*.

## Teaching

### Undergraduate

ENCMP 100	Computer Programming for Engineers	1988-89
CMPUT 215	Programming with Data Structures	1989
CMPUT 229	Computer Organization and Architecture I	13 semesters, 1988-2005
CMPUT 329	Computer Organization and Architecture II	15 semesters, 1989-2013
CMPUT 412	Experimental Mobile Robotics	9 semesters, 1993-2019
CMPUT 498	Topics in Computing Science - Individual Studies	

### Graduate

CMPUT 605	Topics in Computing Science - Individual Studies	
CMPUT 512	Introduction to Robotics	6 semesters, 1988 - 2002
CMPUT 631	Robotics and Multi-Robot Systems	2004
CMPUT 631	Introduction to Robotics: Sensing and Navigation	2006
CMPUT 631	Visual Robot Navigation	4 semesters, 2008-14
CMPUT 631	Autonomous Robot Navigation	2017



---

## Publications – in Archival Journals

- 2020 Fei Wang, Yan Zhuang, Hong Zhang, and Hong Gu, “Real-time 3D Semantic Scene Parsing with LiDAR Sensors”, to appear in *IEEE Transactions on Cybernetics*.
- 2020 Zhanpeng Shao, Youfu Li, and Hong Zhang, “Learning Representations from Skeletal Self-Similarities for Cross-view Action Recognition”, to appear in *IEEE Transactions on Circuits and Systems for Video Technology*.
- 2020 Jiyu Cheng, Hong Zhang, and Max Q.-H. Meng, “Improving Visual Localization Accuracy in Dynamic Environments Based on Dynamic Region Removal”, to appear in *IEEE Transactions on Automation Science and Engineering*.
- 2020 Xiaochun Mai, Hong Zhang, Xiao Jia, and Max Q.-H. Meng, “Faster R-CNN with Classifier Fusion for Automatic Detection of Small Fruits”, to appear in *IEEE Transactions on Automation Science and Engineering*.
- 2019 Jun Li, Chang Xu, Jianhua Xu, Wankou Yang, Changyin Sun, and Hong Zhang, “Discriminative Multi-View Privileged Information learning for Image Re-Ranking”, to appear in *IEEE Transactions on Image Processing*.
- 2019 Shuhuan Wen, Yanfang Zhao, Hong Zhang, Hak Keung Lam, and Luigi Manfredid, “Joint Optimization Based on Direct Sparse Stereo Visual-Inertial Odometry”, to appear in *Autonomous Robots*.
- 2019 Bo Yang, X. Xu, Jun Li, and Hong Zhang, “Landmark Generation in Visual Place Recognition Using Multi-Scale Sliding Window for Robotics”, *Applied Sciences*, 9.15 (2019): 3146.
- 2019 Liang, Wan-jie, Hong Zhang, Gu-feng Zhang, and Hong-xin Cao. “Rice Blast Disease Recognition Using a Deep Convolutional Neural Network”, *Scientific Reports* 9, No. 1 (2019): 2869.
- 2019 Weinan Chen, Lei Zhu, Li Hei, Yisheng Guan, and Hong Zhang, “Reliable Visual Exploration System with Fault Tolerance Structure”, *Applied Sciences* 9.4 (2019): 662.
- 2019 Li He, Nilanjan Ray, Yisheng Guan, and Hong Zhang, “Fast Large-Scale Spectral Clustering via Explicit Feature Mapping”, *IEEE Transactions on Cybernetics*, Vol. 49, Issue 3, March 2019, pp. 1058-1071.
- 2018 Qizi Huangpeng, Hong Zhang, Xiangrong Zeng and Hui Wang, “Automatic Visual Defect Detection Using Texture Prior and Low-Rank Representation”, *IEEE Access*, Volume 6, Issue 1, December 2018, pp. 37965–37976.
- 2018 Xuefeng Zhou, Jiang Li, Yisheng Guan, Haifei Zhu, Dan Huang, Taobo Cheng, Hong Zhang, “Energy-optimal Motion Planning of A Biped Pole-Climbing Robot with Kinodynamic Constraints”, *Industrial Robot: An International Journal*, Vol. 45, Issue 3, 2018, pp. 343-353.
- 2018 Yi Hou, Hong Zhang, and Shilin Zhou, “BoCNF: Efficient Image Matching with Bag of ConvNet Features for Scalable and Robust Visual Place Recognition”, *Autonomous Robots*, Vol. 42, Issue 6, August 2018, pp. 1169-1185.
- 2018 Fengkui Cao, Yan Zhuang, Hong Zhang, and Wei Wang, “Robust Place Recognition and Loop Closing in Laser-Based SLAM for UGVs in Urban Environments”, *IEEE Sensors Journal*, Vol. 18, No. 10, May 2018, pp. 4242–4252.
- 2018 Yi Hou, Hong Zhang, and Shilin Zhou, “Evaluation of Object Proposals and ConvNet Features for Landmark-Based Visual Place Recognition”, *Journal of Intelligent & Robotic Systems*, December 2018, Vol. 92, Issue 3-4, pp. 550-520.
- 2018 Li He and Hong Zhang, “Kernel K-means Sampling for Nystrom Approximation”, *IEEE Transactions on Image Processing*, Vol. 27, Issue 5, May 2018, pp. 2108–2120.
- 2018 Haifei Zhu, Shichao Gu, Li He, Yisheng Guan, and Hong Zhang, “Transition Analysis and Its Application to Global Path Determination for a Biped Climbing Robot”, *Applied Sciences* 2018, 8(1), 122.
- 2018 Weinan Chen, Shichao Gu, Yisheng Guan, Hong Zhang, Haifei Zhu, and Lei Zhu, “Representation of Truss-style Structures for Autonomous Climbing of Biped Pole-climbing Robots”, *Robotics and Autonomous Systems*, Volume 101, March 2018, Pages 126-137.

1443 Herring-Cooper Way, Edmonton, Alberta – Canada

✉ [hzhang@ualberta.ca](mailto:hzhang@ualberta.ca) • 🌐 [www.cs.ualberta.ca/~zhang](http://www.cs.ualberta.ca/~zhang)

