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1 General Information

1.1 Academic Qualifications

- **Ph.D.** in Electrical Engineering and Computer Science, 2008
Massachusetts Institute of Technology, USA
Topic: Decentralized Detection in Resource-limited Sensor Network Architectures
Advisors: John Tsitsiklis and Moe Z. Win
- **MS** in Electrical Engineering, 2002
Stanford University, USA
- **BS** in Mathematics and Electrical Engineering with *distinction*, 2002
Stanford University, USA

1.2 Awards and Honors

- **IEEE Signal Processing Society Young Author Best Paper Award**, 2016.
Awarded with Jack Ho. I am a co-author of the paper and the main supervisor of Jack.
- **Early Career Teaching Excellence Award**, 2016.
School of Electrical and Electronic Engineering, Nanyang Technological University. In recognition of tenure-track assistant professors who have consistently demonstrated excellent teaching.
- **Tan Chin Tuan Exchange Fellowship in Engineering**, 2015.
- **Best Student Paper Award**, 46th Asilomar Conference on Signals, Systems, and Computers, 2012.
The Asilomar Conference on Signals, Systems, and Computers is a prestigious conference in signal processing and computer systems, and is technically co-sponsored by the IEEE Signal Processing Society.
- **Frederick Emmons Terman Engineering Scholastic Award, Stanford University**, 2002.
Awarded to the top engineering students.
- **President's Award, Stanford University**, 1999.
Awarded to top students for academic excellence.
- **Singapore Technologies Undergraduate Scholarship**, 1998.
Scholarship award with fully paid tuition for tertiary studies at select US and UK universities.

1.3 Work Experience

- Sep. 2017 – present, Associate Professor, Nanyang Technological University, Singapore
- Mar. 2010 – Aug. 2017, Assistant Professor, Nanyang Technological University, Singapore
- Oct. 2008 – Mar. 2010, Associate, Quantitative Strategy, Morgan Stanley Asia Limited, Hong Kong
- Feb. 2008 – Sep. 2008, Associate, Quantitative Credit Research, Lehman Brothers Asia Limited
- Aug. 2004 – Dec. 2007, Research Assistant/Teaching Assistant, Massachusetts Institute of Technology

1.4 Consulting Experience

- Apr. 2010 – Mar. 2012, Financial Modelling, Morgan Stanley Asia Limited

1.5 Professional Memberships

- Senior Member, IEEE

2 Research Activities

2.1 Competitive External Research Grant Statistics

Competitive External Grants (S\$)			
	as PI	as co-PI	Overall
Total	2,592,616	3,490,873	6,083,489
Ongoing	1,568,191	3,490,873	5,059,064
Completed	1,024,425	0	1,024,425
Last 3 years	1,668,191	3,267,873	4,936,064

2.2 Ongoing Research Grants

Abbreviations: NRF - National Research Foundation; NTU - Nanyang Technological University

- PI, “Energy Efficient Resilient Distributed Inference”, NRF/Delta Electronics Corp Lab/NTU, Jul. 2016 – Jun. 2019, S\$434,600
- Co-PI, “Project Moscato: A Holistic Approach to Combatting Insider Threats”, Ministry of Defence, Dec. 2015 – Dec. 2018, S\$308,000 (total grant: S\$4,762,600)
- Co-PI, “UWB Based Collaborative Decentralised Localisation”, NRF/ST Dynamics Corp Lab/NTU, Jul. 2015 – Jun. 2018, S\$427,400 (total grant: S\$1,187,000)
- Co-PI, “Development of NTU/NXP-Intelligent Transport System Test-Bed”, Economic Development Board, Dec. 2014 – Nov. 2018, S\$2,568,300 (total grant: S\$14,098,000)
- PI, “Robust Learning in Social Networks: Fundamental Limits and Strategies”, Ministry of Education Academic Research Fund Tier 2, Jan. 2015 – Dec. 2017, S\$652,998

