

MARCELO H. ANG JR.PRESENT POSITION

Professor, Dept. of Mechanical Engineering
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Award date of Tenure: 1 Aug 1998 PE 4162 (Professional Mechanical Engineer, Singapore)

HOME ADDRESS

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EDUCATION

1988 - *Ph.D. in Electrical Engineering*, University of Rochester, Rochester, New York.

Dissertation: "Kinematic Control of Robotic Manipulators With Multiple Interchangeable Wrists," supervised by Professor Vassilios D. Tourassis.

1987 - *M.S. in Electrical Engineering*, University of Rochester, Rochester, New York.

Project: "General-Purpose Inverse Kinematic Transformations for Robotic Manipulators," supervised by Professor Vassilios D. Tourassis.

1985 - *M.S. in Mechanical Engineering*, University of Hawaii at Manoa, Honolulu, Hawaii.

Dissertation: "Application of Robotics to Sugarcane Propagation," supervised by Professor Joel S. Fox.

1981 - *B.S. in Mechanical Engineering (Cum Laude)*, De La Salle University, Manila, Philippines.

1981 - *B.S. in Industrial Management Engineering (Cum Laude)*, De La Salle University, Manila, Philippines.

CURRENT RESEARCH INTERESTS

- Mobile Robotic Manipulation in Unstructured and Human Environments
- Compliant motion and force control.
- Self-Driving Vehicles
- Distributed Autonomous Robotics Systems
- Applications of Robotics and Intelligent Systems
- Computer Control, Mechatronics and Automation.
- Computational Intelligence: Deep Learning (Neural Networks), Genetic Algorithms, and Fuzzy Reasoning; and their applications to robotics and automation.

PROFESSIONAL EXPERIENCE

- Acting Director, Advanced Robotics Center, National University of Singapore, Aug 2012 - .
- Professor, Department of Mechanical Engineering, National University of Singapore, August 1998 - . (Associate Professor, Aug 1998 to June 2020; Sr Lecturer, July 1993- July 1998; Lecturer, June 1989- June 1993).
- Assoc Professor, Department of Industrial Systems Engineering & Management, April 2017 - Dec 2019.
- Dy Head, Division of Engineering and Technology Management, Faculty of Engineering, National University of Singapore, July 2007 - Dec 2010. Associate Professor (July 2007 - March 2017).

- Dy Head (Outreach), Department of Mechanical Engineering, Faculty of Engineering, National University of Singapore, Feb 2011 - Dec 2011.
- Honorary Professor, Obuda University, Budapest, Hungary, Sept 2011 – .
- Dy Director, Centre for Management of Science and Technology, Faculty of Engineering, National University of Singapore, March 2004 – June 2007.
- Dy Director, Centre for Intelligent Products and Manufacturing Systems, Department of Mechanical Engineering, National University of Singapore, April 1994 – Dec 2012.
- Senior Technology Advisor, Asian Technology Information Program, USA & Japan, July 1995 – .
- Program Manager, MSc (Management of Technology) Program, Faculty of Engineering, National University of Singapore, July 2005 – July 2012.
- Program Manager, MSc (Intellectual Property Management) Program, Faculty of Engineering, National University of Singapore, July 2006 – July 2012.
- Program Manager, MSc (Mechatronics) Program, Faculty of Engineering, National University of Singapore, July 1996 – July 2012.
- Adjunct Associate Professor, Department of Mechanical Engineering, Adelaide University, Australia, November 2001 – October 2006. (Honorary Position)
- Associate Professor, Faculty of Industrial Design, Technical University of Eindhoven, Sept 2002 - Sept 2007.
- Program Manager, Mechatronics, Design Technology Institute, National University of Singapore and Technical University Eindhoven, Aug 2002 – July 2007.
- Honorary SIMTech Fellow, Singapore Institute of Manufacturing Technology, Oct 2003 - Nov 2005.
- Dy Director, Centre for Management of Science and Technology, Faculty of Engineering, Mar 2004 – July 2007.
- Asst Dean, Faculty of Engineering, National University of Singapore, Nov 2001 - Feb 2004.
- Adjunct Principal Research Fellow, Gintic Institute of Manufacturing Technology, Jan 1999 - Dec 2001.
- Assistant Professor, Electrical Engineering Department, University of Rochester, Rochester, New York, September 1988 – June 1989.
- Research Assistant, Electrical Engineering Department, University of Rochester, Rochester, New York, September 1986 – August 1988.
- Teaching Assistant, Electrical Engineering Department, University of Rochester, Rochester, New York, September 1985 – August 1986.
- Research Assistant, Artificial Intelligence Laboratory, University of Hawaii at Manoa, Honolulu, Hawaii, August 1983 – August 1985.
- Research Assistant, Energy and Industrialization Project of the Resource Systems Institute, East West Center, Honolulu, Hawaii, August 1983 – August 1985.
- Visiting Research Engineer, Laboratory for Manufacturing and Productivity, Massachusetts Institute of Technology, Cambridge, Massachusetts, May – September 1984.
- Senior Technical Training Officer, Assembly and Test Division, Intel Philippines, Inc., Manila, Philippines, June 1982 – August 1983.
- Instructor, Department of Mechanical Engineering, De La Salle University, Manila, Philippines, May 1981 – May 1982. (Lecturer Oct 1979 – May 1981)
- Instructor, Xavier School, Manila, Philippines, October 1975 – April 1976.

HONORS AND AWARDS

- FLSAA-DLSAA Lasallian Achievement Award in field of Robotics, 27 April 2019, Philippines.

- Merit Award, In recognition of invaluable contributions towards quality and standards in Singapore, awarded by Enterprise Singapore, 26 July 2018.
- Capek Award, For the exceptional contributions in the scientific development and practical applications of robotics, Innorobo, France, 1 July 2015.
- Friend of Land Transport Award, Recognition for the individual who has constructively contributed to positive changes in land transport, Land Transport Authority of Singapore, 17 April 2014
- Andrew P. Sage Best Transactions Paper Award, 9 October 2007. (This paper recognizes the best paper published annually (2006) in the IEEE Transactions on Systems, Man and Cybernetics (SMC). Paper was judged the best paper in all 3 SMC Transactions, Part A, Part B, and Part C in 2006.)
- *Awards for Excellence 2000*, Most Outstanding Paper in the 1999 volume of the journal *Industrial Robot*.
- *Honorable Mention*, Use of IT in Teaching Award, National University of Singapore, 1998.
- *Outstanding Paper Award*, The Asia-Pacific Industrial Automation Conference (IA) '90, Singapore, May 23-26, 1990.
- Research Assistantship, University of Rochester, Rochester, New York, 1987 – 1988.
- Industrial Associates Program Fellowship, Production Automation Project, University of Rochester, Rochester, New York, 1986 – 1987.
- Teaching Assistantship, University of Rochester, Rochester, New York, 1985 – 1986.
- East West Center Honor Award, Honolulu, Hawaii, 1985.
- Renewable Energy Engineering Certificate, University of Hawaii at Manoa, Honolulu, Hawaii, 1985.
- East West Center Scholarship, University of Hawaii at Manoa, Honolulu, Hawaii, 1983 – 1985.
- National Computer Center Scholarship, Manila, Philippines, 1982.
- Third Place, National Engineering Board Registration Examinations, Manila, Philippines, 1981.
- Cum Laude, De La Salle University, Manila, Philippines, 1981.
- First Place, graduating class (Mechanical and Industrial Engineering Departments), De La Salle University, Manila, Philippines, 1981.
- Jose Rizal Honor Certificates (Dean's Honors List), De La Salle University, Manila, Philippines, 1976 – 1981.
- Faculty Resource Training Program Scholarship, De La Salle University, Manila, Philippines, 1979 – 1981.

PATENTS and Technology Disclosures

- NUS Technoloigy Disclosure ILO Ref 2018-046 : *Lidar Mounting for Autonomous Vehicle for Mapping and Localization*, Marcelo H Ang Jr (NUS), Chong Zhuang Jie (NUS), Qin Baoxing (NUS), Tirthankar Bandyopadhyay (SMART), Emilio Frazzoli (MIT), Daniela Rus (MIT), 16 Aug 2018.
- NUS Technoloigy Disclosure ILO Ref 2018-047 : *Dynamic Virtual Bumper: Obstacle-Aware Speed Controller System*, Marcelo H Ang Jr (NUS), Chong Zhuang Jie (NUS), Qin Baoxing (NUS), Fu Guo Ming (SMART), Daniela Rus (MIT), 16 Aug 2018.
- US Patent 6,538,634: *Apparatus Image Guided Surgery*, Chui; Chee-Kong (Singapore, SG); Chen; Percy (Singapore, SG); Wang; Yaoping (Singapore, SG); Ang, Jr.; Marcelo H. (Singapore, SG); Cai; Yiyu (Singapore, SG); Mak; Koon-Hou (Singapore, SG), Application number 215407, Filed 18 Dec 1998, Granted 25 March 2003.

