

Publication List

Refereed Journal Publications

- [1] Chen, I.-M., Burdick, J.W., "Finding Antipodal Point Grasps on Irregularly Shaped Objects," IEEE Journal of Robotics and Automation, Vol. 9, No. 4, pp507-512, Aug. 1993, USA.
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3. Yang, G., Chen, I.-M., Yeo S. H., Lin, W., "Chapet 7: Design and Analysis of a Modular Hybrid Parallel-Serial Manipulator for Robotized Deburring Applications," *Smart Devices and Machines for Advanced Manufacturing* (Ed. L Wang, J. Xi), Springer-Verlag, NY, USA, 2008, ISBN 978-1-84800-146-6, pp167-188.
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Patents

1. Yang, G. L., Teo, T. J., Chen, I.-M., Flexure-based Electromagnetic Linear Actuator (FELA), US patent pending 2007.
2. Chen, I.-M., Lim K.Y., Goh, Y.K., Yeo, S.H., Duh, B.-L., Miniature low-cost flexible goniometer for joint angle measurement, US patent pending 2008.

Graduate Master Theses

1. Tan, Chee Tat, M.Eng. Thesis, 1998, "A Local-Product-of-Exponentials Method for the Kinematic Calibration of Modular Reconfigurable Robots," School of Mechanical and Production Engineering, Nanyang Technological University.
2. Phee, Soo Jay Louis. M.Eng. Thesis, 1999, "The Development of Automatic Flexible Endoscopes for Gastrointestinal Inspection or Surgery Endoscope," School of Mechanical and Production Engineering, Nanyang Technological University.
3. Lim, Wee Kiat, M.Eng. Thesis, 2000, "Kinematics Analysis and Calibration of Modular Parallel Robots," School of Mechanical and Production Engineering, Nanyang Technological University.
4. Ho, Hui Leong, M.Eng. Thesis, 2000, "Supervisory Control of Robotic Manufacturing Workcell," School of Mechanical and Production Engineering, Nanyang Technological University.
5. Lim, Chee Kian, M.Eng. Thesis, 2000, "Systematic Design for Disc-Type Traveling Wave Ultrasonic Motor," School of Mechanical and Production Engineering, Nanyang Technological University.
6. Gao, Yan, M.Eng. Thesis, 2000, "Decomposable Geometric Inverse Kinematics for Reconfigurable Robots Using Product-of-Exponential Formula," School of Mechanical and Production Engineering, Nanyang Technological University.

Graduate PhD Dissertations

1. Yang, Guilin. PhD Dissertation, 1998, "Kinematics, Dynamics, Calibration, and Optimization of Modular Reconfigurable Robots," School of Mechanical and Production Engineering, Nanyang Technological University.
2. Dash, Anjan Kumar. PhD Dissertation, 2004. "Kinematic Design and Control of Reconfigurable Parallel Manipulators," School of Mechanical and Production Engineering, Nanyang Technological University.
3. Xing, Shusong. PhD Dissertation, 2004. "Behavior-Based Physical Agents as Information Display Devices," School of Mechanical and Production Engineering, Nanyang Technological University.
4. Pham, Huy Hoang. PhD Dissertation, 2005. "Design of Flexure Parallel Mechanisms for Micromanipulation," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
5. Theingi. PhD Dissertation, 2005. "Parallel Manipulation Design with Joint-Coupling," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
6. Jin, Yan. PhD Dissertation, 2005. "Study on 6-DOF Decoupled Parallel Manipulators," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
7. Yan, Liang. PhD Dissertation, 2006. "Modeling and Design of 3-DOF Permanent Magnetic Spherical Actuator," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
8. Tang, Xueyan. PhD Dissertation, 2008. "Design, Modeling and Control of an XYZ Flexure Parallel Mechanism with Large motion and Decoupled Kinematic Structure," School of Mechanical and Aerospace Engineering, Nanyang Technological University.

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1. Chen, C.-Y., Chen I.-M., "Reconfigurable Workcell Improves Flexibility in Automation," Industrial Automation Journal, Singapore Industrial Automation Association, Vol. 7, No. 3, July-Sep, 1998, pp13-14.
2. Chen I.-M., Chen, C.-Y., Kang I.-G., Chen, W., Yang, G., "SEMORS: A Simulation and Control Environment for Modular Robots," Industrial Automation Journal, Singapore Industrial Automation Association, Vol. 8, No. 2, Apr - June, 1999, pp12-14.
3. R&D News, Discover Magazine, September 1999 issue, Page 20.
4. Life!, The Straits Times, Singapore, February 10, 2000.
5. "The Future Factory (IA/ICAM and LOGISMAT)", The Business Times, Singapore, June 5, 2001.
6. "BREAKTHROUGH", Channel News Asia, Singapore, 1030pm-1100pm, February 23, 2002.
7. "Underwater robot mimics an amoeba", The Guardian, UK, June 7, 2003.
8. "Commentary on Chinese spacecraft Shenzhou 5 Launch", Channel U Morning News, October 17, 2003. (in Chinese)
9. "Development of Robotic marionettes", Channel U Evening News, Singapore, November 23, 2003. (in Chinese)
10. "Robotic marionette", Lian He Zao Bao (Chinese), Singapore, November 28, 2003.
11. "Ameobot", Mirador, Special issue on Water, Domus Magazine (Architecture & Design), Milan, Italy, November 2006 issue, Page 1.
12. Project: ASTAR Project: Smart Suit, *appeared in*
 - Demo, Singapore-UK Microelectronics and Embedded Systems Workshop (MES), Jan 23-24, 2007.
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Invited/Research Seminars