2.3 Completed Research Grants

- PI, “Identifying Infection Sources in a Network”, Ministry of Education Academic Research Fund Tier 2, Apr. 2014 – Mar. 2017, S\$507,593
- Co-PI, “Project Urban-Nav: Urban Outdoor Navigation of Unmanned Platform under a GPS Challenged Environment”, Defence Research and Technology Office, Dec. 2013 – Feb. 2017, S\$223,000 (total grant: S\$1,854,000)
- PI, “Multi-Target Track Before Detect On TDOA-FDOA Based Measurements”, Defence Science Organization National Laboratories, Mar. 2015 – Feb. 2016, S\$100,000
- PI, “GPS Free TDOA/FDOA Geolocation and Tracking II”, Defence Science Organization National Laboratories, Mar. 2013 – Nov. 2015, S\$236,500
- PI, “Project Technifibre: Cooperative and Distributed Tracking in Urban Environments”, Defence Science and Technology Agency, May 2012 – May 2015, S\$622,725
- PI, “Intelligent Information Fusion and Inference in Sensor Networks”, Ministry of Education Academic Research Fund Tier 1, Mar. 2011 – Feb. 2014, S\$100,000
- PI, “UWB Monitoring System for Sleep Studies”, Nanyang Institute of Technology in Health and Medicine, Jul. 2011 – Jan. 2013, S\$70,000
- PI, “GPS Free TDOA/FDOA Geolocation and Tracking”, Defence Research and Technology Office, Nov. 2011 – Nov. 2012, S\$65,200
- PI, “Distributed Signal Processing and Algorithms for Decentralized Decision Making and Computation in Sensor Networks”, NTU Startup Grant, Mar. 2010 – Mar. 2013, S\$100,000

2.4 Published/Accepted Journal Papers

1. Y. Yu, G. Xiao, G. Li, W. P. Tay, and H. F. Teoh, "Opinion diversity and community formation in adaptive networks," *Chaos*, Oct. 2017
2. F. Quitin, P. De Doncker, F. Horlin, and W. P. Tay, "Virtual multi-antenna array for estimating the direction of a transmitter: system, bounds and experimental results," *IEEE Trans. Veh. Technol.*, 2017, accepted
3. W. Luo, W. P. Tay, and M. Leng, "On the universality of Jordan centers for estimating infection sources in tree networks," *IEEE Trans. Inf. Theory*, vol. 63, no. 7, pp. 4634 – 4657, Jul. 2017
4. F. Ji, W. P. Tay, and L. Varshney, "An algorithmic framework for estimating rumor sources with different start times," *IEEE Trans. Signal Process.*, vol. 65, no. 10, pp. 2517 – 2530, May 2017
5. J. Tang, W. P. Tay, T. Q. S. Quek, and B. Liang, "System cost minimization in cloud RAN with limited fronthaul capacity," *IEEE Trans. Wireless Commun.*, vol. 16, no. 5, pp. 3371 – 3384, May 2017
6. Y. Wang, W. P. Tay, and W. Hu, "A multitask diffusion strategy with optimized inter-cluster cooperation," *IEEE J. Sel. Topics Signal Process.*, vol. 11, no. 3, pp. 504 – 517, Mar. 2017
7. M. Leng, W. P. Tay, F. Quitin, C. Cheng, S. G. Razul, and C. M. S. See, "Anchor-aided joint localization and synchronization using SOOP: Theory and experiments," *IEEE Trans. Wireless Commun.*, vol. 15, no. 11, pp. 7670 – 7685, Nov. 2016
8. Y. Zhang, W. P. Tay, K. H. Li, M. Essegir, and D. Gaiti, "Learning temporal-spatial spectrum reuse," *IEEE Trans. Commun.*, vol. 64, no. 7, pp. 3092 – 3103, Jul. 2016
9. W. Luo, W. P. Tay, and M. Leng, "Infection spreading and source identification: A hide and seek game," *IEEE Trans. Signal Process.*, vol. 64, no. 16, pp. 4228 – 4243, Aug. 2016
10. J. Ho, W. P. Tay, T. Q. S. Quek, and E. K. P. Chong, "Robust decentralized detection and social learning in tandem networks," *IEEE Trans. Signal Process.*, vol. 63, no. 19, pp. 5019 – 5032, Oct. 2015, **IEEE Signal Processing Society Young Author Best Paper Award**
11. J. Tang, W. P. Tay, and T. Q. S. Quek, "Cross-layer resource allocation with elastic service scaling in cloud radio access network," *IEEE Trans. Wireless Commun.*, vol. 14, no. 9, pp. 5068 – 5081, Sep. 2015
12. W. Hu and W. P. Tay, "Multi-hop diffusion LMS for energy-constrained distributed estimation," *IEEE Trans. Signal Process.*, vol. 63, no. 15, pp. 4022 – 4036, Aug. 2015
13. W. Xu, F. Quitin, M. Leng, W. P. Tay, and S. G. Razul, "Distributed localization of a RF target in NLOS environments," *IEEE J. Sel. Areas Commun.*, vol. 33, no. 7, pp. 1 – 14, Jul. 2015
14. W. P. Tay, "Whose opinion to follow in multihypothesis social learning? A large deviations perspective," *IEEE J. Sel. Topics Signal Process.*, vol. 9, no. 2, pp. 344 – 359, Mar. 2015
15. M. Leng, W. P. Tay, T. Q. S. Quek, and H. Shin, "Distributed local linear parameter estimation using Gaussian SPAWN," *IEEE Trans. Signal Process.*, vol. 63, no. 1, pp. 244 – 257, Jan. 2015
16. Y. Zhang, W. P. Tay, K. H. Li, and D. Gaiti, "Distributed boundary estimation for spectrum sensing in cognitive radio networks," *IEEE J. Sel. Areas Commun.*, vol. 32, no. 11, pp. 1961 – 1973, Nov. 2014
17. W. Luo, W. P. Tay, and M. Leng, "How to identify an infection source with limited observations," *IEEE J. Sel. Topics Signal Process.*, vol. 8, no. 4, pp. 586 – 597, Aug. 2014
18. J. Tang, W. P. Tay, and Y. Wen, "Dynamic request redirection and elastic service scaling in cloud-centric media networks," *IEEE Trans. Multimedia*, vol. 16, no. 5, pp. 1434 – 1445, Aug. 2014
19. M. Leng, W. P. Tay, C. M. S. See, S. G. Razul, and M. Z. Win, "Modified CRLB for cooperative geolocation of two devices using signals of opportunity," *IEEE Trans. Wireless Commun.*, vol. 13, no. 7, pp. 3636 – 3649, Jul. 2014
20. W. Hu and W. P. Tay, "An integer linear programming approach for a class of bilinear integer programs," *Oper. Res. Lett.*, vol. 42, no. 3, pp. 226 – 230, May 2014

