# LIST OF PUBLICATIONS

### I-Ming Chen

#### **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.
- [2] Chen, I.-M., Yang, Guilin, "Kinematic Calibration of Modular Reconfigurable Robots Using Product-of-Exponential Formula," Journal of Robotics Systems, Vol. 14, No. 11, pp807-821, 1997, USA.
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### **Book Chapters**

- 1. Pham H. H., Chen, I.-M., "Design and Modeling of a Selective-Actuation XYZ Flexure Parallel Mechanism", in *Experimental Robotics IX* (Ed. M. H. Ang, O. Khatib), Chapter 6 Manipulation, Springer-Verlag, NY, USA, 2006.
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- 4. Li MH, Lu YL, Chen HH, Wang B, Chen I-M, "Angle of Arrival (AOA) Estimation in Wireless Networks," invited chapter, in *Wireless Networks: Research, Technology and Applications*, Ed. J. Feng, Nova Science Publishers, Inc. New York, Chapter 5, pp135-164, ISBN: 978-1-60692-461-7, June 2009
- 5. Li MH, Wang B, Lu YL, Zhou MT, Chen I-M, "Smart Antenna in Intelligent Transportation Systems," in *Wireless Technologies in Intelligent Transportation Systems*, Ed. Ming-Tuo Zhou *et al*, Nova Science Publishers, Inc. New York, Chapter 3, pp51-84, ISBN: 978-1-60741-588-6, August 2010.
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- 2. Yan L, Chen IM, Lim CK, Yang GL, Lee KM, *Modeling, Design and Experiment on Electromagnetic Spherical Actuator*, ISBN 978-94-007-1645-2, Mechanism and Machine Science Series, Vol. 4, Springer-Verlag, UK, 2011.

### Patents

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- 2. Yang, G. L., Teo, T. J., Chen, I.-M., Three Degree-Of-Freedom Active Nano-Alignment Manipulator, Singapore patent No. 200902201-3 March 2009.
- 3. Chen IM, Yuan QL, A Template Based Self-contained Quick Calibration Method For Orientation Measurement Sensor Based Motion Tracking Systems, US Provisional No. 61/557,075, 2011.

## **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.
- Li Kang, M.Eng. Thesis, 2010, "SmartGlove A Multi-Finger Sensing System Based on Optical Linear Encoder," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
- 8. Nguyen Kim Doang, M.Eng. Thesis, 2010, "Programming of a Wearable Body Motion Processing System." School of Mechanical and Aerospace 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, 2007 "Study on 6-DOF Decoupled Parallel Manipulators," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
- 7. Yan, Liang. PhD Dissertation, 2007. "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.
- 9. Lim, Chee Kian. PhD Dissertation, 2008. "Modeling Using Magnetic Dipole Moment Principle & Orientation Sensing Of An Electromagnetic Spherical Actuator," School of Mechanical and Aerospace Engineering, Nanyang Technological University.
- 10. Teo Tat Joo. PhD Dissertation, 2009. "Flexure-Based Electromagnetic Parallel-Kinematics Manipulator System," School of Mechanical and Aerospace Engineering, Nanyang Technological University.

# Magazine Articles, News, & Media

- 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.
- 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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## **Keynote/Plenary Speeches**

- 1. "Fabrication of Artificial Tissue Scaffolds for Biomedical Applications." 2<sup>nd</sup> Int'l Symposium of Biomedical Engineering and Technology, Kun-Shan University of Technology, Tainan, Taiwan, 14 October, 2002.
- 2. "Parallel-Kinematics Machines for Biomedical Application." 2<sup>nd</sup> Int'l Symposium of Bio-medical Engineering and Technology, Kun-Shan University of Technology, Tainan, Taiwan, 15 October, 2002.
- 3. "New Parallel Manipulator Design Methodology From Joint-Coupling to Selective Actuation", 2007 International Symposium on Industrial Electronics, Mechatronics and Applications, Cheng Shiu University, Kao Hsiung, Taiwan, 16-17 November 2007.
- 4. "FOLLOW ME! From Motion Capture (MOCAP) to Motion Replication (MOREP)," 1<sup>st</sup> IFTOMM Int'I Sym Robotics Mechatronics (ISRM), Hanoi, Vietnam, 21 September 2009.

