

# Curriculum Vitae

## Ben M. Chen

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### Education

- ∞ *Ph.D. in Electrical and Computer Engineering*, Washington State University, Pullman, USA, August 1991
- ∞ *M.S. in Electrical Engineering*, Gonzaga University, Spokane, Washington, USA, May 1988
- ∞ *B.S. in Mathematics and Computer Science*, Xiamen University, Xiamen, Fujian, China, July 1983

### Professional Experience

- ∞ *Professor*, August 2018–Present, Department of Mechanical and Automation Engineering, Chinese University of Hong Kong, China
- ∞ *Provost's Chair*, April 2016–Present, The National University of Singapore, Singapore
- ∞ *Head*, September 2012–August 2018, Control Science Group, Temasek Laboratories, The National University of Singapore, Singapore
- ∞ *Director*, July 2011–April 2018, Area of Control, Intelligent Systems and Robotics, Department of Electrical and Computer Engineering, The National University of Singapore, Singapore
- ∞ *Changjiang Guest Chair Professor*, August 2010–August 2013, Nanjing University of Science and Technology, Nanjing, China
- ∞ *Professor*, January 2005–Present, Department of Electrical and Computer Engineering, National University of Singapore, Singapore
- ∞ *Associate Professor*, July 1999–December 2004, Department of Electrical and Computer Engineering, National University of Singapore, Singapore
- ∞ *Senior Lecturer*, July 1996–June 1999, Department of Electrical Engineering, National University of Singapore, Singapore
- ∞ *Lecturer*, August 1993–June 1996, Department of Electrical Engineering, National University of Singapore, Singapore
- ∞ *Assistant Professor*, August 1992–August 1993, Department of Electrical Engineering, State University of New York, Stony Brook, New York, USA
- ∞ *Postdoctoral Associate*, August 1991–August 1992, School of Electrical Engineering and Computer Science, Washington State University, Pullman, Washington, USA
- ∞ *Software Engineer*, July 1983–March 1986, Software Division, South-China Computer Corporation, Guangzhou, Guangdong, China

## Research Interests

- ⊗ Linear Systems; Robust Control; Control Applications
- ⊗ Unmanned Systems
- ⊗ Financial Market Modeling

## Membership in Professional Societies

The IEEE (Institute of Electrical & Electronic Engineers) and IEEE Control Systems Society

- ⊗ FELLOW (2007) ⊗ SENIOR MEMBER (2000) ⊗ MEMBER (1992) ⊗ STUDENT MEMBER (1989)

## Awards & Honors

- ⊗ *Provost's Chair*, National University of Singapore, 2016
- ⊗ *Changjiang Guest Chair Professorship*, Nanjing University of Science and Technology, China, 2010
- ⊗ *Best Application Paper Award*, 8th World Congress on Intelligent Control and Automation, Jinan, China, 2010
- ⊗ *Best Application Paper Award*, 7th Asian Control Conference, Hong Kong, 2009
- ⊗ *Fellow of IEEE*, Institute of Electrical & Electronics Engineers (IEEE), USA, 2007
- ⊗ *Best Industrial Control Application Prize*, 5th Asian Control Conference, Melbourne, Australia, 2004
- ⊗ *Temasek Young Investigator Award*, Defence Science & Technology Agency, Singapore, 2003
- ⊗ *IES Prestigious Engineering Achievement Award*, Institute of Engineers, Singapore, 2001
- ⊗ *University Researcher Award*, National University of Singapore, 2000
- ⊗ *Asian Young Scholars Award*, The University of Melbourne, Australia, 1997
- ⊗ *Best Poster Paper Award*, The 2nd Asian Control Conference, Seoul, Korea, 1997
- ⊗ *Teaching Commendation 2008/2009*, Faculty of Engineering, National University of Singapore
- ⊗ *Teaching Commendation 2003/2004*, Faculty of Engineering, National University of Singapore
- ⊗ *Teaching Commendation 2002/2003*, Faculty of Engineering, National University of Singapore
- ⊗ *Teaching Commendation 2001/2002*, Faculty of Engineering, National University of Singapore
- ⊗ *Innovative Teaching Award 1999/2000*, Faculty of Engineering, National University of Singapore
- ⊗ *Marquis Who's Who in the World*, 19th Edition, Marquis Who's Who, USA, 2002
- ⊗ *Cardinal Yu-Pin Scholarship*, Sino-American Amity Fund, Inc., New York, 1986–1991
- ⊗ *Presidential Scholarship*, Gonzaga University, Spokane, Washington, 1986–1988