21. W. Luo, W. P. Tay, and M. Leng, "Identifying infection sources and regions in large networks," *IEEE Trans. Signal Process.*, vol. 61, no. 11, pp. 2850 – 2865, Jun. 2013
22. D. W. Soh, W. P. Tay, and T. Q. S. Quek, "Randomized information dissemination in dynamic environments," *IEEE/ACM Trans. Netw.*, vol. 21, no. 3, pp. 681 – 691, Jun. 2013
23. T. M. Nguyen, Y. Jeong, T. Q. S. Quek, W. P. Tay, and H. Shin, "Interference alignment in a Poisson field of MIMO femtocells," *IEEE Trans. Wireless Commun.*, vol. 12, no. 6, pp. 2633 – 2645, Jun. 2013
24. Y. Nijssure, W. P. Tay, E. Gunawan, F. Wen, Y. Zhang, Y. L. Guan, and A. P. Chua, "An impulse radio ultra wideband system for contactless non-invasive respiratory monitoring," *IEEE Trans. Biomed. Eng.*, vol. 60, no. 6, pp. 1509 – 1517, Jun. 2013
25. W. P. Tay, "The value of feedback in decentralized detection," *IEEE Trans. Inf. Theory*, vol. 58, no. 12, pp. 7226 – 7239, Dec. 2012
26. G. Hu, W. P. Tay, and Y. Wen, "Cloud robotics: architecture, challenges and applications," *IEEE Network, Special Issue on Machine and Robotic Networking*, vol. 26, no. 3, pp. 21 – 28, May 2012
27. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Bayesian detection in bounded height tree networks," *IEEE Trans. Signal Process.*, vol. 57, no. 10, pp. 4042 – 4051, Oct. 2009
28. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "On the subexponential decay of detection error probabilities in long tandems," *IEEE Trans. Inf. Theory*, vol. 54, no. 10, pp. 4767 – 4771, Oct. 2008
29. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Data fusion trees for detection: Does architecture matter?" *IEEE Trans. Inf. Theory*, vol. 54, no. 9, pp. 4155 – 4168, Sep. 2008
30. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "On the impact of node failures and unreliable communications in dense sensor networks," *IEEE Trans. Signal Process.*, vol. 56, no. 6, pp. 2535 – 2546, Jun. 2008
31. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Asymptotic performance of a censoring sensor network," *IEEE Trans. Inf. Theory*, vol. 53, no. 11, pp. 4191 – 4209, Nov. 2007