- 2018 Homa Foroughi, Nilanjan Ray, and Hong Zhang, “Object Classification with Joint Projection and Low-rank Dictionary Learning”, *IEEE Transactions on Image Processing*, Volume 27, Issue 2, February 2018, pp. 806–821.
- 2017 Hou, Y., Zhang, H., Zhou, S. and Zou, H., “Use of Roadway Scene Semantic Information and Geometry-Preserving Landmark Pairs to Improve Visual Place Recognition in Changing Environments”, *IEEE Access*, 2017(5), pp. 7702-7713.
- 2017 Xiao-Long Wang, Hong Zhang, and Guohua Peng, “Combining Multiple Image Descriptions for Loop Closure Detection”, *Journal of Intelligent & Robotic Systems*, <https://doi.org/10.1007/s10846-017-0755-7>.
- 2017 Yi Hou, Hong Zhang, Shilin Zhou and Huanxin Zou, “Efficient ConvNet Feature Extraction with Multiple RoI Pooling for Landmark-based Visual Localization of Autonomous Vehicles”, *Mobile Information Systems*, Volume 2017 (2017), Article ID 8104386, 14 pages.
- 2017 Xiaolong Wang, Hong Zhang and Guohua Peng, “A Chordigram Image Descriptor Using Local Edgels”, *Journal of Visual Communication and Image Representation*, Volume 49, November 2017, pp. 129–140.
- 2017 Li He, Nilanjan Ray, and Hong Zhang, “Error Bound of Nystrom-approximated NCut Eigenvectors and Its Application to Training Size Selection”, *Neurocomputing*, May 24, 2017, pp. 130-142.
- 2017 Yi Hou, Hong Zhang, and Shilin Zhou, “Tree-based Indexing for Real-time ConvNet Landmark-Based Visual Place Recognition”, *International Journal of Advanced Robotic Systems*, Volume 14, January 2017, pp. 1-13.
- 2016 Moein Shakeri and Hong Zhang, “COROLA: A Sequential Solution to Moving Object Detection Using Low-rank Approximation”, *Computer Vision and Image Understanding*, Volume 146, May 2016, pp. 27-39.
- 2016 Li He and Hong Zhang, “Iterative Ensemble Normalized Cuts”, *Pattern Recognition*, Vol. 52, April 2016, pp. 274–286.
- 2016 Jing Yang, Hong Zhang, and Guo Hua Peng, “Time-Domain Period Detection in Short-Duration Videos”, *Signal, Image and Video Processing*, Vol. 10, No. 4, April 2016, pp. 695-702.
- 2015 Homa Foroughi, Nilanjan Ray, and Hong Zhang, “Robust People Counting using Sparse Representation and Random Projection”, *Pattern Recognition*, Vol. 45, No. 10, October 2015, pp. 3038–3052.
- 2015 Haifei Zhu, Yisheng Guan, Wenqiang Wu, L Zhang, Xuefeng Zhou, and Hong Zhang, “Autonomous Pose Detection and Alignment of Suction Modules of a Biped Wall-Climbing Robot”, *IEEE-ASME Transactions on Mechatronics*, Vol. 2, No. 2, April 2015, pp. 653-662.
- 2014 Xuefeng Zhou, Yisheng Guan, Haifei Zhu, Wenqiang Wu, Xin Chen, Hong Zhang, and Yuli Fu, “Bibot-U6: A Novel 6-DoF Biped Active Walking Robot - Modeling, Planning and Control”, *International Journal of Humanoid Robotics*, Vol. 11, No. 2, April 2014.
- 2014 Haifei Zhu, Yisheng Guan, W. Wu, X. Chen, X. Zhou, and Hong Zhang, “A Binary Approximating Method for Graspable Region Determination of Biped Climbing Robots”, *Advanced Robotics*, Vol. 28, No. 21, 2014, pp. 1405-1418.
- 2014 Mohamed Bensalah, Ismail Ben Ayed, Jing Yuan, and Hong Zhang, “Convex-Relaxed Kernel Mapping for Image Segmentation”, *IEEE Transactions on Image Processing*, Vol. 23, Issue 3, March 2014, pp. 1143-1153.
- 2014 Zhijie Wang, Mohamed Bensalah, and Hong Zhang, “Object Joint Detection and Tracking Using Adaptive Multiple Motion Models”, *The Visual Computer*, Vol. 30, Issue 2, February 2014, pp. 173-187.
- 2013 Hui Wang, Hong Zhang, and Nilanjan Ray, “Adaptive Shape Prior in GraphCut Image Segmentation”, *Pattern Recognition*, Vol. 46, Issue 5, May 2013, pp. 1409-1414.
- 2013 Xuefeng Zhou, Yisheng Guan, Li Jiang, Haifei Zhu, Chuanwu Cai, Wenqiang Wu and Hong Zhang, “Stability of Biped Robotic Walking with Frictional Constraints”, *Robotica*, Volume 31, Issue 04, July 2013, pp. 573-588.

- 2013 Guan, Y., Zhu, H., Wu, W., Zhou, X., Jiang, L., Cai, C., Zhang, L., and Zhang, H., “A Modular Biped Wall-Climbing Robot with High Mobility and Manipulating Function”, *IEEE/ASME Transactions on Mechatronics*, Volume 18, Issue 6, December 2013, pp. 1787–1798.
- 2013 Robert Stewart and Hong Zhang, “A note concerning the distances of uniformly distributed points from the centre of a rectangle”, *Bulletin of the Australian Mathematical Society*, Vol. 87, No. 1, 2013.
- 2012 Zhengwei Zhang, Hong Zhang, and Yibin Li, “Biologically inspired collective construction with visual landmarks”, *Journal of Zhejiang University-SCIENCE C*, May 2012, Volume 13, Issue 5, pp.315-327.
- 2012 Zhijie Wang, Mohamed Bensalah, Hong Zhang, and Nilanjan Ray, “Shape based appearance model for kernel tracking”, *Image and Vision Computing*, Vol. 30, Issue 4-5, May 2012, pp. 332-344.
- 2012 Nilufar, S., Ray, N., and Zhang, H., “Object Detection with DoG Scale-Space: A Multiple Kernel Learning Approach”, *IEEE Transactions on Image Processing*, Vol. 21, Issue 8, pp. 3744-3756, 2012.
- 2012 Hui Wang, Hong Zhang and Nilanjan Ray, “Clump Splitting Via Bottleneck Detection and Shape Classification”, *Pattern Recognition*, Volume 24, Issue 7, July 2012, pp. 2780-2787.
- 2012 Baidya Nath Saha, Nilanjan Ray, Russell Greiner, Albert Murtha and Hong Zhang, “Quick Detection of Brain Tumors and Edemas: A Bounding Box Method Using Symmetry”, *Computerized Medical Imaging and Graphics*, Volume 36, Issue 2, March 2012, pp. 95-107.
- 2012 Jichuan Shi, Nilanjan Ray and Hong Zhang, “Shape Based Local Thresholding for Binarization of Document Images”, *Pattern Recognition Letters*, Volume 33, Issue 1, January 2012, pp. 24-32.
- 2011 Christopher A. C. Parker and Hong Zhang, “Biologically Inspired Collective Comparisons by Robotic Swarms”, *International Journal of Robotics Research*, April 2011, Vol.30, No. 5, pp. 524-535.
- 2011 Yisheng Guan, Hong Zhang, Xianmin Zhang and Zhangjie Guan, “Workspace Generation of Multi-fingered Manipulation”, *Advanced Robotics*, Vol. 25, No. 18, 2011, pp. 2293-2317.
- 2010 Christopher A. C. Parker and Hong Zhang, “Collective Unary Decision-Making by Decentralized Multiple-Robot Systems Applied to the Task-Sequencing Problem”, *Swarm Intelligence*, Volume 4, Number 3, May 2010, pp. 199-220.
- 2009 B. Saha, N. Ray, and H. Zhang, “Snake Validation: A PCA-Based Outlier Detection Method”, *IEEE Signal Processing Letters*, Vol. 16, No. 6, June 2009.
- 2009 D. P. Mukherjee, Y. Potapovich, I. Levner, I. and H. Zhang, “Ore Image Segmentation by Learning Image and Shape Features”, *Pattern Recognition Letters*, Volume 30, Issue 6, April 2009, pp. 615–622.
- 2009 M. Polak, H. Zhang, and M. Pi, “An Evaluation Metric for Image Segmentation of Multiple Objects”, *Image and Vision Computing*, Volume 27, Issue 8, July 2009, pp. 1223-1227.
- 2009 Christopher Parker and Hong Zhang, “Cooperative Decision-Making in Decentralized Multi-Robot Systems: the Best-of-N Problem”, *IEEE/ASME Transactions on Mechatronics*, Volume 14, Issue 2, April 2009, pp. 240-251.
- 2008 I. Levner, H. Zhang, and R. Greiner, “Heterogeneous Stacking for Classification Driven Watershed Segmentation”, *EURASIP Journal on Advances in Signal Processing*, Special Issue on Machine Learning in Image Processing, January 2008, pp. 1 – 9.
- 2007 Ilya Levner and Hong Zhang, “Classification Driven Watershed Segmentation”, *IEEE Transactions on Image Processing*, Volume 16, Number 5, May 2007, pp. 1437-1445..
- 2007 Ricardo Ferrari, Hong Zhang, and Ron Kube, “Real-Time Detection of Steam in Video Images”, *Pattern Recognition*, Volume 40, Issue 3, March 2007, pp. 1148-1159..
- 2006 Mingong Pi, Chong Sze Tong, and Hong Zhang, “A Fast and Effective Model for Wavelet Subband Histograms and Its Application in Texture Image Retrieval”, *IEEE Transactions on Image Processing*, Vol: 15, No.10, Oct. 2006, pp. 3078-3088.

