

Hongsheng He

210 Jabara Hall, Wichita State University, – 1845 Fairmount St, Wichita KS 67260

☎ (316) 978-3053 • ✉ hongsheng.he@wichita.edu

Professional Appointments

Assistant Professor

Wichita State University, Wichita

2017–present

Research Assistant Professor

The University of Tennessee, Knoxville

2016–2017

Research Associate & Lecturer

The University of Tennessee, Knoxville

2013-2016

Visiting Scholar

Northeastern University, Shenyang, China

10/2012-1/2013

Education

PhD, National University of Singapore

Department of Electrical and Computer Engineering

2008-2012

- Thesis: Visual Attention and Perception in Scene Understanding for Social Robotics
- Advisor: Professor Shuzhi Sam Ge, FIEEE, FIFAC, FIET

MS, Northeastern University

Control Theory & Engineering, Department of Information Science and Technology

2006-2008

- Thesis: Design and Development of Educational Robotic Software
- Advisor: Professor Tianyou Chai, FIEEE

BS, Wuhan University of Science and Technology

Automation, Department of Information Science and Technology

2002-2006

Funding

- PI, WSU University Research/Creative Projects Award, URCA-180206, \$4,500, “Real-time traffic condition perception by using a dual-sensor thermal imager for assistive and autonomous driving”, 12/1/2017-12/30/2018.
- PI, NSF of China, Visual Scene Understanding of Intelligent Robotics, 1/1/2014-12/30/2016
- Co-PI (PI: Jindong Tan), DOE, UT-Battelle-ORNL, Support ORNL to Perform GSHP Data Mining from ARRA Ground Source Heat Pump Demonstration Sites, 05/20/2013-09/01/2013

Research Interest

Autonomous Robotics; Artificial Intelligence; Machine Learning; Computer Vision; Smart Sensing

Awards

- Notable Reviewer, International Journal of Social Robotics, Springer 2015
- Silver Medal, Robotic Competition: Microsoft Wheeled-Robot Soccer Simulation, Robocup, 2010

Media Coverage

WBIR-TV, “Robot sensor technology could help people who cannot see navigate unfamiliar places”, by Emily Stroud, featured demos of blind navigation functions, November 4, 2015

Professional Services and Activities

- Editorial Board
 - Associate Editor, International Journal of Social Robotics, Springer, 2017-
 - Editorial Assistant, International Journal of Social Robotics, Springer, 2010-2012
- Organizing Committee
 - Program Chair, International Conference of Social Robotics, Qingdao, China, November 28-30, 2018
 - Publicity Chair, International Conference of Social Robotics, Bristol, UK, 27-29 October 2013
 - Publication Chair, International Conference of Social Robotics, Chengdu, China, October 29-31, 2012
 - Publication Chair, International Conference of Social Robotics, Tsukuba, Japan, November 22-24, 2017
 - Publication Chair, International Conference of Social Robotics, Kansas City, USA, November 1-3, 2016
 - Session Chair, IEEE International Conference on Intelligent Robots and Systems, Vancouver, Canada, September 24-28, 2017
 - Session Co-Chair, Session Title: Robotic Vision and Speech, The 8th international Conference of Social Robotics, Kansas City, USA, November 1-3, 2016
 - Session Chair, Session Title: Human-Robot Interaction, The 8th International Conference on Ubiquitous Robots and Ambient Intelligence, Incheon, Korean, Nov. 23-26, 2011
 - Robot Exhibition, International Conference on Robotics and Automation, Seattle, USA, May 26-30, 2015
- International Program Committee
 - The 5th International Conference on Artificial Intelligence, Paris, France, December 21-23, 2018
 - The 11th International Conference on Adaptive and Self-Adaptive Systems and Applications, Venice, Italy, May 05, 2019
 - The 4th International Conference on Robotics and Artificial Intelligence, Guangzhou, China, Nov 17-19, 2018
 - The International Conference on Cloud Technology and Communication Engineering, Guilin, China, August 18-20, 2017
 - The International Conference on Electronics, Electrical Engineering and Information Science, Guangdong, China, September 8-10, 2017
 - The 7th Chinese Conference on Pattern Recognition, Chengdu, November 5-7, 2016
- Panel Reviewer, SCH Section, S&AS Section, 2014-present
- Review for Journals: IEEE Transactions on Automation Science and Engineering; IEEE Transactions on Measurement and Instrumentation; ACM Transactions on Multimedia Computing Communications and Applications; Information Science; Automatica; International Journal of Social Robotics; Journal of Medical Imaging and Health Informatics; International Journal of Control, Automation and Systems; Journal of Intelligent and Robotic Systems; Journal of Medical Imaging and Health Informatics; ACM Transactions on Multimedia Computing, Communications, and Applications.
- Review for International Conferences: International Conference on Robotics and Automation; IEEE/RSJ International Conference on Intelligent Robots; International Conference on Social Robotics.