- Singapore patent application no. 200307722-9: Rotary Elastic Coupling, Actuator and Control Method, Chai Eddie and Marcelo H Ang Jr, 23 December 2003 (US Provisional Patent Application No 60/435,992 filed 23 Dec 2002).
- Licensed Technology: "Apparatus for the Simulation of Image Guided Surgery," Licensed to Institute for Applied Information Technology - German National Research Center for Information Technology (GMD), Nov 1999 - Present.
- Singapore Patent, 9904405-9: *Automated Building Facade Cleaning Apparatus*, Tay E H, M H Jr Ang and A N Poo, 29 September 1999.
- US Patent No. 5,771,553: *Precision and quick affixing method for flexible automated assembly* (30 June 1998), with Sim Tian Soon and Lim Kah Bin. (Licensed by Koln Energy LLC - Subsidiary of Intellectual Ventures)

PROFESSIONAL AFFILIATION

- Member, Intelligent Autonomous Society (IAS) Governing Board, July 2012 – .
- Professional Engineer (Mechanical), Professional Engineers Board, Singapore 2007 — .
- Registered Professional Engineer and Member of the Philippine Society of Mechanical Engineers, 1982 – .
- President, International Steering Committee, The World Robot Olympiad, Jan 2008 - Dec 2008. Member, International Advisory Committee, The World Robot Olympiad, Jan 2004 – Dec 2007 and Jan 2009 – .
- Member, Institute of Electrical and Electronic Engineers (IEEE), 1988 – Sept 2018; Sr Member, Oct 2018 – . (IEEE Robotics and Automation Society and Industrial Electronics Society); Singapore local chapter Management Committee member of RAS, 2004 – .)
- Member, IEEE Robotics Automation Society Administrative Committee, Jan 2020 to Dec 2022.
- Member *Sigma Xi*, The Scientific Research Society, Rochester Chapter, 1988 – . (Honor Society)
- Founding President, Robotic Games Society Singapore, 1995 – .
- Member, Robofesta International Committee, 2000 – .

EDUCATIONAL ACTIVITIES

- Course Leadership and Organization
 - Working on the Proposal for a new MSc Program in Autonomous Robotics Systems Technology, planned commencement in Aug 2021.
 - Co-Developed the B Eng Specialization in Robotics, proposal submitted on Oct 2018, program commenced in Aug 2019)
 - Co-Developed the new Minor in Management of Technology Program for FoE Undergraduates. Curriculum approved and 1st intake is on 1st Sem of AY04 2.
 - Co-Developed the new MSc in Management of Science and Technology Program, 1st intake was Aug 2005.
 - Co-developed the new MSc in Intellectual Property Management Program, 1st intake was Aug 2006
 - Designed and Organized the MSc (Mechtronics) degree program, which started in July 1996.
 - Co-designed and Co-organized the MTD (Mechatronics) Joint Degree program with Prof. Jeu Schouten of TuE. This is a joint degree program that started in July 2002.
- Development of New Modules introduced in National University of Singapore
 - Developed MT5003: Creativity and Innovation (a new module designed for MSc (MOT) students), 1st implemented in 1st Sem, AY05.

- Co-developed TD6209: New Product Development and Realization, new 10 MC module, 1st implemented in 1st Sem, AY04.
 - TD5322: Mechatronic System Design, Jan 2003 (graduate module)
 - EG1604: Innovation Program, Jan 2002 (undergraduate module)
 - MCH5004_M2: Speed and Position Control Mini-Project for MSc (Mechatronics), July 2001 (postgraduate module)
 - ME1902: Creative Problem Solving in Engineering and Science, Jan 1998 (undergraduate module)
 - ME3101: Mechanical Design (Computer Interfacing and Electronics Components - 6 hrs), July 1997 (undergraduate module)
 - ME1191: Advanced Computing, Jan 1993 (undergraduate module)
 - EE5106/MCH5209/ME 5402 Advanced Robotics, July 1992 (postgraduate module)
 - ME5601: Introduction to Geometric Modeling, July 1991 (postgraduate module)
 - ME562: Computer Control, July 1990 (postgraduate module)
- Courses Taught
 - Engineering Mathematics 1, undergraduate Course, SCALE, National University of Singapore
 - Creativity and Innovation, Graduate course, Division of Engineering and Technology Management, National University of Singapore
 - Innovation Program, Undergraduate course, Faculty of Engineering, National University of Singapore.
 - Special and Advanced Topics in Mechatronics, Graduate course.
 - Mechatronic System Design, Graduate course, Dept of Mechanical Engineering, National University of Singapore.
 - *Advanced Computing*. Undergraduate Course. Department of Mechanical and Production Engineering, National University of Singapore.
 - *Advanced Robotics*. Graduate Course. Department of Mechanical and Production Engineering, National University of Singapore.
 - *Introduction to Geometric Modeling*. Graduate Course. Department of Mechanical and Production Engineering, National University of Singapore. New Course.
 - *Computer Control*. Graduate Course. Department of Mechanical and Production Engineering, National University of Singapore.
 - *Robotics*. Undergraduate Course, Departments of Electrical and Mechanical Engineering, National University of Singapore.
 - *Electrical Engineering and Instrumentation; Applied Electronics and Instrumentation; Sensors and Actuators*. Undergraduate Course. Department of Mechanical Engineering, National University of Singapore.
 - *Computational Methods for Engineers*. Graduate Course. Department of Electrical Engineering, University of Rochester.
 - *Introduction to Robotic Systems*. Graduate and Undergraduate Course. Department of Electrical Engineering. University of Rochester.
 - *Systems Laboratory*. Undergraduate Course. Department of Electrical Engineering. University of Rochester.
 - *Introduction to Computer Programming (Recitation)*. Freshman Course. Electrical Engineering Department. University of Rochester.

- *Basic Engineering Thermodynamics*. Undergraduate Course. Department of Mechanical Engineering. De La Salle University.
- *Mechanical Engineering Thermodynamics*. Undergraduate Course. Department of Mechanical Engineering. De La Salle University.
- *Engineering Mechanics (Statics)*. Undergraduate Course. Department of Engineering Sciences. De La Salle University.
- *Engineering Analysis*. Undergraduate Course. Department of Engineering Sciences. De La Salle University.
- *Differential Calculus*. Undergraduate Course. Department of Engineering Sciences. De La Salle University.
- *Integral Calculus*. Undergraduate Course. Department of Engineering Sciences. De La Salle University.

FUNDED PROJECTS

- PI, Technology Accelerator Program TAP1002019-04-06, Optimising Supplies Delivery Between Ships and Shore With Unmanned Aerial Vehicles, \$49,340, 13 Dec 2019 to 12 June 2020.
- PI, Gift from Micron Foundation, STEM for Robotics and Autonomous Systems, \$101,371, 1 April 2019 to 31 March 2020.
- PI, MoE Tier 1, Robotics Assistance on Object Manipulation Tasks, \$40,000, 1 March 2019 to 28 Feb 2022.
- PI, A*STAR Grant, WP5 of Human-Robot Collaborative AI for Advanced Manufacturing and Engineering, \$1,802,400, 26 Nov 2018 to 25 Nov 2023.
- Co-PI, BCA, HDB, ESG Grant, Drone Inspection System for Building Facade, \$1,363,785, 18 Feb 2019 to 18 Nov 2020.
- PI, ST Kinetics-NUS Collaboration on Autonomous Behaviors and Non-Linear Behavior Prediction (UM01/02), \$1,171,399.20, 15 May 2017 to 14 Nov 2020.
- PI, SIMTech-NUS Joint Laboratory on Industrial Robotics (R261-506-001-592), \$1,250,000, 15 May 2013 to 14 May 2023.
- PI, SMART FM Grant, Autonomy in Mobility on Demand Systems, \$114,960 (Aug 2010 - Sep 2011), \$108,388.66 (Oct 11 - Mar 12), \$178,836 (Apr 2012 - Mar 2013), \$400,980 (April 2013 - Dec 2016) (PI), \$186,396 (Jan 2016 to March 2017), \$278,235.54 (1 April 2017 to 31 March 2019), \$283,560 (1 April 2019 to 31 Dec 2020).
- PI, Technology Accelerator Program 002-004, Indoor and Outdoor Autonomous Transport, \$246,500, 6 Nov 2017 to 5 Oct 2018.
- PI, SMART FM Grant, Autonomous Vehicle Fleet Management System, \$ 72,643.20 (1 Jan 2015 to 31 October 2015).
- Collaborator, A*STAR Grant 141 148 008, Transcutaneous Robot-Assisted Ablation Device Insertion Navigation System (TRAINS), \$439,050 (15 October 2014 - 15 April 2016)
- PI, IDA JLD CFC Grant - Driverless Buggies for Mobility on Demand, \$162,658 (31 March 2014 to 30 June 2015).
- PI, IDA JLD CFC Grant - Information Generation from Real-Time Traffic Data, \$67,500 (31 March 2014 to 30 June 2015).
- PI and Co-Director, SIMTech-NUS Joint Laboratory on Industrial Robotics, \$1,250,000 (15 May 2013 to 14 May 2018)
- PI, A*STAR SERC Grant 12251 00004, Control of Dynamic Interaction Between Motion and Force During Contact, \$1,596,000 (1 Sept 2013 to 28 Feb 2017)