## Awards Won by My UAV Research Teams and Students

- ✕ Shupeng Lai (with Menglu Lan, Ben M. Chen)  
Guan Zhao-Zhi Award  
Total Prize: CNY 5,000 in Cash  
37th Chinese Control Conference, Wuhan, China, 2018
- ✕ Team Instinct Cougar  
Indoor Competition Champion  
International Micro Aerial Vehicle Competition, Toulouse, France, 2017
- ✕ Team Instinct Lion  
Outdoor Competition Champion  
International Micro Aerial Vehicle Competition, Toulouse, France, 2017
- ✕ Team U-Lion: Shupeng Lai, Yingcai Bi, Menglu Lan, Jiaxin Li, Hailong Qin, Kun Zhang  
Overall Championship Award (Gold), Best Platform Design Award (Gold)  
Total Prize: SGD 8,000 in Cash and 5 iPad Mini 4  
Category D2: Fully Autonomous  
Singapore Amazing Flying Machine Competition, 2017
- ✕ Team AeroLion: Kangli Wang, Yijie Ke, Mo Shan (NUS), Xiang Li, Fei Wang (AeroLion Technologies)  
Champion  
Total Prize: CNY 100,000 in Cash  
Category: Rotor-Wing Competition  
The 3rd AVIC Cup — International UAV Innovation Grand Prix, Anji, Zhejiang, China, 2015
- ✕ Team V-Lion: Jinqiang Cui, Hailong Qin, Yingcai Bi, Jiaxin Li, Menglu Lan, Mo Shan, Wenqi Liu  
1st Runner Up  
International Micro Aerial Vehicle Competition, Aachen, Germany, 2015
- ✕ Team AP-Lion: Menglu Lan, Jiaxin Lin, Kaijun Liu, Shuai Wang, Mengmi Zhang  
Overall Championship Award (Gold), Best Performance Award (Gold), Best Theory of Flight Award (Gold),  
Best Video Award (Silver)  
Total Prize: SGD 8,000 in Cash and 5 Samsung Tablets  
Category D2: Fully Autonomous  
Singapore Amazing Flying Machine Competition, 2015
- ✕ Team LV-Lion: Yingcai Bi, Jiaxin Li, Wenqi Liu, Hailong Qin, Mo Shan  
Overall Championship Award (Silver), Best Performance Award (Silver)  
Total Prize: SGD 3,000 in Cash  
Category D2: Fully Autonomous  
Singapore Amazing Flying Machine Competition, 2015
- ✕ Limiao Bai (Sen Yan, Xiaolian Zheng, Ben M. Chen)  
Best Student Paper Award  
The 2014 International Conference on Financial Engineering, London, U.K., 2014
- ✕ Team AeroLion  
Champion  
International Micro Aerial Vehicle Competition, Delft, the Netherlands, 2014

- ⊗ Fei Wang (with P. Liu, S. Zhao, B. M. Chen, S. K. Phang, S. Lai, T. H. Lee, C. X. Cai)  
Guan Zhao-Zhi Award  
Total Prize: CNY 5,000 in Cash  
33rd Chinese Control Conference, Nanjing, China, 2014
- ⊗ Team U-Lion: Kangli Wang, Yijie Ke, Kun Lin, Tao Pang  
Overall Championship Award (Gold), Best Performance Award (Gold), Most Creative Award (Bronze)  
Total Prize: SGD 4,000 in Cash and 5 iPads  
Category E: Unconventional  
Singapore Amazing Flying Machine Competition, 2014
- ⊗ Team Q<sub>1</sub>-Lion: Fei Wang, Swee-King Phang, Zizhang Ai, Wenqi Liu, Wei-Lian Mook  
Overall Championship Award (Silver), Best Performance Award (Gold), Best Theory of Flight Award (Gold)  
Total Prize: SGD 4,000 in Cash  
Category D2: Fully Autonomous  
Singapore Amazing Flying Machine Competition, 2014
- ⊗ Team Q<sub>2</sub>-Lion: Kevin Ang, Jinqiang Cui, Peidong Liu, Shupeng, Lai, Dong Wang  
Best Theory of Flight Award (Silver)  
Category D2: Fully Autonomous  
Singapore Amazing Flying Machine Competition, 2014
- ⊗ Team NUS<sup>2</sup>T-Lion  
2nd Place Overall (1st in Final Round)  
Total Prize: CNY 80,000 in Cash  
Category: Rotor-Wing Competition  
The 2nd AVIC Cup — International UAV Innovation Grand Prix, Beijing, China, 2013
- ⊗ Team NUS<sup>2</sup>T-Lion  
New Innovation Star Award  
Total Prize: CNY 10,000 in Cash  
Category: Creativity Competition  
The 2nd AVIC Cup — International UAV Innovation Grand Prix, Beijing, China, 2013
- ⊗ Kangli Wang, Xiang Li, Di Deng, Hongyu Tian, Youyang Cheng  
Overall Championship Award, Best Performance Award, Most Creative Award  
Total Prize: SGD 10,000 in Cash and 5 iPads  
Category D2: Fully Autonomous  
Singapore Amazing Flying Machine Competition, 2013
- ⊗ Kevin Ang, Fei Wang, Swee King Phang, Peidong Liu  
Most Creative Award  
Cash Prize: SGD 2,000  
Category E: Unconventional  
Singapore Amazing Flying Machine Competition, 2013
- ⊗ Team GremLion  
Finalist (of 9 selected among 144 teams from 153 countries)  
DARPA UAVForge Challenge  
Defense Advanced Research Projects Agency & Space and Naval Warfare Systems Center, Atlantic, USA, 2012