Professional Affiliation

- IEEE Member (Institute of Electrical and Electronics Engineers)
- ACM Member (Association for Computing Machinery)

Teaching

- CS 898AW: Artificial Intelligent for Robotics, Wichita State University, Spring since 2018
- CS 898AC: Introduction to Intelligent Robotics, Wichita State University, Fall since 2017
- BME 430: Biomedical Engineering Laboratory, University of Tennessee, Fall 2015

Service and Leadership Activities

- Award Committee, EECS Department, Wichita State University, 2017–present
- Chair Search Committee, EECS Department, Wichita State University, 2017–2018

Robotic Software

Hongsheng He and Guofeng Tong, "MS Wheeled and Humanoid Micro Robot Simulation", Official RoboCup Competition Platform, Chinese Association of Automation, 2009

Patent

1. Hongsheng He and Jian Lu, "Eye-in-hand Visual Inertial Measurement Unit", US Provisional Patent No 62398536, 2016
2. Hongsheng He and Jindong Tan, "Method of Estimating Relative Motion Using a Visual-Inertial Sensor", US Provisional Patent No 62393338, 2016
3. Hongsheng He, "Method of Depth Estimation Using a Camera and Inertial Sensor", US Provisional Patent No 62403230, 2016
4. Z. Fang, T. Chai, L. Wang, S. Ge, H. He, Z. Li, H. Lv. "Fast Visual System of Design and Evaluation for Automation Education", Patent No. ZL 200810012934.1, CN 100590678C, 2010.2.17

Publications

Books and Book Chapters

- [1] Abderrahmane Kheddar, Eiichi Yoshida, Shuzhi Sam Ge, Kenji Suzuki, John-John Cabibihan, Friederike Eyssel, and Hongsheng He, editors. *Social Robotics*. Lecture Notes in Artificial Intelligence (LNAI). Springer, November 2017.
- [2] Arvin Agah, John-John Cabibihan, Ayanna M. Howard, Miguel A. Salichs, and Hongsheng He, editors. *Social Robotics*. Lecture Notes in Artificial Intelligence (LNAI). Springer, November 2016.
- [3] Fanyu Kong, Hongsheng He, Hollie A. Raynor, and Jindong Tan. *Electronic Imaging Applications in Mobile Healthcare*, chapter 12: DietCam: Multiview Regular-Shaped Food Recognition with a Camera Phone, pages 339–364. SPIE Press, 2016.
- [4] Jindong Tan, Hongsheng He, Ya Tian, Yong Guan, and William R. Hamel. *Recent Advances in Multisensor Attitude Estimation: Fundamental Concepts and Applications*, chapter 27: Ego-Motion Tracking in Dynamic Environments Using Wearable Visual-Inertial Sensors. The CRC Press, 2016.