- PI, A*STAR SERC Grant 12251 00008, Robot Application Development and Operating Environment (RADOE), \$2,868,500 (1 Sept 2013 to 28 Feb 2017)
- Program Manager, A*STAR SERC Industrial Robotics Program, \$20,000,000 (1 Sept 2013 to 28 Feb 2017) [Above 2 Projects included in this program]
- PI, SMART Biosym Grant, Development of a Computer-Controlled Experimental Workstation for Cell Seeding using Microfluidic Devices, \$70,000, May 2011 - April 2012.
- PI, I2R Grant, Intelligent Control Modules for Upper Body Humanoid, \$34,000, July 2010 - Oct 2011.
- PI, DSO & Temasek Labs Grant, Realization of DSO Cognitive Architecture on a Mobile Robot, \$75,210, 1 Dec 2010 to 29 Feb 2012.
- Collaborator, A*STAR Grant, IRAS: Image-Guided Robot Assisted Surgical Training, \$537,910, 15 Sept 2009 to 14 Sept 2011.
- Collaborator NRF2007IDM-IDM002-041: Breathing Life into Machines, S\$1,597,800, 1 Dec 2007 to 1 Dec 2011.
- NUS PI, NUS-SIMTECH Collaborative Research Project U07-R-061SU, Practical Dynamics-based Control of a Robotic Mobile Manipulator, S\$503,176, 2007-2010.
- Co-Principal Investigator, A*STAR SERC Grant 052 121 0082 - TSRP: Ultra Wide Band - Enabled Sentient Computing: "UWB-enabled Sentient Computing Architecture and Middleware with Coordinated QoS (USCAM-CQ), S\$1,113,180, 1 May 2006 to 31 May 2009.
- Partner Investigator, Australian Research Council Linkage Project ID: LP0668052: "Autonomous Service Robots in Multi-Agent Based System for Household and Industrial Environments.", S\$387,573. 1 Jan 2007 to 31 Dec 2008.
- Principal Investigator, EERSS Project RG-265-001-055: Robot Programming Framework for Distributed Mobile Robotic Systems, S\$15,000 (IRO EERSS Programme), 16 July 2005 to 30 June 2007.
- Principal Investigator, Project CRP U01-A-131A: Robust Mobile Manipulation in Unstructured and Human Environments, S\$1,664,312 (53% from Gintic, and 47% from NUS), Oct 2001 – Sept 2004.
- Co-Principal Investigator, A*STAR SERC Grant - Embedded Hybrid Systems Programme Project No 0222 106 0049: "The All-Terrain Advanced Network of Ubiquitous Mobile Asynchronous Systems" ("Tarantulas"), 1 March 2003 - 28 February 2006, S\$668,000 total funding from A*STAR.
- Associate Investigator, Australian Research Council Grant: Optimised and sensory-based robotic fibre placement of carbon fibre composites for fabrication of aerospace components. (Collaboration with Monash University. Australian Research Council SPRIT grant) A\$173,960, 2000-2002.
- Collaborator, NUS RP960684: Trainable Computer Vision Systems for Surveillance and Mobile Robot Control. NUS-ARF-MDR (\$229,365). Jan 97 - June 2003.
- Collaborator, NUS RP3992705. Factory Network Integration and Coordinated Planning for E-Manufacturing (S\$111,000). Mar 2000 to Feb 2002.
- Singapore Robotic Games, annual funding since 1993 (S\$50,000 - S\$100,000 per year).
- Principal Investigator, Project GR6737: Development of a Prototype for Internet-Integrated Home Control System, S\$21,000 from National Computer Board of Singapore, 1999 – 2000.
- Principal Investigator, Project U98-A-031: Control of Dynamic Behavior of Robotic Manipulators through Advanced Sensing Technology and Applications to Automation. S\$2,650,000 from Gintic Institute of Manufacturing Technology, Singapore, 1998 – 2001.
- Principal Investigator in NSTB (National Science and Technology Board - Singapore) Sponsored Project (NSTB/17/3/31-3) on Research and Development of an Intelligent Pipe Measurement System. S\$1,070,300 from NSTB and S\$458,700 from industry. 1998 – 2001.

- Principal Investigator in NSTB (National Science and Technology Board - Singapore) Sponsored Project on Research and Development of a Ship-Welding Robot. S\$1,651,200 from NSTB and S\$60,000 from industry. 1994 – 1997.
- Principal Investigator in NUS (National University of Singapore) -funded research project RP890659 on Integration of Solid Modelling Systems into Robot Controller Architectures Towards Intelligent Robotic Systems. S\$267,150. 1990-1995.
- Principal Investigator in NUS-funded (multi-disciplinary) research project RP910708 on Management of Manufacturing Technologies in Singapore: Trends in Technological Development - Identification, Infusion, and Education. S\$33,000. 1992-1995.
- Chairman of HP Technology Quiz '94 Organizing Committee with members from Faculty of Science of NUS and NTU. Funding of S\$10,000 from Hewlett-Packard Singapore Pte Ltd.

CONSULTANCIES

- Tan Tock Seng Hospital Pte Ltd, 1 May 2019 to 31 May 2021.
- Muratec Machinery Ltd (Japan) and Muratec Machinery Singapore Pte Ltd, 1 Feb 2019 to 30 June 2019.
- Unitech Mechatronics Pte Ltd, 16 Aug 2018 - 31 March 2019.
- CP ALL Public Company Ltd (Thailand), 14-16 March 2019.
- Shado International Grp Pte Ltd, June 2017 - Nov 2017.
- Integrate Engineers, May 2017 - Dec 2017.
- Siix-AGT MedTech Pte Ltd, March 2017 - Aug 2017.
- Khalifa University, March 2014 - Feb 2016.
- National Research Foundation, Dec 2013 - Feb 2014.
- Kanagawa Institute of Technology, Mar 2013.
- SIM University, Oct 2011 - April 2012.
- Land Transport Authority, Feb 2010 - Oct 2010.
- Singapore Technologies Electronics (Info-Comm Systems) Pte Ltd, Feb 2007 to July 2007.
- Sr. Technology Advisor, Asian Technology Information Program (a collaboration between US National Institute of Standards and Technology and The University of New Mexico), July, 1995 - present.
- CET Technologies Pte Ltd, April 2005 to December 2005.
- TSM Traffic and Consultancy, 1 Sept 2004 to 31 Dec 2004
- Expertise Advise on Robotic Vacuum Cleaner, Trental Marketing, Sept 1998 - 2004.
- External Examiner, Diploma in Mechatronics, Ngee Ann Polytechnic, 1997 - 2001.
- Expert Consultant in Robotics, Dept of Electrical & Computer Engineering, Ngee Ann Polytechnic, Singapore, 1996 - 1997.
- Conner Peripherals Pte Ltd, 1995 - 1996. Robotics and Automation Projects.
- Brac Engineering (S) Pte Ltd, 1991 - present. Computer Controlled Asphalt Mixing Plant.
- Rhemax Precision Industries Pte Ltd, 1995 - present. Expert advise on robotics and automation work.
- Port of Singapore Authority, 1993 - present. Development of a Dynamic Weighing System for Containers.
- ST Kay and Company, 1991. Expert advise on robotics and automation work.