- ⊗ Sing-Jie Lee, Yuxiang Wang, Yi-Ling Tan, Sharon Ang, Shiyi Li  
Overall Championship Award, Most Creative Award  
Total Prize: SGD 10,000 in Cash and 5 iPads  
Category D: Autonomous and Flying by Video  
Singapore Amazing Flying Machine Competition, 2011
- ⊗ Swee-King Phang, Jun-Jie Ong, Ronald Yeo  
Best Performance Award  
Category D: Autonomous and Flying by Video  
Cash Prize: SGD 1,000  
Singapore Amazing Flying Machine Competition, 2010
- ⊗ Tao Wang, Fei Wang, Li Liu  
Best Theory Award  
Category D: Autonomous and Flying by Video  
Singapore Amazing Flying Machine Competition, 2009

## Editorial Work

- ⊗ *Editor-in-Chief*, Unmanned Systems, 2012–
- ⊗ *Deputy Editor-in-Chief*, Control Theory and Technology, 2013–
- ⊗ *Associate Editor*, Science China: Information Science, 2015–
- ⊗ *Associate Editor*, IEEE/CAA Journal of Automatica Sinica, 2014–
- ⊗ *Editorial Board Member*, Journal of Systems Science and Complexity, 2014–
- ⊗ *Advisory Board Member*, International Journal of Automation and Logistics, 2014–
- ⊗ *Associate Editor*, Frontier of Electrical and Electronic Engineering, 2010–
- ⊗ *Guest Editor*, Mechatronics, 2011
- ⊗ *Guest Editor*, Transactions of the Institute of Measurement and Control, 2011
- ⊗ *Guest Editor*, Journal of Control Theory and Applications, 2010
- ⊗ *Editor-at-Large*, Journal of Control Theory and Applications, 2008–2013
- ⊗ *Associate Editor*, Chinese Control Conference Editorial Board, 2008–2012
- ⊗ *Associate Editor*, Transactions of the Institute of Measurement and Control, 2007–2010
- ⊗ *Associate Editor*, Journal of Control Science and Engineering, 2006–2009
- ⊗ *Associate Editor*, Automatica, 2005–2008
- ⊗ *Associate Editor*, Systems & Control Letters, 2004–2010
- ⊗ *Member of International Advisory Board*, Kuwait Journal of Science & Engineering, 2003–2013
- ⊗ *Associate Editor*, Control and Intelligent Systems, 2002–2007
- ⊗ *Associate Editor*, Asian Journal of Control, 2002

- ⊗ *Guest Editor*, Transactions of the South African Institute of Electrical Engineers, 2002
- ⊗ *Associate Editor*, IEEE Transactions on Automatic Control, 1999–2001
- ⊗ *Associate Editor*, Conference Editorial Board, IEEE Control Systems Society, 1997–1998

## **Keynote, Plenary and Invited Speakers**

- ⊗ *Plenary Speaker*, 2018 IEEE/CSAA Guidance, Navigation and Control Conference, Xiamen, China, August 2018
- ⊗ *Keynote Speaker*, 2018 IEEE International Conference on Advanced Robotics and Mechatronics, Singapore, July 2018
- ⊗ *Plenary Speaker*, 2018 Symposium on Autonomous Systems, Chongqing, China, May 2018
- ⊗ *Semi-plenary Speaker*, 2017 Asian Control Conference, Gold Coast, Australia, December 2017
- ⊗ *Keynote Speaker*, 2017 International Conference on Computer and Drone Applications, Kuching, Malaysia, November 2017
- ⊗ *Speaker*, 4th World Congress on Robotics and Artificial Intelligence, Osaka, Japan, October 2017
- ⊗ *Keynote Speaker*, 2017 International Micro Air Vehicles Conference and Competition, Toulouse, France, September 2017
- ⊗ *Keynote Speaker*, 2016 International Conference on Electrical, Electronic, Communication and Control Engineering, Johor Bahru, Malaysia, December 2016
- ⊗ *Keynote Speaker*, ETAI 2016 Conference, Struga, Macedonia, September 2016
- ⊗ *Keynote Speaker*, 12th International Conference on Intelligent Unmanned Systems, Xi'an, China, August 2016
- ⊗ *UAV Forum Speaker*, 2015 Chinese Conference on Intelligent Equipment and Robotic Industry Development, Guangzhou, China, June 2016
- ⊗ *Keynote Speaker*, 2015 China Trade about International Unmanned Vehicle Systems, Shenzhen, China, November 2015
- ⊗ *Keynote Speaker*, The Commercial UAV Show 2015, London, U.K., October 2015
- ⊗ *Keynote Speaker*, 10th International Conference on Conference on Computer Science and Education, Cambridge, U.K., July 2015
- ⊗ *Keynote Speaker*, 3rd Singapore-French Symposium, Singapore, February 2015
- ⊗ *Keynote Speaker*, 10th International Conference on Intelligent Unmanned Systems, Montreal, Canada, September 2014
- ⊗ *Keynote Speaker*, 2014 Workshop on Distributed Cooperative Control of Multi-Agent Dynamic Systems, Beijing, China, July 2014
- ⊗ *Plenary Speaker*, 2014 Defence R&T Seminar, Nanyang Technological University, Singapore, May 2014
- ⊗ *Keynote Speaker*, 2013 Workshop on Distributed Cooperative Control of Multi-Agent Dynamic Systems, Beijing, China, July 2013