2.5 Refereed Conference Proceedings

1. W. Tang, F. Ji, and W. P. Tay, "Multiple sources identification in networks with partial timestamps," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Montreal, Canada, Nov. 2017
2. T. S. Lau and W. P. Tay, "Optimal sampling policy for quickest change detection," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Montreal, Canada, Nov. 2017
3. Y. Song, W. P. Tay, and C. L. Law, "Robust decentralized localization in impulsive noise," in *Int. Conf. on Indoor Positioning and Indoor Navigation*, Sapporo, Japan, Sep. 2017
4. Y. Song, C. X. Wang, W. P. Tay, and C. L. Law, "Grid-based belief propagation," in *Int. Conf. on Indoor Positioning and Indoor Navigation*, Sapporo, Japan, Sep. 2017
5. Q. Kang and W. P. Tay, "Sequential multi-class labeling in crowdsourcing: A Ulam-Renyi game approach," in *IEEE/WIC/ACM Int. Conf. on Web Intelligence*, Leipzig, Germany, Aug. 2017
6. M. Sun and W. P. Tay, "Inference and data privacy in IoT networks," in *Proc. IEEE Workshop on Signal Processing Advances in Wireless Commun.*, Hokkaido, Japan, Jul. 2017, *invited paper*
7. F. Ji, W. Tang, W. P. Tay, and E. K. P. Chong, "Inferring network topology from information cascades," in *Proc. IEEE Int. Symp. on Inform. Theory*, Aachen, Germany, Jun. 2017
8. M. Z. A. Bhotto and W. P. Tay, "Non-Bayesian social learning with observation reuse and soft switching," in *Proc. IEEE Int. Conf. on Commun.*, Paris, France, May 2017
9. X. He and W. P. Tay, "Multilayer sensor network for information privacy," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017

10. T. S. Lau, W. P. Tay, and V. V. Veeravalli, "Quickest change detection with unknown post-change distribution," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017
11. W. Tang and W. P. Tay, "A particle filter for sequential infection source estimation," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017
12. J. Yang, W. P. Tay, and X. Zhong, "A dynamic Bayesian nonparametric model for blind calibration of sensor networks," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017
13. F. Ji, W. P. Tay, and L. R. Varshney, "Estimating the number of infection sources in a tree," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Washington, DC, USA, Dec. 2016
14. P. Oguz-Ekim, K. Ali, Z. Madadi, F. Quitin, and W. P. Tay, "Proof of concept study using DSRC, IMU and map fusion for vehicle localization in GNSS-denied environments," in *Proc. IEEE Intelligent Transportation Systems Conf.*, Rio de Janeiro, Brazil, Nov. 2016
15. X. Zhong, Y. Yan, and W. P. Tay, "Posterior Cramér-Rao lower bound for mobile emitter tracking based on a TDOA-FDOA multi-measurement model," in *Proc. of IEEE Int. Conf. on Ubiquitous Wireless Broadband*, Nanjing, China, Oct. 2016, *invited paper*
16. Z. Madadi, F. Quitin, and W. P. Tay, "Receiver tracking using signals of opportunity from asynchronous RF beacons in GNSS-denied environments," in *Proc. IEEE Veh. Technol. Conf.*, Montreal, Canada, Sep. 2016
17. F. Quitin, X. Zhong, V. Govindaraj, and W. P. Tay, "Virtual multi-antenna array for estimating the angle-of-arrival of a RF transmitter," in *Proc. IEEE Veh. Technol. Conf.*, Montreal, Canada, Sep. 2016
18. X. He, W. P. Tay, and M. Sun, "Privacy-aware decentralized detection using linear precoding," in *Proc. IEEE Sensor Array and Multichannel Signal Processing Workshop*, Rio de Janeiro, Brazil, Jul. 2016
19. X. Zhong, W. P. Tay, M. Leng, S. G. Razul, and C. M. S. See, "TDOA-FDOA multiple target detection and tracking in the presence of measurement errors and biases," in *Proc. IEEE Workshop on Signal Proc. Advances in Wireless Commun.*, Edinburgh, UK, Jul. 2016, *invited paper*
20. J. Tang, T. Q. S. Quek, and W. P. Tay, "Joint resource segmentation and transmission rate adaptation in cloud RAN with caching as a service," in *Proc. IEEE Workshop on Signal Proc. Advances in Wireless Commun.*, Edinburgh, UK, Jul. 2016, *invited paper*
21. F. Ji and W. P. Tay, "Identifying rumor sources with different start times," in *Proc. IEEE Workshop on Statistical Signal Processing*, Palma de Mallorca, Spain, Jun. 2016
22. Y. Wang, W. P. Tay, and W. Wu, "Multitask diffusion LMS with optimized inter-cluster cooperation," in *Proc. IEEE Workshop on Statistical Signal Processing*, Palma de Mallorca, Spain, Jun. 2016
23. X. Liu, G. Xiao, W. P. Tay, G. Ma, and H. Xi, "Synchronization of pinning networks with Markovian switching topologies and event-triggered communication," in *World Congress on Intelligent Control and Automation*, Guilin, China, Jun. 2016
24. M. Sun and W. P. Tay, "Privacy-preserving nonparametric decentralized detection," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Shanghai, China, Mar. 2016
25. Y. Zhang, W. P. Tay, K. H. Li, M. Essegir, and D. Gaiti, "Opportunistic spectrum access with temporal-spatial reuse in cognitive radio networks," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Shanghai, China, Mar. 2016
26. Y. Wang, W. P. Tay, and W. Hu, "An energy-efficient diffusion strategy over adaptive networks," in *Proc. Int. Conf. on Information, Communications and Signal Processing*, Singapore, Dec. 2015
27. G. Yang, W. P. Tay, and Y. L. Guan, "Optimal wireless power transfer and harvested power allocation for diffusion LMS in wireless sensor networks," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Orlando, USA, Dec. 2015