- 2006 Christopher Parker and Hong Zhang, “Collective Robotic Site Preparation”, *Journal of Adaptive Behavior*, 2006, 14:5-19.
- 2005 Yisheng Guan and Hong Zhang, “Feasibility of 2-D Multifingered Grasps,” *International Journal of Robotics and Automation*, Vol. 20, No. 4, 2005.
- 2005 Feixiang Yan, Hong Zhang, and C. Ronald Kube, “Multistage Adaptive Thresholding Method”, *Pattern Recognition Letters*, Volume 26, Issue 8, June, 2005, pp. 1183-1191.
- 2005 Cobzas, D., Jagersand, M., and Zhang, H., “A Panoramic Model for Remote Robot Environment Mapping and Predictive Display”, *International Journal of Robotics and Automation*, Vol. 20, No. 1, 2005.
- 2003 Guan, Y. and Zhang, H. “Kinematic Feasibility Analysis of 3D Multifingered Grasps”, *IEEE Transactions on Robotics and Automation*, vol. 19, no. 3, June 2003, pp. 507–513.
- 2002 Boshra, M. and Zhang, H. “An Indexing Scheme for Efficient Data-Driven Verification of 3-D Pose Hypotheses”, *Image and Vision Computing Journal*, vol. 20, no. 7, May 2002, pp. 469–481.
- 2002 Zhang, H. and So, E., “A hybrid tactile sensor using analog resistive technology”, *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 32, no. 1, February 2002, pp. 57–65.
- 2000 Zhang, H. and Chen, N., “Control of contact via tactile sensing,” *IEEE Transactions on Robotics and Automation*, vol. 16, no. 5, October, 2000, pp. 482-495.
- 2000 Boshra, M. and Zhang, H., “Localizing a Polyhedral Object in a Robot Hand by Integrating Visual and Tactile Data,” *Pattern Recognition*, vol. 33, no. 3, March 2000, pp. 483–501.
- 1999 Boshra, M. and Zhang, H., “Accommodating uncertainty in Pixel-based verification of 3-D object hypotheses,” *Pattern Recognition Letters*, vol. 20, issue 7, July 1999, pp. 689–698.
- 1999 Boshra, M. and Zhang, H., “A constraint-satisfaction approach for 3-D object recognition by integrating 2-D and 3-D data,” *Computer Vision and Image Understanding*, vol. 73, no. 2, February 1999, pp. 200–214.
- 1997 Kube, C. R. and Zhang, H., “Task Modelling in Collective Robotics,” *Autonomous Robots*, Vol. 4, No. 1, 1997, pp. 53-72.
- 1995 Zhang, H. “Two-dimensional optimal sensor placement,” *IEEE Trans. on Systems, Man, and Cybernetics*, vol. 25, no. 5, May 1995, pp. 781–792.
- 1995 Zhang, H. and Zhang, B. “Improved trajectory generation schemes based on resolved motion rate control,” *International Journal of Robotics and Automation*, vol. 10, no. 2, 1995, pp. 70–77.
- 1993 Kube, R. and Zhang, H., “Collective robotics: from social insects to robots,” *Journal of Adaptive Behavior*, vol. 2, no. 2, Fall, 1993, pp. 189–218.
- 1993 Zhang, H., “Efficient evaluation of the feasibility of robot displacement trajectories,” *IEEE Trans. on Systems, Man, and Cybernetics*, vol. 23, no. 1, January/February, 1993, pp. 324–330.
- 1991 Zhang, H., and Paul, R., “A parallel inverse kinematics solution for robot manipulators based on multiprocessing and linear extrapolation,” *IEEE Trans. on Robotics and Automation*, vol. 7, no. 5, October, 1991, pp. 660–669.
- 1990 Zhang, H., Trott, G., and Paul, R., “Minimum delay PID control of interpolated joint trajectories for robot manipulators,” *IEEE Trans. on Industrial Electronics*, vol. 37, no. 4, October, 1990, pp. 358–364.
- 1986 Paul, R. P. and Zhang, H., “Computationally efficient kinematics for manipulators with spherical wrists based on the homogeneous transformation representation”. *International Journal of Robotics Research*, vol. 5, no. 2, October 1986, pp. 32–44.

---

## Publications – in Refereed Conferences

- 2019 Sara Elkerdawy, Hong Zhang, and Nilanjan Ray, “Lightweight Monocular Depth Estimation Model By Joint End-to-End Filter Pruning”, 2019 IEEE International Conference on Image Processing (ICIP), Taipei, Taiwan, September 22-25, 2019.

- 2019 Moein Shakeri and Hong Zhang, “Moving Object Detection under Discontinuous Change in Illumination Using Tensor Low-Rank and Invariant Sparse Decomposition”, 2019 IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, California, June 16-20, 2019, pp. 7221-7230.
- 2019 Xinghong Huang, Zhuang Dai, Weinan Chen, Li He, Hong Zhang, “Improving Keypoint Matching Using a Landmark-Based Image Representation”, 2019 IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 20-24, 2019.
- 2019 Shing Yan Loo, Ali Jahani Amiri, Syamsiah Mashohor, Sai Hong Tang, and Hong Zhang, “CNN-SVO: Improving the Mapping in Semi-Direct Visual Odometry Using Single-Image Depth Prediction”, 2019 IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 20-24, 2019.
- 2019 Zhuang Dai, Xinghong Huang, Weinan Chen, Li He, and Hong Zhang, “A Comparison of CNN-Based and Hand-Crafted Keypoint Descriptors” 2019 IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 20-24, 2019.
- 2018 Mennatullah Siam, Sara Elkerdawy, Martin Jagersand, and Hong Zhang, “Real-time Segmentation with Appearance, Motion and Geometry”, 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Madrid, Spain, October 1-5, 2018.
- 2018 Sepideh Hosseinzadeh, Moein Shakeri, and Hong Zhang, “Fast Shadow Detection from a Single Image Using a Patched Convolutional Neural Network”, 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Madrid, Spain, October 1-5, 2018.
- 2018 Weinan Chen, Lei Zhu, Yisheng Guan, Ronald Kube, and Hong Zhang, “Submap-based Posegraph Visual SLAM: A Robust Visual Exploration and Localization System”, 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Madrid, Spain, October 1-5, 2018.
- 2018 Xiaochun Mai, Hong Zhang, and Max Q.-H. Meng, “Faster R-CNN with Classifier Fusion for Small Fruit Detection”, 2018 IEEE International Conference on Robotics and Automation (ICRA), Brisbane, Australia, May 21-25, 2018.
- 2018 Cheng, J., Cheng, H., Meng, M.Q.H. and Zhang, H., “Autonomous navigation by mobile robots in human environments: a survey,” 2018 IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 1981-1986.
- 2017 Su, Z., Zhou, X., Cheng, T., Zhang, H., Xu, B. and Chen, W., “Global localization of a mobile robot using lidar and visual features,” 2017 IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 2377-2383.
- 2017 Moein Shakeri and Hong Zhang, “Moving Object Detection in Time-Lapse or Motion Trigger Image Sequences Using Low-rank and Invariant Sparse Decomposition”, 2017 International Conference on Computer Vision (ICCV), Venice, Italy, October 22-29, 2017, pp. 5123-5131.
- 2017 Homa Foroughi, Moein Shakeri, Nilanjan Ray and Hong Zhang, “Face Recognition Using Multi-Modal Low-Rank Dictionary Learning”, 2017 IEEE International Conference on Image Processing (ICIP), Beijing, China, September 17-20, 2017.
- 2017 Sayem Mohammad Siam and Hong Zhang, “Fast-SeqSLAM: Place Recognition and Multi-robot Map Merging”, 2017 IEEE International Conference on Robotics and Automation (ICRA), Singapore, May 29 - June 3, 2017, pp. 5702-5708.
- 2016 Moein Shakeri and Hong Zhang, “Illumination Invariant Representation of Natural Images for Visual Place Recognition”, 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Daejeon, South Korea, 2016, pp. 466-472.
- 2016 Li He, Xiaolong Wang, and Hong Zhang, “M2DP: A Novel 3D Point Cloud Descriptor and Its Application in Loop Closure Detection”, 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Daejeon, South Korea, 2016 , pp. 231-237.
- 2016 Rong Feng and Hong Zhang, “Efficient Monocular Coarse-to-Fine Object Pose Estimation,” 2016 IEEE International Conference on Mechatronics and Automation (ICMA), Harbin, China, pp. 1617- 1622.

