Curriculum Vitae

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A. Education:

1988 - *Ph.D. in Electrical Engineering*, University of Rochester, Rochester, New York.
1987 - *M.S. in Electrical Engineering*, University of Rochester, Rochester, New York.
1985 - *M.S. in Mechanical Engineering*, University of Hawaii at Manoa, Honolulu, Hawaii.
1981 - *B.S. in Mechanical Engineering* (Cum Laude) and *B.S. in Industrial Management Engineering* (Cum Laude), De La Salle University, Manila, Philippines.

B. Professional Experience:

1989 – Present: Lecturer, Sr Lecturer, Associate Professor, Department of Mechanical Engineering, National University of Singapore.
1988 – 1989: Assistant Professor, Department of Electrical Engineering, University of Rochester, NY, USA.
1985 – 1988: Research Assistant, Department of Electrical Engineering, University of Rochester, NY, USA.
1983 – 1985: Research Assistant, East West Center, Honolulu, and Dept of Mechanical Engineering, University of Hawaii at Manoa, Honolulum Hawaii, USA.
1984: Visiting Research Engineer, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA
1982 – 1983: Sr Technical Traning Officer, Intel Philippines, Mfg Inc
1981 – 1982: Instructor, Dept of Mechanical Engineering, De La Salle University, Manila, Philippines.

C. Research Interests

- Mobile Robotic Manipulation in Human Environments
- Compliant motion and force control.
- Autonomous Vehicles
- Distributed Autonomous Robotics Systems
- Applications of Robotics and Intelligent Systems
- Computer Control, Mechatronics and Automation.
- Computational Intelligence, Machine and Deep Learning

D. Representative Publications

LIU, W, SW Kim, S PENDLETON and M H Jr Ang*, "Situation-aware decision making for autonomous driving on urban road using online POMDP". 2015 IEEE Intelligent Vehicles Symposium (2015): 1126-1133. Seoul: IEEE.

Kim, SW, W LIU, B QIN, Z J CHONG, X SHEN, M H Jr Ang, E Frazzoli and D Rus, "Multivehicle Cooperative Driving Using Cooperative Perception: Design and Experimental Validation". IEEE Transactions on Intelligent Transportation Systems, 16, no. 2 (2014): 663-680. (United States).

LEE, G H and M H Jr Ang*, "An integrated algorithm for autonomous navigation of a mobile

robot in an unknown environment". Journal of Advanced Computational Intelligence and Intelligent Informatics, 12, no. 4 (2008): 228-335. (Japan).

Oetomo, D N and M H Jr Ang*, "Singularity-free joint actuation for omnidirectional mobile platforms with powered caster wheels". Journal of Mechanical Design, 130, no. 5 (2008): 054501-1-054501-5. (United States).

Low*, K H, W K Leow and M H Jr Ang, "Autonomic Mobile Sensor Network with Self-Coordinated Task Allocation and Execution". IEEE Transactions on Systems, Man and Cybernetics Part C - Applications and Reviews, 36, no. 3 (2006): 315-327. (United States).

E. Patents and Licensed Technologies

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); Licensed to Institute for Applied Information Technology - German National Research Center for Information Technology (GMD), Nov 1999 - Present.

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)

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).

F. Professional Awards

Award of Excellence

Service Excellent Award, Land Transport Authority, Singapore, 2014.

Andrew P. Sage Best Transactions Paper Award, 9 October 2007. (Best paper published annually (2006) in the IEEE Transactions on Systems, Man and Cybernetics, Parts A, B and C)

Awards for Excellence 2000, Most Outstanding Paper in the 1999 volume of the journal *Industrial Robot*.

G: Some Research Outcomes

- Pioneer in Self-Driving Vehicles in Singapore, with autonomous car, scooter, wheel chair and golf buggy. First public deployment in Singapore's Chinese and Japanese Gardens in 2014. (2010-Present)
- Improving the intelligence and usability of Industrial Robots and demonstrations in welding and finishing applications (A*STAR Industrial Robotics Program, 2013-2017)
- Realization of effective control of the dynamics of robotics manipulators during contact with the environment. (2000-Present)
- Distributed control of a group of mobile autonomous robots achieving collective intelligence (demonstrated in search and tracking)
- Design and realization of an omni-directional mobile base using powered caster wheels.
- Created a Ship Welding Robotic System for Keppel FELS – 1st in the world with active impedance control for walk-through programming of a powered robotic arm (1994 - 1997)