- ⊗ *Keynote Speaker*, 2013 International Conference on Unmanned Aircraft Systems, Atlanta, USA, May 2013
- ⊗ *Plenary Speaker*, SMI's 12th Annual Conference on Unmanned Aerial Systems 2012, London, U.K., October 2012
- ⊗ *Keynote Speaker*, 2012 China Guidance, Navigation and Control Congress, Beijing, China, August 2012
- ⊗ *Keynote Speaker*, 2012 Workshop on Distributed Coordinated Control of Dynamic Multi-Agent Systems, Beijing, China, July 2012
- ⊗ *Distinguished Robotics and Mechatronics Lecturer*, Singapore Robotic Games, Singapore, February 2012
- ⊗ *Plenary Speaker*, 2012 International Conference on Autonomous Unmanned Vehicles, Bangalore, India, February 2012
- ⊗ *Plenary Speaker*, 23rd Canadian Congress of Applied Mechanics, Vancouver, Canada, June 2011
- ⊗ *Plenary Speaker*, 13th IASTED International Conference on Control & Applications, Vancouver, Canada, June 2011
- ⊗ *Semi-Plenary Speaker*, 23rd Chinese Control and Decision Conference, Mianyang, China, May 2011
- ⊗ *Plenary Speaker*, 29th Chinese Control Conference, Beijing, China, July 2010
- ⊗ *Keynote Speaker*, 2nd International Conference on Control, Instrumentation & Mechatronic Engineering, Malacca, Malaysia, June 2009
- ⊗ *Plenary Speaker*, Unmanned Systems Asia 2009, Singapore, February 2009
- ⊗ *Keynote Speaker*, 2008 IEEE International Conference on Automation & Logistics, Qingdao, China, September 2008
- ⊗ *Keynote Speaker*, International Colloquium on Computing, Communication, Control & Management, Guangzhou, China, August 2008

## **Plenary Panelists at International Conferences**

- ⊗ *Plenary Panel Chair*, 37th Chinese Control Conference, Wuhan, China, 2018
- ⊗ *Forum Panelist*, The Commercial UAV Show Asia 2016, Singapore, 2016
- ⊗ *Plenary Panelist*, 35th Chinese Control Conference, Chengdu, China, 2016
- ⊗ *Plenary Panelist*, 13th International Conference on Control, Automation, Robotics and Vision, Singapore, 2014
- ⊗ *Plenary Panel Chair*, 11th IEEE International Conference on Control and Automation, Taichung, Taiwan, 2014
- ⊗ *Plenary Panelist*, 10th World Congress on Intelligent Control and Automation, Beijing, China, 2012
- ⊗ *Plenary Panelist*, 8th Asian Control Conference, Kaohsiung, Taiwan, 2011
- ⊗ *Plenary Panel Chair*, 29th Chinese Control Conference, Beijing, China, 2010
- ⊗ *Plenary Panel Chair*, 27th Chinese Control Conference, Kunming, China, 2008
- ⊗ *Plenary Panel Chair*, 3rd International Conference on Computer Science and Education, Kaifeng, China, 2008
- ⊗ *Plenary Panelist*, 26th Chinese Control Conference, Zhangjiajie, China, 2007
- ⊗ *Plenary Panelist*, 1st International Conference on Computer Science and Education, Xiamen, China, 2006

## Publications

★ Google Scholar Citation Indices — Citations: 9858; h-index: 48; i10-index: 163 ★