- 2015 Andy Hess, Nilanjan Ray, and Hong Zhang, “Synthetic View point Prediction,” Canadian Conference on Computer and Robot Vision (CRV), Victoria, Canada, 2016, pp. 391–398.
- 2015 Huajian Deng, Hongmin Wu, Cao Yang, Yisheng Guan, Hong Zhang, and Jianling Liu, “Base Frame Calibration for Multi-Robot Coordinated Systems,” 2015 IEEE International Conference on Robotics and Biomimetics (ROBIO), Zhuhai, China, pp.1489-1494.
- 2015 Hongmin Wu, Huajian Deng, Cao Yang, Yisheng Guan, Hong Zhang, and Hao Li, “A Robotic Off-Line Programming System Based on SolidWorks,” 2015 IEEE International Conference on Robotics and Biomimetics (ROBIO), Zhuhai, China, pp.1711-1716.
- 2015 Homa Foroughi, Nilanjan Ray, and Hong Zhang, “Joint Feature Selection with Low-rank Dictionary Learning,” 25th British Machine Vision Conference (BMVC), Swansea, United Kingdom, 2015.
- 2015 Xiaolong Wang, Hong Zhang, and Guohua Peng. “3-DOF Point Cloud Registration Using Congruent Triangles,” 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Hamburg, Germany, 2015.
- 2015 Moein Shakeri and Hong Zhang, “Online Loop-Closure Detection via Dynamic Sparse Representation,” 10th Conference on Field and Service Robotics (FSR), Toronto, Canada, 2015.
- 2015 Yi Hou, Hong Zhang and Shilin Zhou, “Convolutional Neural Network-Based Image Representation for Visual Loop Closure Detection,” 2015 IEEE International Conference on Information and Automation (ICIA), Lijiang, China, 2015.
- 2015 Rajarshi Maiti, Yi Hou, Colleen Cassidy St. Clair and Hong Zhang. “Use of Convolutional Neural Networks to Automate the Detection of Wildlife from Remote Cameras.” CIS-RAM, Angkor Wat, Cambodia, 2015, pp. 42–47.
- 2015 Yang Liu, Rong Feng and Hong Zhang. “Keypoint Matching by Outlier Pruning with Consensus Constraint,” 2015 IEEE International Conference on Robotics and Automation (ICRA), Seattle, USA, 2015, pp. 5481–5486.
- 2015 Angus Leigh, Joelle Pineau, Nicolas Alejandro Olmedo and Hong Zhang. “Person Tracking and Following with 2D Laser Scanners,” 2015 IEEE International Conference on Robotics and Automation (ICRA), Seattle, USA, 2015, pp. 726 – 733.
- 2014 Nicolas Alejandro Olmedo, Michael Lipsett, and Hong Zhang, “Mobile Robot System Architecture for People Tracking and Following Applications,” 2014 IEEE International Conference on Robotics and Biomimetics (ROBIO), Bali, Indonesia, 2014, pp. 825 – 830.
- 2014 Ying Chen and Hong Zhang, “A Background Subtraction Algorithm for a Pan-Tilt Camera,” 2014 IEEE International Conference on In Robotics and Biomimetics (ROBIO), Bali, Indonesia, 2014, pp. 1056 – 1061.
- 2014 Moein Shakeri and Hong Zhang, “Detection of Small Moving Objects Using a Moving Camera,” 2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Chicago, USA, September 2014, pp. 2777 – 2782.
- 2015 Jiuyu Sun, Nilanjan Ray, Hong Zhang, “VFCCV Snake: A Novel Active Contour Model Combining Edge and Regional Information”, Proc. 2014 IEEE International Conference on Image Processing (ICIP), Paris, France, October 27-30, 2014, 927 – 931.
- 2014 Homa Foroughi, Nilanjan Ray, Hong Zhang, “People Counting with Image Retrieval Using Compressed Sensing”, 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Florence, Italy, May 4-9, 2014, pp. 4354-4358.
- 2014 Junjun Wu, Hong Zhang, and Yisheng Guan, “An Efficient Visual Loop Closure Detection Method in a Map of 20 Million Key Locations”, Proc. 2014 IEEE International Conference on Robotics and Automation, Hong Kong, China, May 31-June 7, 2014.
- 2014 Kiana Hajebi and Hong Zhang, “An Efficient Index for Visual Search in Appearance-based SLAM”, Proc. 2014 IEEE International Conference on Robotics and Automation, Hong Kong, China, May 31-June 7, 2014.



- 2013 Moein Shakeri and Hong Zhang, “Cooperative Targeting: Detection and Tracking of Small Objects with a Dual Camera System”, Proc. the 9th Conference on Field and Service Robotics, Brisbane, Australia, Dec 9-11, 2013.
- 2013 Mike Mills and Hong Zhang, “Path Localization Using Gabor Gist”, Proc. 2013 IEEE International Conference on Robotics and Biomimetics, Shenzhen, China, Dec 12-14, 2013.
- 2013 Yang Liu and Hong Zhang, “Performance Evaluation of Whole-Image Descriptors in Visual Loop Closure Detection”, Proc. 2013 IEEE International Conference on Information and Automation, Yinchuan, China, August 26-28, 2013.
- 2013 Yang Liu and Hong Zhang, “Towards Improving the Efficiency of Sequence-Based SLAM”, Proc. 2013 IEEE International Conference on Control and Mechatronics, Takamatsu, Japan, August 4-7, 2013.
- 2012 Yang Liu and Hong Zhang, “Indexing Visual Features: Real-time Loop Closure Detection Using a Tree Structure”, Proc. 2012 IEEE International Conference on Robotics and Automation, St Paul, MN, May 14-18, 2012, pp. 3613-3618.
- 2012 Yang Liu and Hong Zhang, “Visual Loop Closure Detection with a Compact Image Descriptor”, Proc. 2012 IEEE/RSJ International Conference on Intelligent Robots and Systems, Vilamoura, Portugal, Oct 7-12, 2012, pp. 1051-1056.
- 2012 Sharmin Nilufar, Nilanjan Ray, and Hong Zhang, “Wavelet Subband-Based Steam Detection by Multiple Kernel Learning”, Proc 2012 IEEE International Conference on Image Processing, September 30, 2012, Orlando, Florida, USA.
- 2012 Mohamed Ben Salah, Ismail Ben Ayed, Jing Yuan, Zhijie Wang, and Hong Zhang, “Convex Relaxation for Image Segmentation by Kernel Mapping”, Proc 2012 IEEE International Conference on Image Processing, September 30, 2012, Orlando, Florida, USA.
- 2011 Hossein Shahbazi and Hong Zhang, “Application of Locality Sensitive Hashing to Real-time Loop Closure Detection”, Proc. 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems, San Francisco, USA, September 25-30, 2011.
- 2011 Yisheng Guan, Li Jiang, Haifei Zhu, Xuefeng Zhou, Xianmin Zhang, Hong Zhang, “Climbot: A Novel Modular Biomimetic Biped Climbing Robot”, Proc. 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems, San Francisco, USA, September 25-30, 2011.
- 2011 Li He, Hui Wang, and Hong Zhang, “Object Detection by Parts Using Appearance, Structural and Shape Features”, Proc. 2011 IEEE International Conference on Control and Mechatronics, Beijing, China, August 7-10, 2011.
- 2011 Hui Wang, Hong Zhang, and Nilanjan Ray, “Clump Splitting via Bottleneck Detection”, Proc. 2011 IEEE International Conference on Image Processing, Brussels, Belgium, September 11-14, 2011.
- 2011 Kiana Hajebi, Yasin Abbasi-Yadkori, Hossein Shahbazi and Hong Zhang, “Fast Approximate Nearest-Neighbor Search using k-Nearest Neighbor Graph”, Proc. Twenty Second International Joint Conference on Artificial Intelligence, July 16-22, 2011, Barcelona, Spain.
- 2011 Hong Zhang, “BoRF: Loop-Closure Detection with Scale Invariant Visual Features”, Proc. 2011 IEEE International Conference on Robotics and Automation, May 9-13, 2011, Shanghai, China.
- 2010 Baidya Saha, Nilanjan Ray, and Hong Zhang “Automating Snakes for Multiple Object Detection”, Proc. 11th Asian Conference on Computer Vision (ACCV), Queenstown, New Zealand, November 8-12, 2010.
- 2010 H. Zhang, B. Li and D. Yang, “Keyframe Detection for Appearance Based Visual SLAM”, Proc. 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems, Taipei, Taiwan. October 2010, pp. 2071 – 2076.
- 2010 W. Li, K. Mao, H. Zhang and T. Chai, “Selection of Gabor Filters for Improved Texture Feature Extraction”, Proc. 2010 IEEE International Conference on Image Processing, Hong Kong, China, September 2010, pp. 361-364.