28. J. Tang, W. P. Tay, T. Q. S. Quek, and B. Liang, "Towards system cost minimization in cloud radio access network," in *Proc. Asilomar Conf. on Signals, Systems and Computers*, Asilomar, USA, Nov. 2015, *invited paper*
29. M. Leng, F. Quitin, C. Cheng, W. P. Tay, S. G. Razul, and C. M. S. See, "Joint navigation and synchronization using SOOP in GPS-denied environments: Algorithm and empirical study," in *Proc. Sensor Signal Processing for Defence Conf.*, Edinburgh, UK, Sep. 2015
30. W. Luo, W. P. Tay, and M. Leng, "Rumor spreading maximization and source identification in a social network," in *Proc. IEEE/ACM Int. Conf. on Advances in Social Networks Analysis and Mining*, Paris, France, Aug. 2015
31. W. Luo, W. P. Tay, M. Leng, and M. K. Guevara, "On the universality of the Jordan center for estimating the rumor source in a social network," in *Proc. IEEE Int. Conf. on Digital Signal Processing*, Singapore, Jul. 2015
32. G. Garcia, W. Hu, W. P. Tay, and H. Wymeersch, "Joint scheduling and localization in UWB networks," in *Proc. IEEE Int. Conf. on Commun.*, London, UK, Jun. 2015, *invited paper*
33. Z. Madadi, F. Quitin, and W. P. Tay, "RF transmitter geolocation based on signal periodicity: concept and implementation," in *Proc. IEEE Int. Conf. on Commun.*, London, UK, Jun. 2015
34. C. Cheng, W. Hu, and W. P. Tay, "Localization of a moving non-cooperative RF target in NLOS environment using RSS and AOA measurements," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Brisbane, Australia, Apr. 2015
35. W. Hu, W. P. Tay, A. Harilal, and G. Xiao, "Network infection source identification under the SIRI model," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Brisbane, Australia, Apr. 2015
36. Z. Madadi, F. Quitin, and W. P. Tay, "Periodic RF transmitter geolocation using a mobile receiver," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Brisbane, Australia, Apr. 2015
37. Y. Zhang, W. P. Tay, K. H. Li, M. Essegir, and D. Gaiti, "Distributed opportunistic spectrum access with spatial reuse in cognitive radio networks," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Atlanta, US, Dec. 2014
38. J. Tang, W. P. Tay, and T. Q. S. Quek, "Cross-layer resource allocation in cloud radio access network," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Atlanta, US, Dec. 2014, *invited paper*
39. W. Xu, F. Quitin, M. Leng, W. P. Tay, and S. G. Razul, "Distributed localization of a non-cooperative RF target in NLOS environments," in *Proc. Int. Conf. on Information Fusion*, Salamanca, Spain, Jul. 2014
40. W. Hu and W. P. Tay, "Generalized diffusion adaptation for energy-constrained distributed estimation," in *Proc. Int. Conf. on Information Fusion*, Salamanca, Spain, Jul. 2014
41. J. Ho, W. P. Tay, and T. Q. S. Quek, "Robust detection and social learning in tandem networks," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Florence, Italy, May 2014
42. W. Luo and W. P. Tay, "Estimating infection sources in a network with incomplete observations," in *Proc. IEEE Global Conf. on Signal and Information Processing*, Austin, USA, Dec. 2013
43. W. Xu, M. Leng, W. P. Tay, and S. G. Razul, "Distributed localization of an unknown target in NLOS environments," in *Proc. Int. Conf. on Information, Communications and Signal Processing*, Tainan, Taiwan, Dec. 2013
44. W. Luo and W. P. Tay, "Finding an infection source under the SIS model," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Vancouver, Canada, May 2013
45. Y. Zhang, W. P. Tay, K. H. Li, and D. Gaiti, "Distributed boundary estimation for spectrum sensing in cognitive radio networks," in *Proc. IEEE Wireless Commun. and Networking Conf.*, Shanghai, China, Apr. 2013