1. "Issues in Modular Reconfigurable Robotics." Dept of Manufacturing Engineering, Boston University, Boston, USA, June 1997 (invited).
2. "Modularity Issues in Robotics and Automation." School of Mechanical and Production Engineering, NTU, 10 January 1998.
3. "Agile Manufacturing Through Reconfigurable Robotic Workcell." Dept. of Mechanical Engineering, California Institute of Technology, Pasadena, USA, 15 November 1998 (invited).
4. "Software Kernel for Modular Robot Applications: Automatic Modeling Techniques." Institute of Computer Science, Academia Sinica, Taipei, Taiwan, 4 December 1998 (invited).
5. "Development of Underwater Metamorphic Vehicle – Amoebot." Dept. of System Science, Kyoto University, Kyoto, Japan, 12 November 1999 (invited).
6. "Realization Of A Rapidly Reconfigurable Robotic Workcell." Mechanical Engineering Laboratory, AIST, MITI, Tsukuba, Japan, 18 November 1999 (invited).
7. "Rapidly Reconfigurable Robot Workcell." 1st SicToMM Seminar on Robotics and Manufacturing, NTU, Singapore, 13 March 2000 (invited).
8. "Rapidly Reconfigurable Robot Workcell." Applied Research Steering Committee Meeting, Gintic Institute of Manufacturing Technology, Singapore, 25 April 2000.
9. "Propeller-less Underwater Deployment Robots." Seminar on Integrated Engineering, Engineering Advances At the Dawn of the 21st Century, JSPS-NUS-NTU, Singapore, 8 December 2000.
10. "Reconfigurable Parallel-Kinematics Machines." NTU-CMU Joint Symposium on Advances in Robotics, Orchard Hotel, Singapore, 24 August 2001.

11. "Realization Of A Rapidly Reconfigurable Robotic Workcell." Dept. of Mechanical Engineering, Shanghai Jiao Tong University, 20 December 2001 (invited).
12. "Recent Development in Biomorphic Underwater Robotic Systems." Dept of Computational Intelligence and System Science, Graduate School of Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan, 22 May 2002 (invited).
13. "Advancement in Reconfigurable Automation." School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 30 May 2002 (invited).
14. "Fabrication of Artificial Tissue Scaffolds for Biomedical Applications." The 2nd International Symposium of Bio-medical Engineering and Technology, Kun-Shan University of Technology, Tainan, Taiwan, 14 October, 2002 (invited symposium speaker)
15. "Parallel-Kinematics Machines for Biomedical Application." The 2nd International Symposium of Bio-medical Engineering and Technology, Kun-Shan University of Technology, Tainan, Taiwan, 15 October, 2002 (invited symposium speaker)
16. "Parallel-Kinematics Machines for Biomedical Application." Workshop on Bio-medical Engineering and Technology, National Ping-Tung University of Technology, Ping-Tung, Taiwan, 16 October, 2002 (invited speaker)
17. "Parallel-Kinematics Machines for Biomedical Application." Dept. of Mechanical Engineering, Chang Geng University, Tao Yuan, Taiwan, 17 October, 2002 (Invited)
18. "Reconfigurable Automation and Its Applications to Tissue Engineering." Singapore-MIT Alliance Annual Symposium, National University of Singapore, Singapore, 17 January 2003.
19. "Moving HomePlug to Industrial Applications with Power-Line Communication Network," Singapore-MIT Alliance Annual Symposium, Traders Hotel, Singapore, 20 January 2004.
20. "Development Of 3-Dof DC Servo Spherical Actuator," School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 24 March 2004.
21. "New Parallel Manipulator Design Method for Nano- and Meso-scale manipulation: from Joint-Coupling to Selective Actuation," School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 25 March 2004.
22. "Design, Sensing and Control of 3-DOF DC Spherical Actuator," School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, 8 June 2004.
23. "Managing Parallel Manipulator Singularities with Joint-Coupling," Dept of Mechanical Engineering, McGill University, Montreal, Canada, 21 June, 2004.
24. "LEGO Bricks as Visualization Aid in the Teaching of Design," Dept of Mechanical Engineering, McGill University, Montreal, Canada, 22 June, 2004.
25. "New Parallel Manipulator Design Methodology – From Joint-Coupling to Selective Actuation," Dept of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, USA, 21 October, 2004.
26. "Recent Development in Micro/Nano Positioning Systems for Miniaturized Manufacturing and Biomimetic Underwater Robots," Dept of Mechanical Engineering, University of Delaware, Newark, DE, USA, 22 October 2004.
27. "Recent Development in Micro/Nano Positioning Systems for Miniaturized Manufacturing and Biomimetic Underwater Robots," Dept of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA, 27 October 2004.
28. "Modularity and Reconfiguration in Robotics and Automation Systems," GRASP Lab, University of Pennsylvania, Philadelphia, PA, USA, 15 November 2004.
29. "Modularity and Reconfiguration in Robotics and Automation Systems," Media Lab, MIT, Cambridge, MA, USA, 2 December 2004.
30. "Biomimic Robotics and Robot Locomotion," School of Information Sciences, Beijing Normal University, Beijing, China, 2 June, 2005.
31. "Many Strings Attached: From Conventional to Robotic Marionette Manipulation," Dept. of Computer Engineering and Science, Tsinghua University, Beijing, China, 3 June, 2005.
32. "Many Strings Attached: From Conventional to Robotic Marionette Manipulation," CAD/CAM National Key Lab, Zhejiang University, Hangzhou, China, 6 June, 2005.
33. "Many Strings Attached: From Conventional to Robotic Marionette Manipulation," Dept. of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China, 7 June, 2005.
34. "Recent Development in Micro/Nano Positioning Systems for Miniaturized Manufacturing," GE Global Research Center in China, Shanghai, China, 8 June 2005.