- 2010 H. Wang and H. Zhang. “Adaptive Shape Prior in Graphcut Segmentation”, Proc. 2010 IEEE International Conference on Image Processing, Hong Kong, China, September 2010, pp. 3029-3032.
- 2010 Hui Wang and Hong Zhang, “Improving Image Segmentation via Shape PCA Reconstruction”, Proc. 2010 IEEE International Conference on Acoustics, Speech, and Signal Processing, Dallas, USA, March 2010, 1058 - 1061.
- 2009 Weitao Li, Kezhi Mao, Xiaojie Zhou, Tianyou Chai, and Hong Zhang, “Eigen-Flame Image-Based Robust Recognition of Burning States for Sintering Process Control of Rotary Kiln”, Proc. the 48th IEEE Conference on Decision and Control, Shanghai, China, December 2009, pp. 398 – 403.
- 2009 Zhijie Wang and Hong Zhang, “Object Detection with Multiple Motion Models”, Lecture Notes in Computer Science, Computer Vision - ACCV 2009, pp. 183-192.
- 2009 Jichuan Shi and Hong Zhang “Adaptive Local Threshold with Shape Information and Its Application to Object Segmentation”, Proc. 2009 IEEE International Conference on Robotics and Biomimetics, Guilin, China, December 2009, pp. 1124 – 1128.
- 2009 Yisheng Guan, Xuechao Shi, Xuefeng Zhou, Xianmin Zhang and Hong Zhang “A Novel Mobile Robot Capable of Changing its Wheel Distance and Body Configuration”, Proc 2009 IEEE International Conference on Robotics and Biomimetics, Guilin, China, December 2009, pp. 806 – 811.
- 2009 Chuanwu Cai, Haifei Zhu, Jiang Li, Yisheng Guan, Xianmin Zhang, and Hong Zhang, “A Biologically Inspired Miniature Biped Climbing Robot”, Proc 2009 International Conference on Mechatronics and Automation, Harbin, China, August 2009, pp. 2653 – 2658.
- 2009 Andrzej Zadorozny and Hong Zhang “Contrast Enhancement Using Morphological Scale Space”, Proc 2009 International Conference on Automation and Logistics, Shenyang, China, August 2009, pp. 804 – 807.
- 2009 Yisheng Guan, Xianmin Zhang, Li Jiang, Hong Zhang “Development of Novel Robots with Modularization Methodology”, Proc 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems, St. Louis, USA, October 2009, pp. 2385 – 2390.
- 2009 Jonathan Stephen Klippenstein and Hong Zhang, “Performance Evaluation of Visual SLAM Using Several Feature Extractors”, 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems, St. Louis, USA, October 2009, pp. 1574 – 1581.
- 2009 J. Shi, H. Zhang, and N. Ray, “Solidity Based Local Threshold for Oil Sand Image Segmentation”, 2009 IEEE International Conference on Image Processing, Cairo, Egypt, November 2009, 2385 – 2388.
- 2009 Z. Wang, H. Zhang, N. Ray, “Tracking of Multiple Interacting Objects Using a Novel Prediction Model”, 2009 IEEE International Conference on Image Processing, Cairo, Egypt, November 2009, pp. 869 – 872.
- 2009 S. Nilufar, N. Ray, and H. Zhang, “Optimum Kernel Function Design for Scale Space Features for Object Detection”, 2009 IEEE International Conference on Image Processing, Cairo, Egypt, November, 2009, pp. 861 – 864.
- 2009 Nilanjan Ray, Baidya Nath Saha, Hong Zhang, “Change Detection and Object Segmentation: A Histogram of Features-Based Energy Minimization Approach”, Proc 2008 Indian Conference on Computer Vision, Graphics and Image Processing, December 2008, pp. 628 – 635.
- 2009 J Sheldon, R Kube and Hong Zhang, “Oil Sand Screen Modelling Using Partial Least Squares Regression”, 2008 IEEE International Conference on Automation and Logistics, Qingdao, China, September 2008, pp. 2936 – 2940.
- 2009 J Kelly and H Zhang, “Coordinated Three-Dimensional Robotic Self-Assembly”, 2008 IEEE Int Conf on Robotics and Biomimetics, Thailand February 2009, pp. 172–178.
- 2008 Baidya Nath Saha, Nilanjan Ray and Hong Zhang, “Computing Oil Sand Particle Size Distribution by Snake-PCA Algorithm”, Proc 2008 IEEE International Conference on Acoustics, Speech, and Signal Processing, March 2008, Las Vegas, USA, pp. 977 – 980.

- 2008 Ilya Levner, Russell Greiner, and Hong Zhang, “Supervised Image segmentation via Ground Truth Decomposition”, Proc. 2008 IEEE International Conference on Image Processing, San Diego, October 2008, pp. 737-740.
- 2008 H. Wang, N. Ray, and H. Zhang, “Graph-Cut Optimization of the Ratio of Functions and Its Application Image Segmentation”, Proc. 2008 IEEE International Conference on Image Processing, San Diego, October 2008, pp. 737-740.
- 2008 Zhijie Wang and Hong Zhang “Edge Linking Using Geodesic Distance and Neighborhood Information”, Proc 2008 IEEE International Conference on Advanced and Intelligent Mechatronics, Xi’an, China, July 2008, pp. 151–155.
- 2008 Yisheng Guan, Xianmin Zhang, and Hong Zhang, “Workspace generation of 2-D multifingered manipulation under Consideration of All Constraints in the Grasp”, Proc 2009 IEEE International Conference on Advanced and Intelligent Mechatronics, Xi’an, China, July 2008, pp. 151–155.
- 2008 Yisheng Guan, Hong Zhang, Xianmin Zhang “Workspace of 3-D Multifingered Manipulation”, Proc 2008 IEEE Int’l Conference on Intelligent Robots and Systems, Nice, France, September 2008, pp. 2679–2684.
- 2008 Christopher Parker and Hong Zhang “Consensus-Based Task Sequencing in Decentralized Multiple-Robot Systems using Local Communication”, Proc 2008 IEEE Int’l Conference on Intelligent Robots and Systems, Nice, France, September 2008, pp. 1421–1426.
- 2007 Artit Visatemongkolchai and Hong Zhang, “Building Probabilistic Motion Models for SLAM”, Proc IEEE International Conference on Robotics and Biomimetics, Sanya, China, December 2007, pp. 1629 – 1634.
- 2007 J Klippenstein, H Zhang, and X Wang, “Feature Initialization for Bearing Only Visual SLAM Using Triangulation and the Unscented Transform”, Proc 2007 IEEE International Conference on Mechatronics and Automation, Harbin, China, August 5-8, 2007, pp. 1599 - 1604.
- 2007 J Wu and H Zhang, “Camera Sensor Model for Visual SLAM”, Proceedings of 2007 Canadian Conference on Computer and Robot Vision, Montreal, Canada, May 28-30, 2007, pages 149 – 156.
- 2007 J Klippenstein and H Zhang, “Qualitative Evaluation of Feature Extractors for Bearing-Only Visual SLAM”, Proceedings of 2007 Canadian Conference on Computer and Robot Vision. Montreal, Canada, May 28-30, 2007, pages 157 – 164.
- 2007 X Wang and H Zhang, “A UPF-UKF Framework for SLAM”, Proceedings of 2007 IEEE International Conference on Robotics and Automation, Rome, Italy, April 10-14, 2007, pages 1664 – 1669.
- 2007 C Parker and H Zhang, “A Practical Implementation of Random Peer-To-Peer Communication for a Multiple-Robot System”, Proceedings of 2007 IEEE International Conference on Robotics and Automation, Rome, Italy, April 10-14, 2007, pages 3730 – 3735.
- 2006 C. Parker and H. Zhang, “An Analysis of Random Peer-to-Peer Communication for System-Level Coordination in Distributed Multiple-Robot Systems”, 2006 IEEE/RSJ International Conference on Intelligent Robots and Systems. Beijing, China, October 9-15, 2006, pp. 398 – 403.
- 2006 X. Wang and H. Zhang, “Good Image Features for Bearing-only SLAM”, 2006 IEEE/RSJ International Conference on Intelligent Robots and Systems. Beijing, China, October 9-15, 2006, pages 2576–2581.
- 2006 J. Kelly and H. Zhang, “Combinatorial Optimization of Sensing for Rule-Based Distributed Assembly”, 2006 IEEE/RSJ International Conference on Intelligent Robots and Systems”, Beijing, China, October 9-15, 2006, pages 3728–3734.
- 2006 X. Wang and H. Zhang, “Bearing-Only Landmark Initialization by Using SUF with Undistorted SIFT Features”, 2006 IEEE International Conference on Robotics and Automation, Orlando, USA, May 15-19, 2006, pages 1951–1956.