### A. MONOGRAPHS

1. X. Zheng and B. M. Chen, *Stock Market Modeling and Forecasting: A System Adaptation Approach*, Springer, New York, 2013 (*Lecture Notes in Control and Information Sciences Series*, 161 pages, ISBN 978-1-4471-5154-8).
2. G. Cai, B. M. Chen, T. H. Lee and B. Wang, *Unmanned Rotorcraft Systems*, Tsinghua University Press, Beijing, 2012 (Chinese edition; 203 pages, ISBN 978-7-302-29388-0).
3. G. Cai, B. M. Chen and T. H. Lee, *Unmanned Rotorcraft Systems*, Springer, New York, 2011 (*Advances in Industrial Control Series*, 267 pages, ISBN 978-0-85729-634-4).
4. B. M. Chen and B. Xi,  *$H_\infty$  Control and Its Applications*, Science Press, Beijing, 2010 (*Systems and Control Series*, Chinese Edition; 345 pages, ISBN 978-7-03-028742-7).
5. B. M. Chen, Z. Lin and Y. Shamash, *Linear Systems Theory: A Structural Decomposition Approach*, Tsinghua University Press, Beijing, 2008 (Chinese edition translated by Bin Xi; 340 pages, ISBN 978-7-302-16367-1).
6. B. M. Chen, T. H. Lee, K. Peng and V. Venkataramanan, *Hard Disk Drive Servo Systems*, 2nd Edition, Springer, New York, 2006 (*Advances in Industrial Control Series*, 310 pages, ISBN 1-84628-304-3).
7. B. M. Chen, Z. Lin and Y. Shamash, *Linear Systems Theory: A Structural Decomposition Approach*, Birkhäuser, Boston, 2004 (*Control Engineering Series*, 415 pages, ISBN 0-81763-779-6).
8. C. C. Ko, B. M. Chen and J. Chen, *Creating Web-Based Laboratories*, Springer, New York, 2004 (*Advanced Information and Knowledge Processing Series*, 300 pages, ISBN 1-85233-837-7).
9. B. M. Chen, T. H. Lee and V. Venkataramanan, *Hard Disk Drive Servo Systems*, Springer, New York, 2002 (*Advances in Industrial Control Series*, 273 pages, ISBN 1-85233-500-9).
10. B. M. Chen, *Robust and  $H_\infty$  Control*, Springer, New York, 2000 (*Communications and Control Engineering Series*, 446 pages, ISBN 1-85233-255-7).
11. B. M. Chen,  *$H_\infty$  Control and Its Applications*, Springer, New York, 1998 (*Lecture Notes in Control and Information Sciences Series*, 351 pages, ISBN 1-85233-026-0).
12. A. Saberi, P. Sannuti and B. M. Chen,  *$H_2$  Optimal Control*, Prentice Hall, London, 1995 (*Systems and Control Engineering Series*, 471 pages, ISBN 0-13-489782-X).
13. A. Saberi, B. M. Chen and P. Sannuti, *Loop Transfer Recovery: Analysis and Design*, Springer, New York, 1993 (*Communications and Control Engineering Series*, 352 pages, ISBN 0-387-19831-8/ISBN 3-540-19831-8).

### B. TEXTBOOKS

1. C. C. Ko and B. M. Chen, *Basic Circuit Analysis for Electrical Engineering*, Prentice Hall, Singapore, 2nd Edition, 1998 (342 pages, ISBN 981-4024-39-2).
2. C. C. Ko and B. M. Chen, *Basic Circuit Analysis for Electrical Engineering*, Prentice Hall, Singapore, 1996 (304 pages, ISBN 981-3076-01-1).



## C. JOURNAL PUBLICATIONS

1. Y. H. Tan, S. Lai, K. Wang and B. M. Chen, "Cooperative control of multiple unmanned aerial systems for heavy duty carrying," *Annual Reviews in Control* (in press).
2. L. Zhang, F. Deng, J. Chen, Y. Bi, S. K. Phang, X. Chen and B. M. Chen, "Vision-based target three-dimensional geolocation using unmanned aerial vehicles," *IEEE Transactions on Industrial Electronics*, Vol. 65, No. 10, pp. 8052–8061, October 2018.
3. L. Wu, Y. Ke and B. M. Chen, "Systematic modeling of rotor dynamics for small UAVs," *Unmanned Systems*, Vol. 6, No. 2, pp. 81–93, June 2018.
4. Y. Ke, K. Wang and B. M. Chen, "Design and implementation of a hybrid UAV with model-based flight capabilities," *IEEE/ASME Transactions on Mechatronics*, Vol. 23, No. 3, pp. 1114–1125, June 2018.
5. K. Z. Y. Ang, X. Dong, W. Liu, G. Qin, S. Lai, K. Wang, D. Wei, S. Zhang, S. K. Phang, X. Chen, M. Lao, Z. Yang, D. Jia, F. Lin, L. Xie and B. M. Chen, "High-precision multi-UAV teaming for the first outdoor night show in Singapore," *Unmanned Systems*, Vol. 6, No. 1, pp. 39–65, March 2018.
6. K. Peng, F. Lin and B. M. Chen, "Online schedule for autonomy of multiple unmanned aerial vehicles," *Science China Information Sciences*, Vol. 60, Paper No: 072203:1–13, July 2017 (doi:10.1007/s11432-016-9025-9).
7. K. Wang, Y. Ke and B. M. Chen, "Autonomous reconfigurable hybrid tail-sitter UAV U-Lion," *Science China Information Sciences*, Vol. 60, Paper No: 033201:1–16, March 2017 (doi:10.1007/s11432-016-9002-x).
8. J. Q. Cui, S. Lai, X. Dong and B. M. Chen, "Autonomous navigation of UAV in foliage environment," *Journal of Intelligent and Robotic Systems*, Vol. 84, No. 1, pp. 259–276, December 2016.
9. Y. Liu, K. Peng, Y. Lu and B. M. Chen, "Flight control law using composite nonlinear feedback technique for a Mars airplane," *Journal of Guidance, Control, and Dynamics*, Vol. 39, No. 9, pp. 2194–2204, September 2016.
10. S. Lai, K. Wang, H. Qin, J. Q. Cui and B. M. Chen, "A robust online path planning approach in cluttered environments for micro rotorcraft drones," *Control Theory and Technology*, Vol. 14, No. 1, pp. 83–96, February 2016.
11. S. Zhao, F. Lin, K. Peng, X. Dong, B. M. Chen and T. H. Lee, "Vision-aided estimation of attitude, velocity, and inertial measurement bias for UAV stabilization," *Journal of Intelligent and Robotic Systems*, Vol. 81, pp. 531–549, March 2016.
12. J. Q. Cui, S. K. Phang, K. Z. Y. Ang, F. Wang, X. Dong, Y. Ke, S. Lai, K. Li, X. Li, J. Lin, P. Liu, T. Pang, K. Wang, Z. Yang, F. Lin and B. M. Chen, "Cooperative search and rescue using multiple drones in post-disaster situation," *Unmanned Systems*, Vol. 4, No. 1, pp. 83–96, February 2016.
13. S. K. Phang, S. Lai, F. Wang, M. Lan and B. M. Chen, "Systems design and implementation with jerk-optimized trajectory generation for UAV calligraphy," *Mechatronics*, Vol. 30, pp. 65–75, September 2015.
14. L. Bai, S. Yan, X. Zheng and B. M. Chen, "Market turning points forecasting using wavelet analysis," *Physica A: Statistical Mechanics and its Applications*, Vol. 437, pp. 184–197, May 2015.
15. K. Z. Y. Ang, J. Cui, T. Pang, K. Li, K. Wang, Y. Ke and B. M. Chen, "Design and implementation of a thrust-vectoring unmanned tail-sitter with reconfigurable wings," *Unmanned Systems*, Vol. 3, No. 2, pp. 143–162, April 2015.