MEMBERSHIP IN INTERNATIONAL SCIENTIFIC ADVISORY BOARDS

- Singapore Representative and member of Advisory Council, World Robot Olympiad, 2004 to Present.
- Singapore Representative, Robofesta (International Robotic Games), 2000 - Present.
- Member of Technical Committee for Mechatronics, International Federation for the Theory of Machines and Mechanisms, 2001- 2004, 2005- Present.
- Member of Permanent Committee for History of Mechanisms and Machines, International Federation for the Theory of Machines and Mechanisms, 2001- Present.
- Member, Steering Committee for International Symposia on Experimental Robotics, (ISER), 2002 - Present.
- Member, Board of Governors, Intelligent Autonomous Systems Society, 29 Jan 2012 - Present.

MEMBERSHIP IN EDITORIAL BOARDS OF INTERNATIONAL JOURNALS

- Associate Editor, IEEE Transactions on Intelligent Vehicles, 2015 - Present.
- Associate Editor, International Journal of Social Robotics, 2007 - present.
- International Member of Editorial Board, Advanced Robotics (The International Journal of the Robotics Society of Japan), Feb 2003 to Present
- Member of Editorial Board, Advances in Automobile Engineering, Jan 2003 - Present.
- Associate Editor, Control and Intelligent Systems, January 2002 - December 2003.
- Member of Editorial Board, International Journal of Applied Evolutionary Computation (IJAEC), Feb 2008 - present.
- Member of Editorial Board, Soft Computing (International Journal by Springer, Germany), January 2006 - present.
- Associate Editor, Acta Politechnica, April 2004 – present.
- Member, Board of Reviewers, Knowledge Engineering Systems, June 2005 - present.
- Member of Board of Reviewers, International Journal of Hybrid Intelligent Systems (<http://ijhis.hybridsystem.com>), July 2003 –
- Associate Editor, International Journal of Humanoid Robotics (IJHR), April 2003 - December 2009.
- Co-Chief-Editor, INNOVATION Magazine, December 2002 to July 2006.
- Member, Editorial Advisory Board, INNOVATION Magazine, March 2002 to July 2006.
- Editor, ICASE Transaction on Control, Automation and Systems, April 2000 - Present.
- Editor, International Journal of Knowledge Based Intelligent Engineering Systems, 1997- Present.

MEMBERSHIP IN LOCAL COMMITTEES

- Co-Chair, Technical Committee on Autonomous Vehicles, Singapore Standards Organisation, 2 Oct 2017 - Present.
- Co-Chair, Technical Committee on Autonomous Technology, Singapore Standards Organisation, 2 Oct 2017 - Present.
- Member, Main Committee, Singapore Robotics Games; Founding President, Robotic Games Society, 4 Jan 1993 - Present.
- Member, Robotics and Automation Technical Committee, Singapore Standards Organisation, 4 Jan 2014 - Present.
- Member, Working Group for Personal Care Robots, Singapore Standards Organisation, 1 Mar 2016 - Present.

- Member, Working Group for Safe Use of Industrial Robots, Singapore Standards Organisation, 1 July 2015 - Present.
- Member, AI Technical Committee, Singapore Standards Organisation, 19 Oct 2018 - Present.
- Member, Management Committee, AI Professional Association Singapore, 1 July 2020 - Present

MEMBERSHIP IN NATIONAL UNIVERSITY OF SINGAPORE COMMITTEES

- Chair, Search Committee for Zhang Hongying, July 2020
- Member, Search Committee for Feng Huijian, July 2020
- Member, Search Committee for David Lentink, July 2020
- Member, Search Committee for Okan Koc, July 2020
- Member, Search Committee for Gordon Cheng, ECE Dept, Jan 2020
- Member, Search Committee for Cecilia Laschi, Oct 2019
- Chair, Search Committee for Guillaume Sartoretti, March 2019
- Chair, Thesis Advisory Committee, Pan Zexu (NGS), 4 Feb 2020
- Chair, Thesis Advisory Committee, Ajinkya Bhat (NGS), 16 May 2019
- Chair, Thesis Advisory Committee, Miko CHANG May Lee (NGS), 11 June 2015
- Chair, Thesis Advisory Committee, Mahdi Rasouli (NGS), 8 Nov 2016
- Chair, Thesis Advisory Committee, Mansoor Shaukat (NGS), Dec 2014.
- Member, Thesis Advisory Committee, Mar Choon Hock, Dec 2016
- Chair, Thesis Advisory Committee, Manuel del Rosario Jr, July 2020.

CONFERENCE ORGANIZATION

- General Chair, 16th International Conference on Intelligent Autonomous Systems (IAS-16), 22-25 June 2021, Singapore.
- Member, Steering Committee, International Symposium on Experimental Robotics (ISER 2020), 22-25 March 2021, Malta.
- Program Chair, 11th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management (HNICEM), Ilocos Norte, Philippines, 28 Nov - 1 Dec 2019.
- Publicity Chair, The 9th International Conference on Cybernetics and Intelligent Systems (CIS), and Robotics, Automation and Mechatronics (RAM), 18-20 Nov 2019, Bangkok, Thailand.

EVENTS ORGANIZED

- 2019 RobotX Interactive Forum, 4-6 Dec 2019, Suntec City, Singapore
- NUS-NVIDIA AV Workshop, "Embedding Intelligence in Autonomous Vehicles, 17-18 Oct 2019, Singapore
- ARC Robotics @ Lunchtime Seminars, 23 Dec 2019
- Zoom with ARC, 17 April 2020

PROFESSIONAL SERVICE

- General Chair, 16th International Conference on Intelligent Autonomous Systems (IAS-16), 22-25 June 2021, Singapore.
- Associate Editor, 2020 International Symposium on Experimental Robotics (ISER 2020), 22-25 March 2021, Malta.

- General Co-Chair, 2017 IEEE International Conference on Robotics and Automation, 29 May - 3 June 2017, Singapore.
- Chair of Local Organizing Committee, International Symposium on Robotics Research, 16-19 Dec 2013, Singapore.
- Technical Program Chair, ASIA International Symposium on Mechatronics, Singapore, 15-18 Dec 2010.
- Technical Program Chair, 2009 IEEE/ASME International Conference on Advanced Intelligent Mechatronics, Singapore, 7-11 July 2009.
- Member, International Program Committee, IASTED International Conference on Intelligent Systems and Control (ISC 2008), Orlando, USA, 16-18 Nov 2008
- Technical Program Chair, IEEE International Conference on Systems, Man and Cybernetics, Singapore, 12-15 Oct 2008.
- Co-Chair, Video Session, IEEE/RSJ 2008 International Conference on Intelligent Robots and Systems (IROS 2008), 22-26 Sept 2008, Nice, France.
- Chair, Invited Sessions, International Conference on Automation and Logistics (ICAL) 2008, 1-3 Sept 2008, Qingdao, China.
- Member, International Program Committee, 2008 IEEE International Conferences on Robotics, Automation & Mechatronics (RAM 2008), 3 - 6 June 2008 in Chengdu, China. (<http://www.cisram.org/2008/>)
- Member, International Program Committee, ACCAS 2007 (Asian Conference on Computer Aided Surgery), Singapore, 1-2 December 2007.
- Member, Program Committee, 8th International Symposium on Advanced Intelligent Systems 2007 (ISIS 2007), Sokcho City, Korea, 5-8 Sept 2007 (<http://isis2007.fuzzy.or.kr>)
- Member, Program Committee, IEEE International Conference on Mechatronics and Automation 2007 (IEEE ICMA 2007), Harbin, Heilongjiang, China, 5-8 Aug 2007 (www.ieee-icma.org)
- Member, Program Committee, 2007 International Conference on Advanced Robotics (ICAR 2007) will be held on August 21-24, 2007, in Jeju Island, Korea (www.icar2007.org/)
- Member, International Program Committee (IPC) for the IASTED International Conference on Intelligent Systems and Control, ISC 2007, which is to take place in Cambridge, USA, 19-21 Nov 2007
- Member of the International Program Committee, The 3rd IASTED International Conference on Computational Intelligence (CI 2007), 2-4 July 2007, Banff, Alberta, Canada.
- Member of Technical Program Committee, 13th Annual International Conference on Mechatronics, and Machine Vision in Practice (M2VIP 2006), 5-7 Dec 2006, Toowomba, Australia.
- Program Chair, 3rd International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management 2007, 15-18 March 2007, Manila, Philippines.
- Associate Editor, IEEE Robotics and Automation Society Conference Editorial Board, 2007 IEEE International Conference on Robotics and Automation (ICRA'07), 10-14 April 2007, Rome, Italy.
- Member, International Advisory Committee, International Conference on Control, Instrumentation and Mechatronics (CIM'07), Malaysia, 28-29 May 2007.
- Member, Program Committee, IEEE International Conference on Mechatronics and Automation (IEEE ICMA 2006), Luoyang, China, 25-28 June 2006.
- Member, International Program Committee, The IASTED International Conference on Intelligent Systems and Control (ISC 2006), Hawaii, USA, 14-16 Aug, 2006.
- Member, Program Committee, The 8th International Symposium on Distributed Autonomous Robotic Systems (DARS 2006), Minneapolis/St Paul, Minnesota, 12-14 July 2006.