Journal Papers

- [5] Yinlong Zhang, Wei Liang, Hongsheng He, and Jindong Tan. Wearable heading estimation for motion tracking in health care by adaptive fusion of visual-inertial measurements. *IEEE Journal of Biomedical and Health Informatics*, 2018.
- [6] Hongsheng He, Yan Li, and Jindong Tan. Relative motion estimation using visual–inertial optical flow. *Autonomous Robots*, pages 1–15, 2017.
- [7] Hongsheng He, Dali Wang, Yang Xu, and Jindong Tan. Data synthesis in the community land model for ecosystem simulation. *Journal of Computational Science*, 2016.
- [8] Hongsheng He, Fanyu Kong, and Jindong Tan. Dietcam: Multi-view food recognition using a multi-kernel svm. *IEEE Journal of Biomedical and Health Informatics*, 2015.
- [9] Hongsheng He, Yan Li, Yong Guan, and Jindong Tan. Wearable ego-motion tracking for blind navigation in indoor environments. *IEEE Transaction on Automation Science and Engineering*, 12(4):1181–1190, 2015.
- [10] Hongsheng He, Zhenzhou Shao, and Jindong Tan. Recognition of car makes and models using a single traffic camera image. *IEEE Transaction on Intelligent Transportation Systems*, 2015.
- [11] Fanyu Kong, Hongsheng He, Hollie A. Raynor, and Jindong Tan. Dietcam: Multi-view regular shape food recognition with a camera phone. *Pervasive and Mobile Computing*, 19(2):108–121, 2015.
- [12] Hongsheng He, Shuzhi Sam Ge, and Zhengchen Zhang. An attention-driven robotic head with biological saccade behaviors for social robots. *Autonomous Robotics*, 36(3):225–240, 2014.

- [13] Shuzhi Sam Ge, Hongsheng He, and Chengyao Shen. Geometrically local embedding in manifolds for dimension reduction. *Pattern Recognition*, 45(4):1455–1470, 2012.
 - [14] Zhengchen Zhang, Shuzhi Sam Ge, and Hongsheng He. Mutual-reinforcement document summarization using embedded graph based sentence clustering for storytelling. *Information Processing & Management*, 48(4):767–778, 2012.
 - [15] Shuzhi Sam Ge, Hongsheng He, and Zhengchen Zhang. Bottom-up saliency detection for attention determination. *Machine Vision and Applications*, 24(1):103–116, 2011.
 - [16] Hongsheng He, Shuzhi Sam Ge, and Zhengchen Zhang. Visual attention prediction using saliency determination of scene understanding for social robots. *International Journal of Social Robotics*, 3(4):457–468, 2011.
 - [17] Xiaoyu Liu and Hongsheng He. Implementation of visualized kinematics simulation platform for kld-600 6-dof robot based on matlab. *Techniques of Automation and Applications*, 30(7):66–68, 2011.
 - [18] Kun Yang, Shuzhi Sam Ge, and Hongsheng He. Robust line detection using two-orthogonal direction image scanning. *Computer Vision and Image Understanding*, 115(8):1207–1222, 2011.
 - [19] Guofeng Tong, Hongsheng He, and Zhenzhou Shao. New 3d soccer simulator based on microsoft robotics studio. *Journal of University of JINAN (Sci&Tech)*, 21(S2-0001-05), 2007.
- Conference Papers.....**
- [20] Hui Li, Yimesker Yihun, and Hongsheng He. Magichand: In-hand perception of object characteristics for dexterous manipulation. In *International Conference on Social Robotics*, pages 523–532. Springer, Cham, 2018.
 - [21] Yan Li, Jindong Tan, Yinlong Zhang, Wei Liang, and Hongsheng He. Spatial calibration for thermal-rgb cameras and inertial sensor system. In *2018 24th International Conference on Pattern Recognition (ICPR)*, pages 2295–2300. IEEE, 2018.
 - [22] Achyutha Bharath Rao, Krishna Kumar Krishnan, and Hongsheng He. Learning robotic grasping strategy based on natural-language object descriptions. In *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2018.
 - [23] Dustin Wilson, Fujian Yan, Kaushik Sinha, and Hongsheng He. Robotic understanding of scene contents and spatial constraints. In *International Conference on Social Robotics*, pages 93–102. Springer, Cham, 2018.
 - [24] Fujian Yan, Yinlong Zhang, and Hongsheng He. Semantics comprehension of entities in dictionary corpora for robot scene understanding. In *International Conference on Social Robotics*, pages 359–368. Springer, Cham, 2018.
 - [25] Yinlong Zhang, Wei Liang, Hongsheng He, and Jindong Tan. Kinematic chain based multi-joint capturing using monocular visual-inertial measurements. In *Intelligent Robots and Systems (IROS), 2017 IEEE/RSJ International Conference on*, pages 1818–1823. IEEE, 2017.
 - [26] Hongsheng He, Yan Li, and Jindong Tan. Rotational coordinate transformation for visual-inertial sensor fusion. *Proceedings of International Conference on Social Robotics (ICSR)*, pages 412–422, 2016.
 - [27] Hongsheng He and Jindong Tan. Adaptive ego-motion tracking using visual-inertial sensors for wearable blind navigation. In *Proceedings of the Wireless Health (Acceptance Rate: 30%), National Institutes of Health*, pages 1–7. ACM, Oct 29, 2014 - Oct 31, 2014 2014.
 - [28] Hongsheng He and Jindong Tan. A wearable navigator for the visually impaired and blind population. In *BMES Annual Meeting*, San Antonio, Oct. 22-25 2014.
 - [29] Hongsheng He and Jindong Tan. Ambient motion estimation in dynamic scenes using wearable visual and inertial sensors. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 1002–1007, May 31 - June 7 2014.