## **Invited Seminars**

- 1. "Issues in Modular Reconfigurable Robotics." Dept of Manufacturing Engineering, Boston University, Boston, USA, June 1997.
- 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.
- 4. "Software Kernel for Modular Robot Applications: Automatic Modeling Techniques." Institute of Computer Science, Academia Sinica, Taipei, Taiwan, 4 December 1998.
- 5. "Development of Underwater Metamorphic Vehicle Amoebot." Dept. of System Science, Kyoto University, Kyoto, Japan, 12 November 1999.
- 6. "Realization Of A Rapidly Reconfigurable Robotic Workcell." Mechanical Engineering Laboratory, AIST, MITI, Tsukuba, Japan, 18 November 1999.
- 7. "Rapidly Reconfigurable Robot Workcell." 1<sup>st</sup> SicToMM Seminar on Robotics and Manufacturing, NTU, Singapore, 13 March 2000.
- 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 21<sup>st</sup> 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.
- 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.
- 13. "Advancement in Reconfigurable Automation." School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 30 May 2002.
- 14. "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.
- 15. "Parallel-Kinematics Machines for Biomedical Application." Dept. of Mechanical Engineering, Chang Geng University, Tao Yuan, Taiwan, 17 October, 2002.
- 16. "Reconfigurable Automation and Its Applications to Tissue Engineering." Singapore-MIT Alliance Annual Symposium, National University of Singapore, Singapore, 17 January 2003.

- 17. "Moving HomePlug to Industrial Applications with Power-Line Communication Network," Singapore-MIT Alliance Annual Symposium, Traders Hotel, Singapore, 20 January 2004.
- 18. "Development Of 3-Dof DC Servo Spherical Actuator," School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 24 March 2004.
- 19. "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.
- 20. "Design, Sensing and Control of 3-DOF DC Spherical Actuator," School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, 8 June 2004.
- 21. "Managing Parallel Manipulator Singularities with Joint-Coupling," Dept of Mechanical Engineering, McGill University, Montreal, Canada, 21 June, 2004.
- 22. "LEGO Bricks as Visualization Aid in the Teaching of Design," Dept of Mechanical Engineering, McGill University, Montreal, Canada, 22 June, 2004.
- 23. "New Parallel Manipulator Design Methodology From Joint-Coupling to Selective Actuation," Dept of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, USA, 21 October, 2004.
- 24. "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.
- 25. "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.
- 26. "Modularity and Reconfiguration in Robotics and Automation Systems," GRASP Lab, University of Pennsylvania, Philadelphia, PA, USA, 15 November 2004.
- 27. "Modularity and Reconfiguration in Robotics and Automation Systems," Media Lab, MIT, Cambridge, MA, USA, 2 December 2004.
- 28. "Biomimic Robotics and Robot Locomotion," School of Information Sciences, Beijing Normal University, Beijing, China, 2 June, 2005.
- 29. "Many Strings Attached: From Conventional to Robotic Marionette Manipulation," Dept. of Computer Engineering and Science, Tsinghua University, Beijing, China, 3 June, 2005.
- 30. "Many Strings Attached: From Conventional to Robotic Marionette Manipulation," CAD/CAM National Key Lab, Zhejiang University, Hangzhou, China, 6 June, 2005.
- 31. "Many Strings Attached: From Conventional to Robotic Marionette Manipulation," Dept. of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China, 7 June, 2005.
- 32. "Recent Development in Micro/Nano Positioning Systems for Miniaturized Manufacturing," GE Global Research Center in China, Shanghai, China, 8 June 2005.
- 33. "Modularity and Reconfiguration for Intelligent Robotics and Automation System Design," Industrial Technology Research Institute (ITRI), Hsin-Chu, Taiwan, 4 November 2005.
- "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.
- 35. "Modularity and Reconfiguration for Intelligent Robotics and Automation System Design," Dept of Control Engineering, National Chiao Tong University, Hsin-Chu, Taiwan, 25 February 2006.
- 36. "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.
- 37. "Entertainment Robots Technology and Future," Specialist Seminar Series (Precision Machinery Research Center, Taiwan), BenQ Inc., Taipei, Taiwan, 20 December 2006.
- "Critical Issues and Technology for Commercialization of Robotics," Specialist Seminar Series (Precision Machinery Research Center, Taiwan), Micro Star Inc., Taipei, Taiwan, 22 December 2006.
- 39. "Novel and Smart Actuators for Robotics", Specialist Seminar Series (Precision Machinery Research Center, Taiwan), Micro Star Inc., Taipei, Taiwan, 22 December 2006.
- 40. "New Parallel Manipulator Design Methodology From Joint-Coupling to Selective Actuation", Metal Industries Research & Development Center, Kaohsiung, Taiwan, 11 July 2007.
- 41. "Entertainment Robot and Smart Suit Critical Technology for Interactive Digital Media", Industrial Technology Research Institute (ITRI), Hsin-Chu, Taiwan, 16 July 2007.
- 42. "Entertainment Robots and Interactive Sensing Technology", International Seminar Series on Intelligent Robotics, National Taiwan University of Science and Technology, Taipei, Taiwan, 20 November 2007.
- 43. "Flexure-Based Linear Actuator for Nano-Precision Manufacturing", NTU-ITRI Joint Research Workshop, NTU, Singapore, 21-22 Jan 2008.