16. S. Zhao, Z. Hu, M. Yin, K. Z. Y. Ang, P. Liu, F. Wang, X. Dong, F. Lin, B. M. Chen and T. H. Lee, "A robust real-time vision system for autonomous cargo transfer by an unmanned helicopter," *IEEE Transactions on Industrial Electronics*, Vol. 62, No. 2, pp. 1210–1219, February 2015.
17. F. Wang, P. Liu, S. Zhao, B. M. Chen, S. K. Phang, S. Lai, T. Pang, B. Wang, C. Cai and T. H. Lee, "Development of an unmanned helicopter for vertical replenishment," *Unmanned Systems*, Vol. 3, No. 1, pp. 63–87, January 2015.
18. A. Karimoddini, H. Lin, B. M. Chen and T. H. Lee, "Hierarchical hybrid modeling and control of an unmanned helicopter," *International Journal of Control*, Vol. 87, No. 9, pp. 1779–1793, September 2014.
19. X. Zheng and B. M. Chen, "Identification of stock market forces in the system adaptation framework," *Information Sciences*, Vol. 265, pp. 105–122, May 2014.
20. S. K. Phang, K. Li, K. H. Yu, B. M. Chen and T. H. Lee, "Systematic design and implementation of a micro unmanned quadrotor system," *Unmanned Systems*, Vol. 2, No. 2, pp. 121–141, April 2014.
21. S. Zhao, F. Lin, K. Peng, B. M. Chen and T. H. Lee, "Finite-time stabilization of cyclic formations using bearing-only measurements," *International Journal of Control*, Vol. 87, No. 4, pp. 715–727, April 2014.
22. S. Zhao, B. M. Chen and T. H. Lee, "Optimal deployment of mobile sensors for target tracking in 2D and 3D spaces," *IEEE/CAA Journal of Automatica Sinica*, Vol. 1, No. 1, pp. 24–30, January 2014.
23. Y. Sun, H. Lin and B. M. Chen, "Bisimilarity enforcing supervisory control for deterministic specifications," *Automatica*, Vol. 50, No. 1, pp. 287–290, January 2014.
24. S. Zhao, F. Lin, K. Peng, B. M. Chen and T. H. Lee, "Distributed control of angle-constrained circular formation using bearing-only measurements," *Systems & Control Letters*, Vol. 63, No. 1, pp. 12–24, January 2014.
25. G. Cheng, K. Peng, B. M. Chen and T. H. Lee, "Discrete-time mode switching control with application to a PMSM position servo system," *Mechatronics*, Vol. 23, No. 8, pp. 1191–1201, December 2013.
26. X. Liu, H. Lin and B. M. Chen, "Structural controllability of switched linear systems," *Automatica*, Vol. 49, No. 12, pp. 3531–3537, December 2013.
27. R. Chisholm, J. Q. Cui, S. K. Y. Lum and B. M. Chen, "UAV LiDAR for below-canopy forest surveys," *Journal of Unmanned Vehicle Systems*, Vol. 1, pp. 61–68, November 2013.
28. F. Wang, J. Q. Cui, B. M. Chen and T. H. Lee, "A comprehensive UAV indoor navigation system based on vision optical flow and laser FastSLAM," *Acta Automatica Sinica*, Vol. 39, No. 11, pp. 1889–1900, November 2013.
29. F. Lin, K. Z. Y. Ang, F. Wang, B. M. Chen, T. H. Lee, B. Yang, M. Dong, X. Dong, J. Cui, S. K. Phang, B. Wang, D. Luo, K. Peng, G. Cai, S. Zhao, M. Yin and K. Li, "Development of an unmanned coaxial rotorcraft for the DARPA UAVForge Challenge," *Unmanned Systems*, Vol. 1, No. 2, pp. 211–245, October 2013.
30. S. Zhao, B. M. Chen and T. H. Lee, "Optimal sensor placement for target localization and tracking in 2D and 3D," *International Journal of Control*, Vol. 86, No. 10, pp. 1687–1704, October 2013.
31. M. Zhu, S. Lai, R. Boucher, B. M. Chen, C. Xiang and W. Kang, "Minimum time trajectory for helicopter UAVs: computation and flight test," *Applied Mathematical Sciences*, Vol. 7, No. 130, pp. 6475–6487, September 2013.