- Member, International Program Committee, 2006 IEEE International Conferences on Robotics, Automation & Mechatronics (RAM 2006), Bangkok, Thailand, 7-9 June 2006.
- Member, International Program Committee, 10th International Conference on Knowledge Based & Intelligent Information & Engineering Systems (KES 2006), Bournemouth, UK, 9-11 Oct 2006.
- Member, International Program Committee, IASTED International Conference on Computational Intelligence (CI 2006), Alberta, Canada, 17-19 July 2006.
- Member, Poster Program Committee, 2006 IEEE International Conference on Robotics and Automation, Orlando, Florida, USA, 15-19 May 2006.
- Member, Program Committee, 2006 International Symposium on Flexible Automation (2006 IFSA), Osaka, Japan, 10-12 July 2006.
- Member, Organizing Committee, 2006 IEEE International Conference on Information Acquisition (IEEE ICIA 2006), Weihai, Shandong, China, 20-23 Aug 2006.
- Member, Program Committee of the 2006 Intelligent Autonomous Systems Conference, to be held in The University of Tokyo in the Kashiwa new Campus, March 7-9, 2006 (IAS 9).
- Co-Chair, Asia-Oceania, IEEE/ASME International Conference on Advanced Intelligent Mechatronics 2007 (AIM 2007), July 10-13, 2007 in Neuchâtel, Switzerland.
- Member, International Program Committee, 3rd International Joint Conference on Soft Computing and Intelligent Systems (SCIS), Tokyo, Japan, Sept 20-24, 2006. (<http://scis2006.cs.dm.u-tokai.ac.jp/>)
- Member, International Program Committee, 7th International Symposium on Advanced Intelligent Systems (ISIS), Tokyo, Japan, Sept 20-24, 2006. (<http://scis2006.cs.dm.u-tokai.ac.jp/>)
- Member, Advisory Committee, International Conference on Mechatronics (ICM 2006), Budapest, July 3-5, 2006.
- Member, International Advisory Board, 10th Anniversary FIRA RoboWorld Cup and Congress, Singapore, Dec 11-17, 2005.
- Member, International Program Committee, 9th International Conference on Mechatronic Technology, Kuala Lumpur, Malaysia, 5-8 Dec 2005. (<http://www.cairo.utm.my/icmt2005/>)
- Member, Program Committee, International Symposium on Flexible Automation (ISFA) (formerly Japan-USA Symposium on Flexible Automation) to be held in Osaka, Japan, 10-12 July 2006
- Member, International Program Committee (IPC), the IASTED International Conference on Intelligent Systems and Control (ISC 2005), Cambridge, USA , 31 Oct - 2 Nov 2005.
- Member, Program Committee, 2005 IEEE International Conference on Mechatronics and Automation, to Niagara Falls, Ontario Canada, 29 July - 1 August 2005.
- Member, International Program Committee, International Symposium on Collaborative Research in Applied Science (ICOCRIAS), University of British Columbia, Vancouver, Canada, 7-9 Oct 2005. (www.researchcentre.apsc.ubc.ca)
- Member, Program Committee, The IASTED International Conference on Computational Intelligence 2005, Calgary, Canada, July 4-6, 2005 (<http://www.iasted.com/conferences/2005/calgary/ci.htm>).
- Member, Program Committee, 2005 IEEE Symposium on Computational Intelligence in Robotics and Automation, Helsinki, Finland 27-30 June 2005.
- Member, Program Committee, 12th International Conference on Advanced Robotics July 17-20th, 2005, Seattle, Washington, USA (<http://www.icar2005.org/index.htm>)
- Member, International Program Committee, 4-th Symposium on Mechatronics Systems, 12-14 September 2006 in Wiesloch/Heidelberg, Germany.
- Member, International Advisory Board, 2nd International Conference on Mechatronics (ICOM 05), 10-12 May 2005, Kuala Lumpur, Malaysia

- Member, Program Committee, 2005 IEEE International Symposium on Assembly and Task Planning, 19-21 July 2005, Montreal, Canada.
- Member, International Program Committee, Joint 2nd International Conference on Soft Computing and Intelligent Systems (SCIS2004), 21-24 September 2004, Yokohama, Japan.
- Member, International Program Committee, 5th International Symposium on Advanced Intelligent Systems (ISIS2004), 21-24 September 2004, Yokohama, Japan.
- Member, Program Committee, International Symposium on Computational Intelligent and Industrial Applications (ISCIIA2004), 20-22 Dec 2004, Haikou (Hainan Island), China
- Member, International Program Committee, 2004 IEEE Conference on Robotics, Automation and Mechatronics (RAM04) 1-3 December 2004, Singapore.
- Member, International Steering Committee, 8th International Conference on Mechatronics Technology (ICMT04), November 8-12, 2004, Hanoi, Vietnam.
- Member, Program Committee, 2004 IEEE/RSJ International Conference of Intelligent Robots and Systems (IROS 2004), 28 September 28 - 2 October 2004, Sendai, Japan.
- Member, International Organising Committee, 11th IEEE International Conference on Mechatronics and Machine Vision in Practice 2004 (M2VIP 2004), Nov 30 - Dec 2, 2004, Macau, SAR.
- Member, International Program Committee, IASTED International Conference on Intelligent Systems and Control (ISC 2004), Honolulu, HI, USA, 23-25 August 2004.
- Co-Chair, 9th International Symposium on Experimental Robotics, Singapore, 22-25 June 2004.
- Member, International Advisory Committee, IEEE International Conference on Mechatronics, Istanbul, Turkey, June 3-5, 2004.
- Chair, 8th International Symposium on Experimental Robotics (ISER'04), Singapore, 25-28 June 2004.
- Member, International Program Committee, 8th Conference on Intelligent Autonomous Systems, Amsterdam, Netherlands, 10-13 March 2004.
- Member, International Program Committee, 2nd International Conference on Computational Intelligence, Robotics and Autonomous Systems (CIRAS), 15-18 Dec 2003, Singapore.
- Member, International Program Committee, IFAC Symposium on Mechatronic Systems, Sept 2004, Sydney, Australia.
- Member, Program Committee, 2003 IEEE/RSJ International Conference of Intelligent Robots and Systems (IROS 2003), October 27 - November 1, 2003, Las Vegas, NV, USA.
- Member, International Steering Committee, International Conference on Mechatronics Technology, 2-6 December 2003, Taipei, Taiwan.
- Judge, National Junior Robotics Competition, Singapore, 1999, 2000, 2001, 2002, and 2003. Advisor to National Senior Robotics League, Singapore, 2003.
- Member, International Program Committee, IASTED International Conference on Intelligent Systems and Control (ISC-2003), Salzburg, Austria, 25-27 June 2003.
- Member, Scientific Committee, International Symposium on Dynamics and Control, Hanoi, Vietnam, September 2003.
- Program Chair, International Conference on Humanoid, Nanotechnology, Information technology, Communication and control, Environment, and Management 2003 (HNICEM 2003), Manila, Philippines, 29-31 March 2003.
- Member, International Program Committee, 2nd IFAC-Conference on MECHATRONIC SYSTEMS, Dec 9-11, 2002, Berkeley, CA, USA.
- Member, Technical Program Committee, IEEE International Conference on Industrial Electronics and Control, Sevilla, Spain, 5-8 November 2002.