- [30] Zhenzhou Shao, Yong Guan, Hongsheng He, and Jindong Tan. Geometry constrained sparse embedding for multi-dimensional transfer function design in direct volume rendering. In *IEEE Conference on Robotics and Automation (ICRA)*, pages 1290–1295, May 31 - June 7 2014.
- [31] Shuzhi Sam Ge, John-John Cabibihan, Zhengchen Zhang, Yanan Li, Cai Meng, Hongsheng He, Mohammadreza Safi Zadeh, Yinbei Li, and Jiaqiang Yang. Design and development of nancy, a social robot. In *Proceedings of the 8th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 568–573, 2011.
- [32] Shuzhi Sam Ge, Yanan Li, and Hongsheng He. Neural-network-based human intention estimation for physical human-robot interaction. In *Proceedings of the 8th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 390–395, 2011.
- [33] Shuzhi Sam Ge, Chengyao Shen, and Hongsheng He. Visual cortex inspired junction detection. In *Proceedings of Neural Information Processing*, pages 225–232, 2011.
- [34] Shuzhi Sam Ge, Zhengchen Zhang, and Hongsheng He. Weighted graph model based sentence clustering and ranking for document summarization. In *the 4th International Conference on Interaction Sciences (ICIS)*, pages 90–95, 2011.
- [35] Cai Meng, Hongsheng He, and Shuzhi Sam Ge. Composite x marker detection and recognition. In *IEEE Conference on Robotics, Automation and Mechatronics (RAM)*, pages 12–17, 2011.
- [36] Hongsheng He, Zhengchen Zhang, and Shuzhi Sam Ge. Attention determination for social robots using salient region detection. *Proceedings of International Conference on Social Robotics (ICSR)*, pages 295–304, 2010.
- [37] Hongsheng He, Shuzhi Sam Ge, and Guofeng Tong. Task-based flocking algorithm for mobile robot cooperation. In Springer Berlin Heidelberg, editor, *Progress in Robotics*, pages 310–321, 2009.
- [38] Yaozhang Pan, Shuzhi Sam Ge, and Hongsheng He. Face recognition using alle and sift for human robot interaction. In Springer Berlin Heidelberg, editor, *Advances in Robotics*, pages 53–62, 2009.
- [39] Yaozhang Pan, Shuzhi Sam Ge, Hongsheng He, and Lei Chen. Real-time face detection for human robot interaction. In *IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, pages 1016–1021, 2009.
- [40] Guofeng Tong, Hongsheng He, and Zhenzhou Shao. A hifi simulator for robot soccer. In *Proceedings of the 7th World Congress on Intelligent Control and Automation*, pages 3045–3048, June 25 - 27 2008.
- [41] Guofeng Tong, Zhenzhou Shao, Hongsheng He, and Xi Chen. A hifi 3d simulator for humanoid robot soccer. In *IEEE International Conference on Information and Automation (ICIA)*, pages 804–808, 2008.

Thesis.....

- [42] Hongsheng He. *Visual attention and perception in scene understanding for social robotics*. PhD thesis, Department of Electrical and Computer Engineering, National University of Singapore, 2012.