- 2006 I. Levner, A. Kovarsky, and H. Zhang, "Heuristic Search for Coordinating Robot Agents in Adversarial Domains", 2006 IEEE International Conference on Robotics and Automation, Orlando, USA, May 15-19, 2006, pages 563–569.
- 2006 X. Lu and H. Zhang, "Color Classification Using Adaptive Dichromatic Model", 2006 IEEE International Conference on Robotics and Automation, Orlando, USA, May 15-19, 2006, pages 3411–3416.
- 2006 D. Zhou and H. Zhang, "Accurate Segmentation of Moving Objects in Image Sequence Based on Spatio-Temporal Information", 2006 IEEE International Conference on Mechatronics and Automation. Luoyang, China, June 25-28, 2006, pages 543–548.
- 2005 Dongxiang Zhou and Hong Zhang, "Modified GMM Background Modeling and Optical Flow for detection of multiple moving objects", 2005 IEEE International Conference on System, Man, and Cybernetics, Hawaii, U.S.A., October 10-13, 2005, pages 2224–2229.
- 2005 Minghong Pi and Hong Zhang, "Measurement of Fine Particle Size with Wavelet Signature", 2005 IEEE International Conference on Image Processing, Genova, Italy, September 11-14, 2005, pp. III- 65–III-168.
- 2005 Matthew McNaughton, Sean Verret, Andrzej Zadorozny, and Hong Zhang, "Broker: An Interprocess Communication Solution for Multi-Robot Systems", 2005 IEEE International Conference on Intelligent Robots and Systems, Edmonton, Canada, August 2-6, 2005, pp. 556–561.
- 2005 R. Neouchi, H. Zhang and R. Elio, "Distance Based Communication in the Surveillance Task in a Multi-Robot System", 2005 IEEE International Conference on Intelligent Robots and Systems, Edmonton, Canada, August 2-6, 2005, pp. 221–227.
- 2005 Guang Li and Hong Zhang, "A Rectangular Partition Algorithm for Planar Self-Assembly", 2005 IEEE International Conference on Intelligent Robots and Systems, Edmonton, Canada, August 2-6, 2005, pp. 2324–2329.
- 2005 C. Parker and H. Zhang "Active Versus Passive Expression of Preference in the Control of Multiple-Robot Decision-Making", 2005 IEEE International Conference on Intelligent Robots and Systems, Edmonton, Canada, August 2-6, 2005, pp. 915–920.
- 2005 Dongxiang Zhou and Hong Zhang, "2D Shape Measurement of Multiple Moving Objects by GMM Background Modeling and Optical Flow", Proceedings of Second International Conference on Image Analysis and Recognition: (ICIAR 2005), Toronto, Canada, September, 28-30, 2005.
- 2005 Xiaoli Wang, Mark Polak, Vadim Bulitko, and Hong Zhang, "Machine Learning for Adaptive Parameter Selection in Ore Image Segmentation", AAAI Workshop on Learning in Computer Vision July 9-13 2005, Pittsburgh, USA.
- 2005 Xiaohu Lu and Hong Zhang, "Adaptive Color Classification with Gaussian Mixture Modeling", 2005 IEEE International Conference on Robotics and Biomimetics, June 29-July 3, 2005, pp. 330–335.
- 2005 Minghong Pi and Hong Zhang, "Two-Stage Image Segmentation by Adaptive Thresholding and Gradient Watershed", Proceedings of Second Canadian Conference on Computer and Robot Vision, Victoria, Canada, May 9-11, 2005, pp. 57–64.
- 2005 Colin Cherry and Hong Zhang, "Toward Versatility of Multi-Robot Systems", Proc. 3rd International NRL Workshop on Multi-Robot Systems, Washington, D.C., USA, March 14-16, 2005, pp. 79–90.
- 2004 Christopher Parker and Hong Zhang, "Biologically Inspired Decision Making for Collective Robotic Systems", Proceedings of 2004 IEEE International Conference on Intelligent Robots and Systems, Sendai, Japan, 2004, pp. 375–380.
- 2004 Xiujuan Luo and Hong Zhang, "Characterization of Acuity Laser Rangefinder", The Eighth International Conference on Control, Automation, Robotics and Vision (ICARCV 2004), December 6-9, 2004, Kunming, China, pp. 2100–2104.
- 2004 Sean Verret, Hong Zhang, and Max Q.-H. Meng, "Collective Sorting with Local Communication", Proceedings of 2004 IEEE International Conference on Intelligent Robots and Systems, Sendai, Japan, 2004, pp. 375-380, pp. 2687-2692.

- 2004 Tao Wang and Hong Zhang, "Collective sorting With Multiple Robots", Proc. 2004 IEEE International Conference on Robotics and Biomimetics, Shenyang, China, August 22-26, 2004.
- 2004 Dan Lizotte and Hong Zhang, "Trading Confidence for Communication" 2004 IEEE International Conference on Systems, Man, and Cybernetics, the Hague, the Netherlands, October 10-13, 2004.
- 2004 Perron, M. and Zhang, H., "Coaching a Robot Collective", Proc. 2004 IEEE Int. Conf. on Robotics and Automation (ICRA 2004), New Orleans, April 26 - May 1, 2004, pp. 3443-3448.
- 2003 Guan, Y. and Zhang, H., "Workspace of 2D Multifingered Manipulation", Proceedings of 2003 IEEE International Conference on Intelligent Robots and Systems. Las Vegas, USA, October 27-31, 2003, pp. 3705-3710.
- 2003 Guan, Y. and Zhang, H., "Feasibility Analysis of 2D Grasps", Proceedings of 2003 IEEE International Conference on Intelligent Robots and Systems, Las Vegas, USA, October 27-31, 2003, pp. 3435-3440.
- 2003 Parker, C., Zhang, H., and Kube, R. "Blind Bulldozing: Multiple Robot Nest Construction", Proc. IROS 2003, Las Vegas, USA, October 27-31, 2003, pp. 2010-2015.
- 2003 Cobzas, D., Jagersand, M., and Zhang, H., "A Panoramic Model for Robot Predictive Display", Proc. 16th Int. Cof. on Vision Interface (VI 2003), Halifax, Canada, June 11-13, 2003.
- 2002 Zadorozny, A., Jagersand, M., Zhang, H., "Granulometry Using Transformation Based Techniques", Proc 15th International Conference on Vision Interface, Calgary, Canada, May 27-29.
- 2002 Cobzas, D., Zhang, H. and Jagersand, M., "Comparative Analysis of Geometric and Image-Based 3D-2D Registration Algorithms", Proc. of ICRA 2002, Washington DC, May 11-15, 2002.
- 2001 Cobzas, Dana and Zhang, H., "Cylindrical Panoramic Image-Based Model for Robot Localization", Proc. 2001 International Conference on Intelligent Robots and Systems, October 29-November 3, 2001, Maui, Hawaii.
- 2001 Cobzas, Dana and Zhang, H., "Planar Patch Extraction with Noisy Depth Data", in Proc. Third International Conference on 3D Digital Imaging and Modeling, May 2001, Quebec City, Canada, pp. 240-245.
- 2001 Cobzas, D. and Zhang, H., "Mobile Robot Localization using Planar Patches and a Stereo Panoramic Model", in Proc. of Vision Interface 2001, June 7-9, 2001, Ottawa, Canada, pp. 94-99.
- 2001 Guan, Y., Ho, T., and Zhang, H. "An Integrated Robotic Hand/Simulator System for Telemanipulation via the Internet", Proc. 2001 IEEE International Conference on Robotics and Automation, May 21-26, 2001, Seoul, Korea, pp. 1909-1914.
- 2001 Guan, Y. and Zhang, H. "Kinematic Feasibility Analysis of 3D Grasps" Proc. 2001 IEEE International Conference on Robotics and Automation, May 21-26, 2001, Seoul, Korea, pp. 2197-2202.
- 2001 Kwon, K. Zhang, H., and Dornaika, F., "Hand pose recovery with a single video camera" Proc. 2001 IEEE International Conference on Robotics and Automation, May 21-26, 2001, Seoul, Korea, pp. 1194-1200.
- 2001 Cobzas, D. and Zhang, H., "Mobile Robot Localization using Planar Patches and a Stereo Panoramic Model", Proc. of Vision Interface 2001, June 7-9, 2001, Ottawa, Canada.
- 2001 Cobzas, D. and Zhang, H., "Planar Patch Extraction with Noisy Depth Data", Proc. Third International Conference on 3D Digital Imaging and Modeling, May 28-June 1, 2001, Quebec City, Canada.
- 2000 Cobzas, D. and Zhang, H., "2D Robot Localization with Image-Based Panoramic Models Using Vertical Line Features", Proc. of Vision Interface 2000, pp. 211-216, May 14-17, 2000, Montreal, Canada.
- 2000 Guan, Y. and Zhang, H. "Automatic Generation of 2D Canonical Grasps", Proc. 2000 International Symposium on Robotics, Montreal, May 14-17, 2000, pp. 59-64.