35. "Modularity and Reconfiguration for Intelligent Robotics and Automation System Design," Industrial Technology Research Institute (ITRI), Hsin-Chu, Taiwan, 4 November 2005.
36. "Modularity and Reconfiguration for Intelligent Robotics and Automation System Design," Dept of Mechanical Engineering, National Yunlin University of Science and Technology, Yunlin, Taiwan, 15 December 2005.
37. "Modularity and Reconfiguration for Intelligent Robotics and Automation System Design," Dept of Control Engineering, National Chiao Tung University, Hsin-Chu, Taiwan, 25 February 2006.
38. "Modularity and Reconfiguration for Intelligent Robotics and Automation System Design," Distinguished Lectures Workshop in Robotics, Dept of Electromechanical Engineering, University of Macau, Macau, SAR, China, 29 June 2006.
39. "Entertainment Robots – Technology and Future," Specialist Seminar Series (Precision Machinery Research Center, Taiwan), BenQ Inc., Taipei, Taiwan, 20 December 2006.
40. "Critical Issues and Technology for Commercialization of Robotics," Specialist Seminar Series (Precision Machinery Research Center, Taiwan), Micro Star Inc., Taipei, Taiwan, 22 December 2006.
41. "Novel and Smart Actuators for Robotics", Specialist Seminar Series (Precision Machinery Research Center, Taiwan), Micro Star Inc., Taipei, Taiwan, 22 December 2006.
42. "New Parallel Manipulator Design Methodology – From Joint-Coupling to Selective Actuation", Metal Industries Research & Development Center, Kaohsiung, Taiwan, 11 July 2007.
43. "Entertainment Robot and Smart Suit – Critical Technology for Interactive Digital Media", Industrial Technology Research Institute (ITRI), Hsin-Chu, Taiwan, 16 July 2007.
44. "New Parallel Manipulator Design Methodology – From Joint-Coupling to Selective Actuation", **Keynote Speech**, 2007 International Symposium on Industrial Electronics, Mechatronics and Applications, Cheng Shiu University, Kao Hsiung, Taiwan, 16-17 November 2007.
45. "Entertainment Robots and Interactive Sensing Technology", International Seminar Series on Intelligent Robotics, National Taiwan University of Science and Technology, Taipei, Taiwan, 20 November 2007.
46. "Flexure-Based Linear Actuator for Nano-Precision Manufacturing", NTU-ITRI Joint Research Workshop, NTU, Singapore, 21-22 Jan 2008.
47. "Entertainment Robots and Interactive Sensing Technology", Advances in Robotics EEE Technology Day, Singapore Polytechnic, Singapore, 20 February 2008.
48. "Wearable Sensors for High Fidelity Human Motion Monitoring and Tracking", NTU-Chinese University Joint Research Workshop, NTU, Singapore, 19 March 2008.
49. "Flexure-Based Linear Actuator for Nano-Precision Manufacturing", School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 3 July 2008.