- 44. "Entertainment Robots and Interactive Sensing Technology", Advances in Robotics EEE Technology Day, Singapore Polytechnic, Singapore, 20 February 2008.
- 45. "Wearable Sensors for High Fidelity Human Motion Monitoring and Tracking", NTU-Chinese University Joint Research Workshop, NTU, Singapore, 19 March 2008.
- 46. "Flexure-Based Linear Actuator for Nano-Precision Manufacturing", School of Mechanical Engineering, Xian Jiao Tong University, Xian, China, 3 July 2008.
- 47. "Wearable Sensors for High Fidelity Human Motion Monitoring and Tracking", 5<sup>th</sup> International Symposium on Biomedical Engineering, Chang Geng University, Taoyuan, Taiwan, 11 December 2008.
- 48. "Wearable Sensors for High Fidelity Human Motion Monitoring and Tracking", Dept of Computer Science, National Cheng Chi University, Taipei, Taiwan, 5 January 2009.
- 49. "Personalized Mechatronics Systems: From Motion Capture (MOCAP) to Motion Replication (MOREP)," Dept of Mechano-Informatics, Univ of Tokyo, Tokyo, Japan, 22 July 2009.
- 50. "Wearable Mechatronics Systems: From Motion Capture (MOCAP) to Motion Replication (MOREP)," Dept of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan, 17 November 2009.
- 51. "Wearable Mechatronics Systems: From Motion Capture (MOCAP) to Motion Replication (MOREP)," Dept of Electrical and Control Engineering, National Chiao Tung University, Hsinchu, Taiwan, 18 November 2009.
- 52. "Wearable Mechatronics Systems: From Motion Capture (MOCAP) to Motion Replication (MOREP)," Dept of Mechanical Engineering, National Taiwan University, Taipei, Taiwan, 19 November 2009.
- 53. "Wearable Mechatronics Systems: From Motion Capture (MOCAP) to Motion Replication (MOREP)," CGU-NTU Joint Symposium on Emerging Technology for Biomedical Engineering, Chang Geng University, Taoyuan, Taiwan, 21 November 2009.
- 54. "SmartSuit and SmartGlove: Wearable Technology for Real-time Data Driven Medical Simulation," ASTAR MedTech Forum on Medical Simulation and Minimal Invasive Surgery, NUS School of Medicine, Singapore, 19 June 2010.
- 55. "Wearable Mechatronic Systems for Human-Robot and Human-Human Interactions," Faculty of Mechanical Engineering, Budapest University of Technology and Economy, Budapest, Hungary, 13 July 2010.
- 56. "Seamless Monitoring and Assessment System for Stroke Patient Rehabilitation," TTSH-NTU Workshop on Rehabilitation and Assistive Technology, Nanyang Technological University, 1 March 2011.
- 57. "Interactive Humanoid Robot For Entertainment And Therapy," Institute of Mental Health, Child Development Clinic, Singapore, 21 April 2011.
- 58. "SLAC: 3D Localization of Human Based on Kinetic Human Movement Capture," School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China, 12 May 2011.
- 59. "SmartSuit and SmartGlove: Wearable Technology for Real-time Data Driven Simulation and Training," University Surgical Cluster Meeting, National University Health System (NUHS) Tower, Singapore, 4 June 2011.