- 2000 Dornaika, F., and Zhang, H., "Granulometry using Mathematical Morphology and Motion", in Proc. 2000 IAPR Workshop on Machine Vision Applications, Tokyo, Japan, November 28-30, 2000, pp. 51-54.
- 2000 Guan, Y. and Zhang, H. "Kinematic Graspability of a Multifingered Hand", Proc. 2000 IEEE International Conference on Robotics and Automation, San Francisco, USA., pp. 3591-3596, April 22-28, 2000.
- 1999 So, E., Zhang, H. and Guan, Y., "Sensing Contact Shape with Analog Resistive Technology," Proc. 1999 IEEE International Conference on Systems, Man, and Cybernetics, Tokyo, Japan, vol. 2, pp. 806-811, October 12-15, 1999.
- 1999 Guan, Y. and Zhang, H. "Sensing Contact Forces in a Dexterous Hand", Proc. 1999 International Conference on Advanced Robotics, Tokyo, Japan, pp. 155-160, October, 1999
- 1999 Baldwin, J., Basu, A., and Zhang, H. "Panoramic Video with Predictive Windows for Telepresence Applications," Proc. 1999 IEEE International Conference on Robotics and Automation, Detroit, U.S.A., pp. 1922-1927, May 10-15, 1999.
- 1998 Baldwin, J., Basu, A., and Zhang, H. "Hybrid Video for Telerobotics," Intelligent and Autonomous Systems IAS-5, Sapporo, Japan, June 1-4, 1998, pp. 78-85.
- 1998 Baldwin, J., Basu, A., and Zhang, H. "Predictive Windows for Delay Compensation in Telepresence Applications," Proc. 1998 IEEE International Conference on Robotics and Automation, Leuven, Belgium, May 16-20, 1998.
- 1997 Zhang, H., Tyzuck, W., Ho, T., Siu, E., Kube, C. R., Gamble, J., and Sutphen, S., "Rotating Sonar: Modeling and Application" Proc. 1997 International Conference on Field and Service Robotics, Canberra, Australia, December 8-10, 1997, pp. 546-551.
- 1997 Zhang, H., Chen, N., Sikka, P., and Sutphen, S., "From Touch to Motion," Video Proc. 1997 IEEE International Conference on Robotics and Automation, Albuquerque, NM, April 20-25, 1997.
- 1997 Kube, C. R. and Zhang, H., "Multi-robot Box Pushing," Video Proc. 1997 IEEE International Conference on Robotics and Automation, Albuquerque, NM, April 20-25, 1997.
- 1997 Chen, N., Zhang, H., and R. Rink, "Touch-Driven Robot Control Using a Tactile Jacobian," Proc. 1997 IEEE International Conference on Robotics and Automation, Albuquerque, NM, April 20-25, 1997.
- 1996 Tang, W. and Zhang, H., "Decentralized Control of Robot Formation Marching," Proc. Sixth International Symposium on Robotics and Manufacturing, Montpellier, France, May 27-30, 1996.
- 1996 Zhang, H., Tanie, K., and Maekawa, H., "Dextrous Manipulation Planning by Grasp Transformation," Proc. 1996 IEEE International Conference on Robotics and Automation, Minneapolis, Minnesota, April 22-28, 1996.
- 1996 Zhang, H., Maekawa, H., and Tanie, K., "Sensitivity Analysis and Experiments of Curvature Estimation Based on Rolling Contact," Proc. 1996 IEEE International Conference on Robotics and Automation, Minneapolis, Minnesota, April 22-28, 1996.
- 1996 Chen, N., Rink, R., and Zhang, H., "Local Object Shape from Tactile Sensing," Proc. 1996 IEEE International Conference on Robotics and Automation, Minneapolis, Minnesota, April 22-28, 1996.
- 1996 Kube, R., and Zhang, H., "The Use of Perceptual Cues in Multi-Robot Box-Pushing," Proc. 1996 IEEE International Conference on Robotics and Automation, Minneapolis, Minnesota, April 22-28, 1996.
- 1996 Boshra, M., and Zhang, H., "An Efficient Pixel-Based Technique for Visual Verification of 3-D Object Hypotheses," Proc. 1996 IEEE International Conference on Robotics and Automation, Minneapolis, Minnesota, April 22-28, 1996.
- 1995 Charlton, S., Sikka, P., and Zhang, H., "Extracting Contact Parameters from Tactile Data Using Artificial Neural Networks," Proc. 1995 IEEE International Conference on Neural Networks, Perth, Western Australia, November 27-December 1, 1995, pp. 2536-2540.



- 1995 Chen, N., Zhang, H., and Rink, R., "Edge Tracking Using Tactile Servo," Proc. 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems, Pittsburgh, August 5-9, 1995, pp. 84-89.
- 1995 Chen, N., Rink, R., and Zhang, H., "Efficient Edge Detection from Tactile Data," Proc. 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems, Pittsburgh, August 5-9, 1995, pp. 386-391.
- 1995 Boshra, M., and Zhang, H., "A constraint satisfaction approach for vision/touch-based object recognition," Proc. 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems, Pittsburgh, August 5-9, 1995, pp. 368-373.
- 1994 Kube, C. R., and Zhang, H., "Stagnation recovery behavior for collective robotics," Proc. 1994 IEEE/RSJ International Conference on Intelligent Robots and Systems, Munich, Germany, September 16-19, 1994, pp. 1883-1890.
- 1994 Boshra, M., and Zhang, H., "Use of tactile sensors for enhancing the efficiency of 3-D visual object localization," Proc. 1994 IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems, Las Vegas, Nevada, October 2-5, 1994, pp. 243-250.
- 1994 Boshra, M., and Zhang, H., "Use of visual and tactile data for generation of 3-D object hypothesis," Proc. 1994 IEEE/RSJ International Conference on Intelligent Robots and Systems, Munich, Germany, September 16-19, 1994, pp. 73-80.
- 1994 Patil, R., Basu, A., and Zhang, H., "Crack detection using contact sensing," Proc. 1994 IEEE International Conference on Robotics and Automation, San Diego, CA, May 7-12, 1994, pp. 1772 - 1777.
- 1993 Kube, C. R., Zhang, H., and X. Wang, "Controlling collective tasks with ALN," Proc. 1993 IEEE/RSJ International Conference on Intelligent Robots and Systems, Yokohama, Japan, July 26-30, 1993, pp. 289-293.
- 1992 Kube, C. R. and Zhang, H., "Collective robotic intelligence," Proc. Second International Conference on Simulation of Adaptive Behaviors, Honolulu, Hawaii, U.S.A., December 7-12, 1992, pp. 460-468.
- 1992 Sikka, P. and Zhang, H., "Tactile-assisted robotic object manipulation," Proc. Fourth International Symposium on Robotics and Manufacturing, Santa Fe, NM, U.S.A., November 11-13, 1992, pp. 83-88.
- 1992 Zhang, H. and Zhang, B., "Motion trajectory generation for robot manipulators based on resolved motion rate control," Proc. 1992 IASTED International Conference on Control and Robotics, Vancouver, Canada, August 4-7, 1992, pp. 376-379.
- 1992 Zhang, G., Zhang, H., and Hashimoto, M., "Joint torque sensing based on sensor data fusion," Proc. 1992 Japan-U.S.A. Symposium on Flexible Automation, San Francisco, U.S.A., July 13-15, 1992, pp. 353-359.
- 1992 Basu, A., Bakir, G., and Zhang, H., "Motion planning with acceleration constraint," Proc. 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, U.S.A., July 7-10, 1992.
- 1992 Zhang, H., "Optimal sensor placement," Proc. 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 12-14, 1992, pp. 1825-1831.
- 1991 Bakir, G., and Zhang, H., "Robot localization by sensor data fusion," Proc. Vision Interface '91, Calgary, Canada, June, 1991, pp. 27-34.
- 1991 Zhang, H., "Feasibility analysis of displacement trajectories for robot manipulators with a spherical wrist," Proc. 1991 IEEE International Conference on Robotics and Automation, Sacramento, CA, April, 1991, pp. 1252-1257.
- 1990 Zhang, H., "A kinematically stable hybrid control formulation," Proc. Third International Symposium on Robotics and Manufacturing, Burnaby, BC, Canada, July 18-20, 1990, pp. 287-292.