- Member, Program Committee, 9th International Conference on Neural Information Processing (ICONIP'02), Singapore, 18-22 November 2002.
- Co-Chair for Invited Sessions, IEEE International Symposium on Intelligent Control, Vancouver, Canada, October 2002.
- Member, International Steering Committee, 6th International Conference on Mechatronics Technology, Kitakyushu, Japan, Sept 29 - Oct 3, 2002.
- Member, International Program Committee, IEEE Conference on Mechatronics and Machine Vision in Practice, ChangMai, Thailand, 10-12 September 2002.
- Member, Program Committee, 2002 IEEE International Conference on Robotics and Automation (ICRA 2002), Washington, DC, USA, 11-15 May 2002.
- Member, Program Committee, Seventh Intelligent Autonomous Systems (IAS-7) Conference, Marina del Rey, California, USA, 25-27, March 2002.
- Member, International Program Committee for the International Conference on Computational Intelligence and Robotics, Singapore, 28-30 November 2001.
- Finance Chair, The IEEE 5th International Conference on Intelligent Transport Systems, Singapore, September 3-6, 2002.
- Publicity Co-Chair, Asian Control Conference (ASCC 2002), Singapore, September 25-27, 2002.
- Member, International Program Committee, 1st International Conference on Information Technology in Mechatronics (ITM'01), Istanbul Turkey, 1-3 October 2001.
- Member, Program Committee, 2001 IEEE/RSJ International Conference on Intelligent Robots and Systems, Maui, USA, 29 Oct - 3 November 2001.
- Member, International Program Committee, IEEE Conference on Mechatronics and Machine Vision in Practice, Hong Kong, 27-29 August 2001.
- Member. Technical Committee, Third World Manufacturing Congress (WMC'2001), Rochester, NY, USA, Sept 24-27, 2001.
- Member, Local Program Committee, International MEMS Workshop 2001, Singapore, 4-6 July 2001.
- Member, Program Committee (Asia and Oceania), 2001 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM'01), Italy, July, 2001.
- Chair, Local Arrangement, 5th International Conference of Mechatronics Technology (ICMT'01), Singapore 6-8 June 2001.
- Chair, Technical Program, 4th Asian Conference on Robotics and Its Applications (ACRA'01), Singapore, 6-8 June 2001.
- Member, International Advisory Board, International Conference on Mechatronics (ICOM'01), Kuala Lumpur, Malaysia, 12-13 February 2001.
- Member, Technical Program Committee, Philippine Computing Society Congress (PCSC'2000), Manila, Philippines.
- Member, International Advisory Panel, Students Conference on R&D 2001, Kuala Lumpur, Malaysia, 20-21 Feb 2001.
- Member, Program Committee, Opto Mechatronics Systems (RB07), SPIE International Symposium on Intelligent Systems for Advanced Manufacturing, 5-8 November 2000, Boston, USA.
- General Co-Chair, FIRA Asia-Pacific Cup Singapore 2000, 23-25 May 2000.
- Member, International Scientific Committee, 2000 World Conference on Mathematics and Computers in Mechanical Engineering, Athens, Greece, 10-15 July, 2000.
- Member, Technical Program Committee, 2000 International Conference on Industrial Electronics and Control, 22-28 October 2000, Nagoya, Japan.

- Member, Program Committee, Intelligent Autonomous Systems, 7-9 July 2000, Venice Italy.
- Member, International Program Committee, 3rd Asian Control Conference, 4-7 July 2000.
- Member, Program Committee. 2000 IEEE Int. Conf. on Robotics & Automation (ICRA'2000), 22-28 April, 2000, San Francisco, USA.
- Member, International Program Committee, World Manufacturing Congress, 27-30 September 1999.
- Member, Review Committee, Third International Conference on Knowledge-Based Intelligent Information Engineering Systems, KES99
- Member, International Program Committee, IROS99 (IEEE/RSJ International Conference on Intelligent Robots and Systems), 17-21 Oct 1999, Korea.
- Member, International Program Committee, ISMT'99 (International Symposium on Manufacturing Technology)
- Singapore Representative, International Liaison Committee, ICMT98 (International Conference on Mechatronic Technology), November 30 - December 2, 1998, Hsinchu, Taiwan.
- Program Co-Chair, 2nd International Conference on Recent Advances in Mechatronics, ICRAM99, Istanbul, Turkey. May 24-26, 1999.
- Organising Committee Co-Chairman (Asia), *International Symposium on Intelligent Automation and Control*, 10-14 May 1998, Alaska, USA.
- Editor, *International Journal of Knowledge-Based Intelligent Engineering Systems*, 1997 – Present.
- Guest Editor, *Robotics and Autonomous Systems*, Special Issue on "Critical Issues in Robotics", September 1997.
- Member of Advisory Committee, *Computer Playtime 1997*, Singapore, December 4-7, 1997.
- Member of International Technical Committee, *World Manufacturing Congress 1997*, New Zealand, November 18-21, 1997. (Consists of *First International Symposium on Manufacturing Systems (ISMS)*, *First International Symposium on Manufacturing Technology (ISMT)*, *First International Symposium on Manufacturing Management (ISMM)*.)
- Member of Program Committee, *1997 IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA '97)*, Hyatt Regency, Monterey, California, July 10-11, 1997.
- Member of International Program Committee, *World Conference on Systemics, Cybernetics and Informatics (SCI'97)*, Caracas, Venezuela, July 1997.
- Member of the Organizing Committee, 4th International Conference on Computational Physics, Singapore, 2-4 June 1997.
- Member of International Advisory Committee, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'96)*, Osaka, Japan, 4-8 November 1996.
- Member of International Program Committee, *International Conference on Information Systems Analysis and Synthesis (ISAS'96)*, Orlando, USA, 22-26 July, 1996.
- Chief Judge, National Skills Competition (Mechatronics - Youth Category), Qualifying Rounds: 12-14 March 1996, Final Rounds: 28 June - 1 July 1996.
- Member of Advisory Committee, *Computer Playtime 1996*, 12-15 December 1996.
- Member of Advisory Committee, 1996 International Conference on Neural Information Processing (ICONIP'96), Hong Kong, September 25-27, 1996
- Member of Program Committee, Factory Automation Track, The 22nd Annual International Conference of the IEEE Industrial Electronics Society - IECON'96, Taipei, Taiwan, August 5-9, 1996.
- Member of International Program Committee, *International Conference on Information Systems Analysis and Synthesis (ISAS'96)*, Orlando, USA, 22-26 July, 1996.

- Judge, Tan Kah Kee Young Inventors' Award (16 - 20 yrs old group), 7 February 1995.
- Member of International Advisory Committee, *1995 International Conference on Neural Information Processing (ICONIP'95)*, Beijing China, October 1995.
- Vice-President, Asia Pacific Neural Network Assembly (APNNA), (1993 - .).
- President, Robotic Games Society (Singapore), 1996 - .
- Honorary Secretary (1991-95), Vice Chairman (1996 - .), Faculty Club, National University of Singapore.
- Chairman (1993, 1994, 1996 -), Founding Chairman (1992), Vice Chairman (1995), Singapore Robot Games (SRG) Main Committee, (1993,1994, 1996-).
- Chairman, HP Technology Quiz 1994 Organising Committee.
- Resource Person, Innovation Programme (organised by Faculty of Engineering and Ministry of Education), (1993 - .).
- Program Committee Member, "International Conference on Data and Knowledge Systems for Manufacturing and Engineering," Hong Kong, 2-4 May 1994.
- Member of the International Advisory Committee, "International Conference on Neural Information Processing," Seoul Korea, 17-20 October 1994.
- Member of the Organising and Technical Program Committees, International Conference on Automation, Robotics and Computer Vision (ICARCV'94), Nanyang Technological University, Singapore, 13-16 September 1994.
- Member of Organising Committee, Singapore International Conference on Intelligent Control and Instrumentation, 1995 (SICICI'95).
- Member of Organising and Technical Program Committees, 1995 International Symposium on Industrial Robots, 4-6 October 1995.
- Chairman, Organizing Committee for Singapore Robot Games (SRG) '93, 16-28 November 1993, Singapore Science Centre, Singapore.
- Chairman, Neural Networks Special Interest Group (NNSIG) - Singapore, May 1990 - .
- Headed the Publicity Committee and Member of Technical Committee for the IEEE International Conference on Neural Network Applications to Signal Processing (NNASP'93), 17-20 August 1993, Singapore.
- Member of Organising Committee, International Conference on Organisational and Workforce Management Issues in Automation: Cross Cultural Perspectives, 25-27 August 1992, Singapore.
- Judge for the Robotics Section, Singapore Science Fair 1992, 15th Singapore Youth Science Fortnight, 26 May 1992, Singapore.
- Headed the Publicity Committee and Member of Technical Committee for the International Joint Conference on Neural Networks (IJCNN) '91, November 18-21, 1991, Singapore.
- Member of the Organising Committee for the Singapore Robotics Festival (SRF) '91, Singapore, November, 1991.
- Reviewer of several international journals and conferences
 - IEEE Robotics and Automaiton Magazine, paper RAM-20-0092, 19 Aug 2020.