46. M. Leng, W. P. Tay, C. M. S. See, and S. G. Razul, "Fundamental limits for location and velocity estimation using asynchronous beacons," in *Proc. IEEE Wireless Commun. and Networking Conf.*, Shanghai, China, Apr. 2013
47. M. Leng, W. P. Tay, C. M. S. See, and S. G. Razul, "GPS-free localization using asynchronous beacons," in *Proc. IEEE Int. Conf. on Mobile Ad-hoc and Sensor Networks*, Chengdu, China, Dec. 2012, *invited paper*
48. W. Luo and W. P. Tay, "Identifying multiple infection sources in a network," in *Proc. Asilomar Conf. on Signals, Systems and Computers*, Asilomar, USA, Nov. 2012, *invited paper, best student paper award*
49. Y. Nijasure, W. P. Tay, E. Gunawan, and J. Lai, "A Bayesian nonparametric approach to tumor detection using UWB imaging," in *Proc. of IEEE Int. Conf. on Ubiquitous Wireless Broadband*, New York, USA, Sep. 2012
50. F. Wen and W. P. Tay, "Localization for mixed near-field and far-field sources using data supported optimization," in *Proc. Int. Conf. on Information Fusion*, Singapore, Jul. 2012
51. F. Wen and W. P. Tay, "Tensor decomposition based R-dimensional matrix pencil method," in *Proc. Int. Conf. on Information Fusion*, Singapore, Jul. 2012
52. W. Luo and W. P. Tay, "Identifying infection sources in large tree networks," in *Proc. IEEE Int. Conf. on Sensing, Communication, and Networking*, Seoul, Korea, Jun. 2012
53. C. Cheng, W. P. Tay, and G. B. Huang, "Extreme learning machines for intrusion detection," in *Proc. IEEE Int. Joint Conf. on Neural Networks*, Brisbane, Australia, Jun. 2012
54. M. Leng, W. P. Tay, and T. Q. S. Quek, "Cooperative and distributed localization for wireless sensor networks in multipath environments," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Kyoto, Japan, Mar. 2012
55. M. Leng, W. P. Tay, and T. Q. S. Quek, "Cooperative and distributed localization for wireless sensor networks in multipath environments," in *Proc. Int. Conf. on Information, Communications and Signal Processing*, Singapore, Dec. 2011
56. D. W. Soh, T. Q. S. Quek, and W. P. Tay, "Randomized rumor spreading in non-static networks," in *Proc. IEEE Int. Conf. on ICT Convergence*, Seoul, Korea, Sep. 2011, *invited paper*
57. D. W. Soh, T. Q. S. Quek, and W. P. Tay, "Randomized broadcast in dynamic network environments," in *Proc. IEEE Workshop on Signal Processing Advances in Wireless Commun.*, San Francisco, USA, Jun. 2011
58. W. P. Tay and J. N. Tsitsiklis, "Error exponents for decentralized detection in feedback architectures," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Prague, Czech Republic, May 2011
59. W. P. Tay and J. N. Tsitsiklis, "The value of feedback for decentralized detection in large sensor networks," in *Proc. Int. Sym. on Wireless and Pervasive Computing*, Hong Kong, Feb. 2011
60. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "On the sub-exponential decay of detection probabilities in long tandems," in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Honolulu, USA, Apr. 2007, pp. 837–840
61. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Bayesian detection in bounded height tree networks," in *Proc. of Data Compression Conf.*, Snowbird, USA, Mar. 2007, pp. 243–252
62. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Detection in dense wireless sensor networks," in *Proc. IEEE Wireless Commun. and Networking Conf.*, Hong Kong, Mar. 2007, pp. 3483–3488
63. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Data fusion trees for detection: Does architecture matter?" in *Proc. Allerton Conf. on Commun., Control and Computing*, Monticello, USA, Sep. 2006
64. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Asymptotically optimal distributed censoring," in *Proc. IEEE Int. Symp. on Inform. Theory*, Seattle, USA, Jul. 2006, pp. 625–629
65. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Censoring sensors: Asymptotics and the value of cooperation," in *Proc. Conf. on Inform. Sci. and Sys.*, Princeton, USA, Mar. 2006, pp. 62–67