- 1990 Zhang, H. and Paul, R., "A parallel inverse kinematics solution for robot manipulators based on multiprocessing and linear extrapolation," Proc. 1990 IEEE International Conference on Robotics and Automation, Cincinnati, Ohio, May, 1990, pp. 468–474.
- 1989 Zhang, H., "Parallel inverse kinematics for robot manipulators based on linear extrapolation," Proc. 12th IASTED International Symposium on Robotics and Manufacturing, Santa Barbara, CA, 1989, pp. 75–79.
- 1989 Zhang, H., "Kinematic stability of robot manipulators under force control," Proc. 1989 IEEE International Conference on Robotics and Automation, Scottsdale, Arizona, May, 1989, pp. 80–85.
- 1988 Zhang, H. and Paul, R. P., "Non-kinematic errors in robot manipulators," Proc. 1988 IEEE International Conference on Robotics and Automation, Philadelphia, PA, April, 1988, pp. 1138–1139.
- 1988 Zhang, H. and Paul, R. P., "A parallel solution to robot inverse kinematics," Proc. 1988 IEEE International Conference on Robotics and Automation, Philadelphia, PA, April, 1988, pp. 1140–1145.
- 1986 Zhang, H. and Paul, R. P., "A robot force and motion server," Proc. 1986 ACM/IEEE Computer Society Fall Joint Computer Conference, Dallas, Texas, November 1986, pp. 178–184.
- 1986 Paul, R. P. and Zhang, H., "Design of a robot force and motion server," Proc. 1986 IEEE International Conference on Robotics and Automation, San Francisco, California, April 1986, pp. 1878–1883.
- 1985 Zhang, H. and Paul, R. P., "Hybrid control of robot manipulators," Proc. 1985 IEEE International Conference on Robotics and Automation, St. Louis, March, 1985, pp. 602–607.
- 1984 Paul, R. P. and Zhang, H., "Robot motion trajectory specification and generation," Proc. 2nd International Symposium of Robotics Research, Kyoto, JAPAN, August, 1984, pp. 373–380.
- 1983 Paul, R. P., Ma, R., and Zhang, H., "Dynamics of the PUMA manipulator," Proc. American Control Conference, San Francisco, California, June 1983, pp. 491–496.

---

## Publications – Non-refereed Conference Publications

- 2004 Lizotte, D. and Zhang, H. "Trading Confidence for Communication", Proc. 2004 IEEE International Conference on Systems, Man, and Cybernetics, the Hague, the Netherlands, October 10-13, 2004.
- 2002 Parker, Christopher and Zhang, Hong. "Robot Collective Construction by Blind Bulldozing", Proc. 2002 IEEE International Conference on Systems, Man, and Cybernetics, Hammamet, Tunisia, October 6-9, 2002. 18
- 2000 Baldwin, J., Basu, A. and Zhang, H., Proc. 2000 IEEE International Conference on Systems, Man, and Cybernetics, "Hybrid Video Using Motion Estimation", Nashville, Tennessee, October 8-11, 2000.
- 2000 Ho, T. and Zhang, H., "Internet-Based Tele-Manipulation," Proc. 1999 IEEE Canadian Conference on Electrical and Computer Engineering, Edmonton, Canada, May 9–12, 1999, pp. 1425–1430.
- 1998 Zhang, H., and So, E., "Hybrid Tactile Sensing: Turning Garbage Bags into Tactile Sensors," Proc. IARP First International Workshop on Humanoid and Human Friendly Robotics, Tsukuba, Japan, October 26–27, 1998. 6. Chen, N., Zhang, H., and Rink, R., "Tactile sensing of point contact," Proc. IEEE International Conference on Systems, Man, and Cybernetics, Vancouver, B.C., Canada, October 22–25, 1995, Vol. 1, pp. 574–579.
- 1995 Charlton, S., Sikka, P. and Zhang, H., "Extracting contact parameters from tactile data using artificial neural networks," Proc. IEEE International Conference on Systems, Man, and Cybernetics, Vancouver, B.C., Canada, October 22–25, 1995, Vol. 4, pp. 3954–3959.
- 1993 Zhang, H., Sikka, P., and Sutphen, S., "Tactile servo: control of touch-driven robot motion", Preprints of Third International Symposium on Experimental Robotics, Kyoto, Japan, October 28-29, 1993, pp 155–161.

- 1991 Zhang, H. and Sikka, P., “Characterization of the workspace for planar robot manipulators,” Proc. IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing, Vancouver, B.C., Canada, May 9-10, 1991, vol. 1, pp. 158–161.
- 1988 Zhang, H., “Stability analysis of robot hybrid control,” Proc. Canadian Conference on Electrical and Computer Engineering, Vancouver, B.C., Canada, November, 1988, vol. 1, pp. 727–730.

## Publications – Book Chapters

- 2005 “Biologically Inspired Collective Robotics”, in Recent Developments in Biologically Inspired Computing, editors Leandro Nunes de Castro and Fernando J. Von Zuben, Publisher Idea Group Inc. (IGI), 2005, pp. 367-397.
- 1999 “Tactile Sensors,” Volume 21, Wiley Encyclopedia of Electrical and Electronics Engineering, ed. J. G. Webster, John Wiley & Sons, Inc., 1999.
- 1998 “Hybrid Video for Telerobotics”, Intelligent and Autonomous Systems IAS-5, ed. Y. Kakazu, M.Wada, and T. Sato, IOS Press, 1998.
- 1998 “Decentralized Control of Robot Formation Marching,” Robotics and Manufacturing: Recent Trends in Research and Applications Vol. 6, ed. M. Jamshidi, F. Pin, and P. Dauchez, ASME Press, 1996.
- 1992 “Tactile Servo: Control of Touch-Driven Robot Motion,” Robotics and Manufacturing: Recent Trends in Research and Applications Vol. 4, ed. M. Jamshidi, R. Lumia, J. Mullins, and M. Shahinpoor, ASME Press, 1992.
- 1990 “A Kinematically Stable Hybrid Control Formulation,” Robotics and Manufacturing: Recent Trends in Research and Applications Vol. 3, ed. M. Jamshidi, and M. Saif, ASME Press, 1990.
- 1987 “Computationally efficient kinematics for manipulators with spherical wrists based on the homogeneous transformation representation,” in Kinematics of Robot Manipulators, ed. J. M. McCarthy, The MIT Press: Cambridge, Massachusetts, 1987.
- 1994 “Robot motion trajectory specification and generation,” in Robotics Research: Proceedings of the Second International Symposium, ed. Hanafusu, The MIT Press: Cambridge, Massachusetts, 1984.

## Graduate Student Supervision

### Completed Supervision

- PDF Yisheng Guan (2001), Fadi Donaika (2001), Minghong Pi (2007), Ricardo Ferrari (2007), Dongxiang Zhou (2008), Hao Zhang (2008), Mohammed Bensalah (2012), Robert Stewart (2012), Li He (2017), Jun Li (2018), Zhanpeng Shao (2018-Present), Moein Shakeri (2019-Present), Xiaolong Wang (2019-Present)
- PhD Pavan Sikka (1994), Ning Chen (1997), Ronald Kube (1997), Michael Boshra (1997), Jonathan Baldwin (2000), Dana Cobzas (2004), Ilya Levner (2008), Christopher Parker (2010), Zhijie Wang (2012), Hui Wang (2013), Kian Hajebi (2014), Yang Liu (2015), Homa Foroughi (2017), Moein Shakeri (2019)
- MSc Goskin Bakir (1990), Ladislav Hala (1991), Guanghong Zhang (1992), Ronald Kube (1993), Steven Charlton (1995), Wenzhong Tang (1995), Teresa Ho (1999), Kihwan Kwon (2000), Eric So (2000), Marc Perron (2003), Christopher Parker (2003), Sean Verret (2005), Andrej Zadorozny (2005), Xiaohu Lu (2006), Jonathan Kelly (2006), Xiaoli Wang (2007), John Sheldon (2007), Jing Wu (2008), Artit Visatemongkolchai (2008), Jonathan Klippenstein (2008), Yury Potapovich (2009), Hossein Shabazi (2011), Jichuan Shi (2011), Jiemin Wang (2013), Michael Mills (2013), Ying Chen (2013), Amritpal Saini (2015), Sayem Siam (2017), Mahdi Shooshtari (2017), Sepideh Hosseinzadeh (2017), Ali Jahani (2019), Sean Sheideman (2019)

### Current Supervision

- PDF Zhanpeng Shao, Moein Shakeri, Xiaolong Wang
- PhD Shing-Yan Loo, Islam Ali, Ehsan Ahmadi, Sara Elerdawry, Abhineet Singh
- MSc Eduardo Montemayor Castillo, Siqi Yan, Vivian Ting, Nazmus Sakib