32. A. Karimodini, H. Lin, B. M. Chen and T. H. Lee, "A bumpless hybrid supervisory control algorithm for the formation of unmanned helicopters," *Mechatronics*, Vol. 23, No. 6, pp. 677–688, September 2013.
33. K. Peng and B. M. Chen, "Variant-factor technique for tracking control of a class of nonlinear systems with input saturation," *Control and Intelligent Systems*, Vol. 41, No. 3, pp. 169–177, July 2013.
34. A. Karimodini, H. Lin, B. M. Chen and T. H. Lee, "Hybrid 3-D formation control for unmanned helicopters," *Automatica*, Vol. 49, No. 2, pp. 424–433, February 2013.
35. X. Liu, H. Lin and B. M. Chen, "Graph-theoretic characterisations of structural controllability for multi-agent system with switching topology," *International Journal of Control*, Vol. 86, No. 2, pp. 222–231, February 2013.
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## D. CONFERENCE PUBLICATIONS

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## Funded Research Projects

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2. *Navigation and Control of MAVs in Indoor and Outdoor Cluttered Environments*, DSO National Laboratories, 2014–2016, S\$492,000.
3. *Fruit Dove UAV Control*, Temasek Laboratories, National University of Singapore, 2014–2016, S\$150,000.
4. *Optimal Coverage and Surveillance Using Cooperative Planning and Control of UAVs*, with C. Xiang (PI), T. H. Lee, C. Chen, W. Kang and O. Yakimenko, Temasek Defence Systems Institute, National University of Singapore, 2013–2016, S\$300,000.
5. *Investigation of Navigation Systems for Unmanned Aerial Vehicles in Outdoor Cluttered Environments*, with T. H. Lee, C. Chen and O. Yakimenko, Temasek Defence Systems Institute, National University of Singapore, 2012–2015, S\$300,000.
6. *Special Project for DARPA UAVForge Competition*, DSO National Laboratories, Jan.–May 2012, S\$230,040.
7. *Development of Autonomous Micro Aerial Vehicles*, with T. H. Lee and P. Tan, DSO National Laboratories, 2011–2013, S\$625,800.
8. *Optimal Motion Planning in Obstacle-Rich Environment*, with W. Kang (PI, Naval Postgraduate School, USA), Temasek Defence Systems Institute, National University of Singapore, 2010–2013, US\$148,521.
9. *Development of a Sophisticated 3D Indoor Navigation System for UAVs*, with H. Lin and T. H. Lee, Temasek Defence Systems Institute, National University of Singapore, 2009–2012, S\$300,000.
10. *Development of Multi-UAV Testbeds and Vision-Based Navigation and Motion Coordination*, with K. Y. Lum and K. Peng, Temasek Laboratories, National University of Singapore, 2009–2013, S\$200,000.
11. *Cooperative Reconfiguration Control for Multiple Unmanned Air Vehicles*, with H. Lin (PI), T. H. Lee and C. Chen, Temasek Defence Systems Institute, National University of Singapore, 2008–2011, S\$300,000.

12. *Technologies to Lead Unmanned Air Vehicles via Manned Air Vehicles*, with T. H. Lee and R. Teo, Temasek Defence Systems Institute, National University of Singapore, 2007–2010, S\$300,000.
13. *Nonlinear Flight Model Identification & Control for Vertical Take-off and Landing UAV in Formation*, with K. Y. Lum and K. Peng, Temasek Laboratories, National University of Singapore, 2007–2009, S\$100,000.
14. *Nonlinear Control of Unmanned Flying Vehicles*, Defence Science & Technology Agency, Singapore, 2003–2006, S\$700,000.
15. *Compensation of Friction in Hard Disk Drives*, with T. H. Lee, National University of Singapore, 2003–2005, S\$130,432.
16. *Virtual Reality Interface for Web-Based Remote Experimentation*, with C. C. Ko (PI), Singapore Advanced Research & Education Network (SingAREN), 2001–2003, S\$336,000.
17. *Dual Stage Servo System for Hard Disk Drives*, with T. H. Lee and G. Guo, National University of Singapore, 2000–2004, S\$312,175.
18. *Web-based Virtual Laboratory*, with C. C. Ko (PI), National University of Singapore, 1998–2000, S\$174,650.
19. *Dual Actuator Control System for Read/Write Head Actuation in Rotating Memory Devices*, with Siri Weerasooriya and Lee Tong Heng, National University of Singapore, 1996–1999, S\$178,000.
20. *Gain Scheduling for Robust Controllers in Flight Control Systems*, with Lee Tong Heng and Poh Eng Kee, Defence Science Organisation, Ministry of Defence, Singapore, 1994–1995, S\$5,000.