2.6 Book Chapters

1. M. Leng and W. P. Tay, "Fundamental limits of self-localization for cooperative robotic platforms using signals of opportunity," in *Cooperative Robots and Sensor Networks*. New York, NY: Springer, 2015, pp. 159 – 181
2. W. P. Tay and J. N. Tsitsiklis, "Error exponents for decentralized detection in tree networks," in *Networked Sensing Information and Control*, V. Saligrama, Ed. New York, NY: Springer, 2008, pp. 73 – 92, *invited chapter*

2.7 Thesis

1. W. P. Tay, "Decentralized detection in resource-limited sensor network architectures," Ph.D. dissertation, Massachusetts Institute of Technology, Dec. 2007

2.8 Other Publications

1. Z. Madadi, F. Quitin, and W. P. Tay, "Vehicle localization using periodic transmissions from an RSU in GNSS denied environments," in *Proc. ITS Asia-Pacific Forum*, Nanjing, China, Apr. 2015
2. Y. Nijsure, W. P. Tay, and E. Gunawan, "An impulse radio ultra wideband system for contactless non-invasive respiratory monitoring," *Asia Pacific BioTech News*, vol. 16, no. 10, pp. 28–31, Oct. 2012, *invited paper*

2.9 Patents and Copyrights

1. X. He, W. P. Tay, and M. Sun, "Privacy engine for IoT device networks," Singapore Provisional Patent 10 201 604 263X, May. 26, 2016
2. W. P. Tay, F. Quitin, and Z. Madadi, "Geolocation using virtual TDOA with asynchronous clocks," Singapore Provisional Patent 10 201 408 393V, Jan. 9, 2015
3. W. P. Tay and F. Quitin, "Localization of non-cooperative RF targets in cluttered environments," US Provisional Patent PAT/078/14/14/USPRV, Jun. 24, 2014
4. W. Hu and W. P. Tay, "A generalized diffusion adaptation strategy for energy-constrained estimation," NTU Copyright TD/077/14, May 30, 2014
5. W. P. Tay, E. Gunawan, and Y. L. Guan, "Method for contactless respiratory monitoring using multiple UWB transceivers," NTU Copyright TD/215/12, Feb. 26, 2012

2.10 Selected Invited Talks and Presentations (Excluding Conference Papers)

Abbreviations: NTU - Nanyang Technological University; NXP - NXP Semiconductors N.V.; Delta - Delta Electronics, Inc.; I2R - Institute for Infocomm Research; KTH - KTH Royal Institute of Technology; STEngg - Singapore Technologies Engineering; UTT - University of Technology of Troyes

1. "Detecting Sources of Cascading Failures," NTU-Singapore Power Workshop, NTU, Mar. 2017
2. "Cooperative Vehicular Positioning Through Data Fusion in GNSS-denied Environments," NTU-NXP Workshop, NTU, Jan. 2017
3. "Towards Information Privacy for the Internet of Things," Singapore University of Technology and Design, Singapore, Oct. 2016
4. "Energy Efficient Resilient Distributed Inference," NTU-Delta Workshop, NTU, Aug. 2016
5. "Privacy Engine for IoT Device Networks," NTU-Delta Workshop, NTU, Aug. 2016
6. "Algorithms for Network Infection Sources Estimation," Singapore University of Technology and Design, Singapore, Jun. 2016