LANGUAGES

- English, Filipino, and Chinese (written and spoken).

INVITED Lectures/Seminars

- Invited Lecture, "Towards Pervasive Autonomous Robotics", AiBotics 2020 Webinar with Oxford University, 6 Aug 2020.
- Invited Lecture, "Robotics with Generalized Intelligence in our Daily Lives," 40th PAASE ANNIVERSARY & 2020 APAMS Annual Scientific Meeting, via Zoom, 29 July 2020.
- Invited Lecture. "Robotics with Generalized Intelligence," via Zoom with Xidian University, China, 1 July 2020.
- Invited Lecture, "Robotics and Driverless Vehicles ", e-SISC. India, via Zoom, 1 July 2020.
- Invited Lecture, "Singapore Science and Technology Development, Innovation and Enterprise," Singapore-Russia Webinar on Distributed R&D Centers: International Experience, 28 May 2020.
- Invited Lecture, "AI Driven Robotics in our Daily Lives", e-SISC. India, via Zoom, 27 May 2020.
- Plenary Talk, Robotics Towards Quality Living, MBZIRC Symposium, Abi Dhabi, UAE, 27 Feb 2020.
- Invited Lecture, "Robotics Revolution," Singapore Robotics Games, 6 Feb 2020.
- Invited Lecture, "Robotics in Everyday Lives," iMagination Week, Essec Business School, Singapore, 16 Jan 2020
- Invited Lecture, "The Robotics Revolution", SGInnovate and IES-INCA: The Robotics Revolution, Singapore, 14 Jan 2020.
- Invited Lecture, "General Intelligence", CP ALL Limited, 21 Dec 2019
- Invited Lecture, "AI-Driven Robotics", 21 Dec 2019
- Invited Lecture, "Robotics for Quality Living for All", SICC, NUS, Singapore, 19 Dec 2019
- Invited Lecture, "Robotics Towards Quality Living," DLSU, Philippines, 13 Dec 2019.
- Invited Lecture, "Towards Autonomous Vehicles for All, " ISFM, Jeju, South Korea, 11 Nov 2019.
- Keynote, "Quality Living with Robotics," ICMASS2019, Nagoya, Japan, 1 Nov 2019.
- Keynote, "Intelligent Robotics – Quality Living for All, IEEE Ro-Man 2019, New Delhi, India, 16 Oct 2019.
- Invited Lecture, "Towards Truly Intelligent Machines," NUS, Singapore, 7 Oct 2019.
- Invited Lecture, "Robotics Towards Quality Living for All, " Innovfest, Suzhou, 25 Sept 2019.
- Invited Lecture, "Autonomous Vehicles for All: Current State and Challenges," Future of Transport: AVs and TR68, IES, Singapore, 6 Aug 2019.
- Invited Lecture, "AI-Driven Robotics – Towards Everyday Robotics," AI Summer Camp, NUS, Singapore, 17 July 2019.
- Invited Lecture, "AI Driven and Everyday Robotics", SICC, NUS, Singapore, 16 July 2019.
- Invited Lecture, "AI Driven Robotics", TDS-NUS Workshop on Intelligent Robotics, NUS, Singapore, 30 May 2019.
- Invited Lecture, "AI Driven and Everyday Robotics", SICC, NUS, Singapore, 28 May 2019.
- Invited Lecture, "Robotics in our Daily Lives", SAUVC 2019, Singapore, 11 March 2019.
- Invited Lecture, "Robotics Towards Quality Living," Oral Robert University, USA (via webinar), 7 March 2019.
- Invited Lecture, "Mobility on Demand Using Autonomous Vehicles towards Better Living," Micron Semiconductor Asia Pte Ltd, 15 Feb 2019.
- Invited Lecture, "AI-Driven Robotics," AI Summer School, NUS, 24 Jan 2019.
- Invited Lecture, "Everyday Robotics for All", Chiangmai University, Thailand, 14 Nov 2018.
- Invited Lecture, "Connected Machines with Collective Intelligence," Tech Talk on Future Ready Technologies, IMDA, Singapore, 17 Sept 2018.

- Invited Lecture, "Full Mobility using Self Driving Vehicles (towards Better Living)," Connected Car and Smart Mobility Asia 2018, Sofitel City Centre, Singapore, 7 September 2018
- Invited Lecture, "Mobility on Demand using Autonomous Vehicles (towards Better Living)," BIGIT 2018, Four Seasons, Kuala Lumpur, Malaysia, 4-5 Sept 2018.
- Invited Lecture, "Mobility on Demand using Autonomous Vehicles (towards Better Living)," NVidia AI Technology Centre Symposium, SGInnovate, Singapore, 29 Aug 2018.
- Invited Lecture, "Robotics in Healthcare," Singapore Healthcare Management 2018, Sands Expo and Convention Centre, Singapore, 14-16 Aug 2018.
- Invited Lecture, "Mobility on Demand using Autonomous Vehicles (towards Better Living)," Future Mobility Workshop, Continental, Singapore, 3 Aug 2018.
- Invited Lecture, "AI driven Robotics," 3rd Annual Manufacturing Excellence Conference, Pan Pacific Hotel, Singapore, 1 Aug 2018.
- Invited Lecture, Robotics and Autonomy," SMART Remix, Singapore 25 July 2018.
- Invited Lecture, "AI driven Robotics," IPOS (Intellectual Property Office of Singapore, 13 July 2018.
- Invited Lecture in 5th International Electric Vehicle Expo, 2-6 May 2018, Jeju island (Korea).
- Keynote lecture in 2nd International Conference on Mechanical and Aeronautical and Automotive Engineering, Hotel Royal, Singapore, 25 Feb 2018.
- Invited Lecture in "Entering the Connected and Autonomous Vehicles (CAVs) Workshop, IES, Singapore, 1 Feb 2018
- Invited Lecture, "Robotics in our Everyday Lives," TEDxNUS, NUS, 20 July 2016.
- "The Art of Engineering and Robotics", Invited lecture for Science Research Programme, National University of Singapore (LT31), 9 April 2008.
- "The Art of Engineering", Invited lecture for Science Research Programme, LT31, National University of Singapore, 12 April 2006.
- "Art of Engineering and Research Methods", Invited lecture for Science Research Programme, LT31, National University of Singapore, 30 March 2005.
- "The Art of Engineering", Invited lecture for Science Research Programme, LT31, National University of Singapore, 21 November 2004.
- Public Lecture, "Introduction to Robotics", IT Festival for Robotics, Entertainment and Education (IT FREE), Jurong East Sports and Cultural Centre, 14 Dec 2003 (organized by the Southwest Community and Development Centre, Singapore)
- Plenary Lecture, "Modeling and Analysis of Omnidirectional Mobile Robot Toward Isotropic Design," PICS International Conference and Exhibition on Instrumentation and Control, Heritage Hotel, Manila, 27 November 2003.
- "Robotics Beyond the Factory - New Opportunities and Challenges", Invited Public Lecture for 2002 Technology Month, Engineering Auditorium, National University of Singapore, 20 September 2002.
- "The Art of Engineering", Invited Public Lecture, Smart Classroom, Faculty of Engineering, 17 August 2002.
- "Robotics and Mechatronics in Biomedical Applications", Invited talk for Bioengineering Workshop, EA-06-03, Faculty of Engineering, National University of Singapore, 25 July 2002.
- "Opening Address as Guest of Honour for Opening of Robotics and Intelligent Machines Center, Institute of Technical Education (West), Singapore, 31 October 2001.
- "Recent Developments in Robotics - Towards Mobile Manipulation in Human and Unstructured Environments", Invited Lecture, ITE-West, 31 October 2001.