## PhD Students Supervised/Co-Supervised

1. Yu Heng Tan, PhD, on-going
2. Xiaodong Liu, PhD, on-going
3. Menglu Lan, PhD (NGS Scholar), on-going
4. Jiabin Li, PhD (NGS Scholar), 2018
5. Yingcai Bi, PhD (NGS Scholar), 2018
6. Yijie Ke, PhD, 2017
7. Kangli Wang, PhD (President Fellow), 2017
8. Zhi Qiao, PhD (NGS Scholar), 2016
9. Shupeng Lai, PhD (NGS Scholar), 2016
10. Limiao Bai, PhD (NGS Scholar), 2016
11. Kun Li, PhD, 2015
12. Jinqiang Cui, PhD (NGS Scholar), 2015
13. Kevin Ang, PhD (DSO Scholar), 2015
14. Swee King Phang, PhD (NGS Scholar), 2014

15. Shiyu Zhao, PhD (NGS Scholar), 2014
16. Fei Wang, PhD (NGS Scholar), 2014
17. Xiaoyang Li, PhD, 2013
18. Ali Karimoddini, PhD, 2013
19. Xiaomeng Liu, PhD, 2013
20. Yajun Sun, PhD, 2013
21. Xiaolian Zheng, PhD, 2012
22. Xiangxu Dong, PhD, 2012
23. Feng Lin, PhD, 2011
24. Ben Yun, PhD, 2010
25. Guowei Cai, PhD, 2009
26. Chin-Kwan Thum, PhD, 2009
27. Chee-Khiang Pang, PhD, 2007
28. Guoyang Cheng, PhD, 2006
29. Yingjie He, PhD, 2006
30. Shijian Lu, PhD, 2005
31. Minghua He, PhD, 2003
32. Zhongming Li, PhD, 2003
33. Jianping Chen, PhD, 2003
34. Venkatakrishnan Venkataramanan, PhD, 2002
35. Kexiu Liu, PhD, 2001

## **Master of Engineering Students Supervised/Co-Supervised**

1. Junji Zhu, Master of Engineering, on-going
2. Yu Chen, Master of Engineering, on-going
3. Shuai Zhang, Master of Engineering, 2018
4. Xu Yan, Master of Engineering, 2018
5. Mingjie Lao, Master of Engineering, 2018
6. Xudong Chen, Master of Engineering, 2018
7. Hongyu Tian, Master of Engineering, 2018
8. Hailong Qin, Master of Engineering, 2017

9. Tao Pang, Master of Engineering, 2016
10. Peidong Liu, Master of Engineering, 2015
11. Remus Chua, Master of Engineering, 2003
12. Chao Wu, Master of Engineering, 2003
13. Guowen Zeng, Master of Engineering, 2001
14. Xinmin Liu, Master of Engineering, 2000
15. Chen Lin, Master of Engineering, 2000
16. Shihong Chen, Master of Engineering, 2000
17. Teck-Beng Goh, Master of Engineering, 1999
18. Feng Gu, Master of Engineering, 1999
19. Lan Wang, Master of Engineering, 1998
20. Xiaoping Hu, Master of Engineering, 1998
21. Boon-Choy Siew, Master of Engineering, 1997
22. Jun He, Master of Engineering, 1997
23. Yi Guo, Master of Engineering, 1996

## **Undergraduate and Graduate Courses Taught**

1. *Introduction to Control Systems*, Washington State University, Course Level: 4th Year
2. *Linear Systems*, State University of New York, Stony Brook, Course Level: Graduate
3. *Optimal Control*, State University of New York, Stony Brook, Course Level: Graduate
4. *Computer Control Systems*, National University of Singapore, Course Level: Graduate
5. *Control Systems I*, National University of Singapore, Course Level: 4th Year
6. *Optimal Control Systems*, National University of Singapore, Course Level: Graduate
7. *Electrical Engineering (Circuits)*, National University of Singapore, Course Level: 1st Year
8. *Engineering Mathematics III*, National University of Singapore, Course Level: 2nd Year
9. *Linear Algebra and Numerical Analysis*, National University of Singapore, Course Level: 3rd Year
10. *Control Systems*, National University of Singapore, Course Level: Postgraduate Diploma Course
11. *Circuits*, National University of Singapore, Course Level: 2nd Year
12. *Digital Control Systems*, National University of Singapore, Course Level: 3rd Year
13. *Multivariable Control Systems*, National University of Singapore, Course Level: Graduate
14. *Analytical Methods in ECE*, National University of Singapore, Course Level: 2nd Year

15. *EE Foundation*, National University of Singapore, Course Level: Pre-admission
16. *Electrical Engineering (Applications)*, National University of Singapore, Course Level: 1st Year
17. *Special Topic in Automation and Control*, National University of Singapore, Course Level: Graduate
18. *Advanced in Intelligent Systems*, National University of Singapore, Course Level: 4th Year
19. *Feedback Control Systems*, National University of Singapore, Course Level: 3rd Year

\*\*\* For information on my international conference activities, invited talks, workshops, short courses, and other activities, please visit my personal website at <http://uav.ece.nus.edu.sg/~bmchen/>.