- “Robotics in Human Work Environments - New Paradigms, Opportunities and Challenges”, Gintic-Georgia Tech Joint Forum on Manufacturing Technology, Grand Hyatt Hotel, Singapore, 27 September 2001.
- “Computational Intelligence and Robotics”, Invited Public Lecture, Gintic Institute of Manufacturing Technology, 10 May 2001.
- ”Innovation and Technological Progress,” Opening Address, Launch of Innovation Program 2000, Ministry of Education, 13 Jan 2001.
- ”Telepresence Robotic Manipulation with Haptic and Stereo Feedback,” Invited Seminar, Singaren, NUS School of Computing, 4 January 2001.
- “The Art of Engineering: Creativity and Innovation”, Invited Public Address to selected international teachers and students, Science and Technology Camp, Engineering Auditorium, National University of Singapore, 6 Dec 2000.
- “ Robotics and Automation Opportunities in the Marine Industry,” The Marine Group Local Industry Upgrading Program (LIUP) Event on Towards a Knowledge-Driven Marine Industry, 2 May 2000, World Trade Centre, Singapore.
- “Real-Time Control Using Personal Computers,” Innovators’ Club Talk, National University of Singapore, 13 March 2000.
- “Robotic Applications in Pipe Measurements for Repair Shipyards,” First SiCToMM (Singapore Committee for the Technologies of Machines and Mechanisms) Seminar, NTU, 13 March 2000.
- “E-Factory, Singapore Confederation of Industries and LCEL (NUS) Symposium on Competitiveness in Manufacturing Industries, 16 February 2000.
- “IP Strategy: Increasing Chances by Systematic & Favorable Interactions”, Innovation Program Workshop on Mentoring Process I, Ministry of Education, 22 January 2000.
- ”Innovation and Technological Progress,” Opening Address, Launch of Innovation Program 2000, Ministry of Education, 15 Jan 2000.
- “Art of Engineering, Science and Technology Camp 1999, National University of Singapore, 7 December 1999.
- “Robotics in Shipyards - Opportunities and Challenges”, Techmonth’99 Seminar on Achievements of Science and Technology in the Marine Industry, Ngee Ann Polytechnic, 11 September 1999.
- “Robotics Research Issues - Some Recent Developments,” Invited Seminar by Dept of ME, De La Salle University, Philippines, 21 June 1999.
- “Real-Time Control Using Personal Computers,” Innovators’ Club Talk, National University of Singapore, 10 March 1999.
- “Science & Technology - Innovations, Creations and Inventions, Innovation Program Opening Ceremony Address, Temasek Polytechnic, 23 January 1999.
- “Mechatronics in Singapore and Applications in Data Storage (with Tony Huang), 1998 Trans-Pacific Workshop on Mechatronic Technology, ITRI, Hsinchu, Taiwan, 2 December 1998.
- “Control and Automation Using Personal Computers,” IES and Innovators Club (Students) Talk, National University of Singapore, 5 March 1998.
- “ Mechatronics Research and Development,” Faculty of Engineering, National University of Singapore, 18 Feb 1998.
- “Robotics Research Directions & Applications to Marine Industry - A Personal Perspective. Singapore-Norway Technology Seminar, organized by NSTB. 20 October 1997.
- “Management of Manufacturing Automation Technology,” in *Symposium on Management of Technology in Manufacturing Industry in Singapore*, 10 September 1997, Computer Centre Auditorium, National University of Singapore.

- “A Paradigm Shift in Robotics - Current Trends,” Singapore Microcomputer Society Talks, 11 April 1997, Temasek Room, Novell, Singapore.
- ”Neural Network Applications in Robot Motion Control,” Dept of Information Systems and Computer Science, National University of Singapore, 27 March 1997.
- ”Neural Networks in Robotics,” Colloquium on Neural Science Research, Faculty of Science, National University of Singapore, 4 March 1997.
- “Project Work to Enhance Learning,” Centre for Development in Teaching and Learning, 22 February 1997, National University of Singapore, Singapore.
- “A New Paradigm for Robotic Applications – A Welding Example,” Technology Month 1996 Seminar, 27 September 1996, National University of Singapore.
- “Passive Compliance in Robotics – A Key to Successful Robotic Automation,” Electronic and Computer Engineering Department, Ngee Ann Polytechnic, Singapore 21 September 1996.
- ”Robotics and Intelligence,” National University of Singapore, 13 September 1996.
- “A User-Interface for Robotic Welding in Shipyards,” in *New Technologies in the Marine Industry*, 5 September 1996, Singapore Productivity and Standards Board, Singapore.
- “A Simple Yet Effective Compliance Control Algorithm for Industrial Robots,” Electronic and Computer Engineering Department, Ngee Ann Polytechnic, Singapore 21 August 1996.
- “Robotics & Applications – A Paradigm Shift,” Electronic and Computer Engineering Department, Ngee Ann Polytechnic, Singapore 19 July 1996.
- “Neuro-Model-Based Robot Motion Control Strategies,” Electronic and Computer Engineering Department, Ngee Ann Polytechnic, Singapore 9 May 1996.
- “Passive Compliance in Robotics - Towards Successful Robotic Automation,” Seminar on Developments in Intelligent Control, NUS, 19 January 1996.
- “Passive Compliance in Robotics – A Key to Successful Robotic Automation,” Department of Mechanical and Materials Engineering, University of Western Australia, Perth, Australia, 20 December 1995.
- “Challenges in Robotics, ” Ngee Ann Polytechnic, 8 November 1995.
- “Robotics and Intelligence,” Seminar on Marine Technology, Ngee Ann Polytechnic, 23 September 1995.
- “Lecture-cum-Practical: A Robotic Experience”, for Secondary School Students from Raffles Institution, 2 December 1994.
- “A Parallel Adaptive Neural Network for Motion Control,” *NNSIG-Singapore Talk*, Singapore, July 28, 1993.
- “The LEGO Computer Control System,” National University of Singapore, 1 June 1992.
- “Neurocomputing Towards Intelligent Systems,” Singapore Computer Society and IEEE, Singapore, 9 April 1992.
- “Neural Network Applications in Robotics.” *NUS Inter-Faculty Seminar on Mathematical Applications in Engineering*, Department of Mathematics, October 29, 1990. (with Dr. Teo Chee Leong)
- “Robotics: The Current State and Where To?” *Singapore Institution of Engineers (IES) Technical Talk*, IES Headquarters, Singapore, October 26, 1990.
- “Neural Network Based Robot Control.” *IEEE Computer Chapter Technical Talk*, Faculty Club, National University of Singapore, Singapore, October 9, 1990. (Invited.)
- “The Interchangeable Wrist Concept – A Step Towards Modular Robotics.” Department of Electrical Engineering, National University of Singapore, November 15, 1989. (Invited Seminar.)

- “Kinematic Control of Robotic Manipulators with Multiple Interchangeable Wrists.” Department of Ocean Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, January 17, 1989. (Invited Seminar.)
- “Kinematic Control of Robotic Manipulators with Multiple Interchangeable Wrists.” School of Engineering Science, Simon Fraser University, Vancouver, British Columbia, December 13, 1988. (Invited Seminar.)
- “Fast Kinematic Algorithms for Robot Control.” *Industrial Associates Meeting, Production Automation Project*. Rochester, New York, October 15, 1986.

WORKSHOPS and SHORT COURSES

- “Sensors and Actuators”, 6-day short course for staff of Delphi, Singapore, Sept 2002.
- “Advanced Robotics, 5-day short course for staff of AMA CU, Philippines, July 7-15, 2002.
- “Introduction to Robotics.” 30-hour short course for staff of Ngee Ann Polytechnic. May 28 to June 18, 1994.
- “Introduction to Motion Control,” in *Workshop on Advanced Topics in Motion Control*, 29 May 1992, Singapore.
- “Creating a Corporate Automation Culture,” with G.B. Andeen, S.H. Park, and J. Ling. The Regent Hotel, Singapore, May 31, 1990. (Sponsors: the Economic Development Board, Automation Applications Center, Applied Research Corporation, and the National University of Singapore.)
 - Repeat Offering with G.B. Andeen, S.H. Park, and J. Ling. Goodwood Park Hotel, Singapore, August 24, 1990.
 - Repeat Offering with A.N. Poo, S.H. Park, and J. Ling, The Glass Hotel, Singapore, January 18, 1991.
- “Robotics: Basics and Fundamentals,” with V.D. Tourassis. *The Third International Conference on CAD/CAM Robotics and Factories of the Future*. Detroit, Michigan, August 15, 1988.

PUBLICATIONS

- Complete list: <http://guppy.mpe.nus.edu.sg/~mpeangh/publicat.pdf>
- Selected publications can be downloaded from <http://guppy.mpe.nus.edu.sg/~mpeangh/publications>

PROFESSIONAL REFERENCES

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Stanford University
Stanford, CA 94305-9010
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