7. "Algorithms for Network Infection Sources Estimation," Chongqing University, Jun. 2016
8. "Proof of Concept Study Using DSRC, IMU and Map Fusion for Vehicle Localization in GNSS-Denied Environments," Chongqing University of Posts and Telecommunications, Jun. 2016
9. "Towards Information Privacy for the Internet of Things," International Conference on Communications and Networking in China (Chinacom), Chongqing, China, Jun. 2016
10. "Cooperative Vehicular Positioning Through Data Fusion in GNSS-denied Environments," NTU-NXP Workshop, NTU, Jun. 2016
11. "Network Infection Sources Estimation," University of Illinois at Urbana-Champaign, USA, Jul. 2015
12. "Asymptotics in Social Learning", University of Illinois at Urbana-Champaign, USA, Jul. 2015
13. "Cooperative Vehicular Positioning Through Data Fusion in GNSS-denied Environments," NTU-NXP Workshop, NTU, Dec. 2015
14. "Privacy-preserving Inference for IoT Networks," NTU-Delta Workshop, NTU, Oct. 2015
15. "Collaborative Social Sensing in IoT," KTH-NTU workshop on Urban Social Systems and Networking, NTU, Nov. 2015
16. "Social Learning in IoT Under Uncertainty," Cybersecurity Workshop with Tel Aviv University, NTU, Oct. 2015
17. "A Machine Learning Approach to Privacy-preserving Inference in IoT Networks," NTU-Delta Workshop, NTU, Oct. 2015
18. "Cooperative Vehicular Positioning Through Data Fusion in GNSS-denied Environments," NTU-NXP Workshop, NTU, Jul. 2015
19. "Localization Methods for Smart Mobility," NTU-I2R Smart Mobility Workshop, NTU, Mar. 2015
20. "Identifying Infection Sources in a Network," Singapore-UK Cybersecurity Workshop, NTU, Feb. 2015
21. "iMata: Information Management in Twitter Rumor Attacks," Singapore-United Kingdom Cybersecurity Workshop, NTU, Feb. 2015
22. "Identifying Infection Sources in a Network," National University of Singapore, Singapore, Jan. 2015
23. "Asymptotics in Social Learning," Hong Kong University, Jan. 2015
24. "Whose Opinion to Follow in Social Learning?," IEEE Taiwan-Hong Kong Joint Workshop on Information Theory and Communications, Hong Kong, Jan. 2015
25. "Optimizing collaborative parameter estimation through adaptive diffusion in sensor networks," NTU-Delta Workshop, NTU, Jan. 2015
26. "Intelligent Autonomous Mobile Robotic Networks for Distributed Sensing and Inference," NTU-STEngg Workshop, NTU, Apr. 2014
27. "Cooperative Network Localization for Robotic Platforms," NTU-STEngg Workshop, NTU, Apr. 2014
28. "Advanced Communications and Security for Future Large-scale Vehicle-to-vehicle Networks," NTU-KTH Workshop, NTU, Sep. 2014
29. "Cooperative Localization using V2X," Workshop on V2X Communication and Their Applications in ITS, NTU, Nov. 2014
30. "Source Identification for Rumor Spreading," Workshop on Cybersecurity, NTU, Sep. 2014
31. "Network Infection Source Estimation," UTT, France, Jul. 2014
32. "Distributed Localization of a Non-cooperative RF Target in NLOS Environments," Positioning, Navigation and Timing Workshop, Hawaii, USA, Jun. 2014
33. "Fundamental Limits for Geolocation Using Signals of Opportunity," Positioning, Navigation and Timing Workshop, Hawaii, USA, Jun. 2014
34. "Wireless Sensors for Vehicular Networks," Land Transport Authority, Singapore, Sep. 2013
35. "Distributed Detection and Tracking using Wireless Sensor Networks," Maritime and Port Authority of Singapore, Singapore, Feb. 2012
36. "Cloud-Enabled Robotics," Defence Science Organization Workshop, Singapore, Feb. 2012
37. "Distributed Decision Making," Centre for Strategic Infocomm Technologies, Singapore, Jun. 2010
38. "Information Fusion in Large Networks," Land Transport Authority, Singapore, May 2010
39. "Distributed Decision Making in Tree Networks," NTU-UTT Workshop, NTU, Apr. 2010

40. "Decentralized Detection in Large Sensor Networks," Qualcomm Inc., USA, Mar. 2007

3 Educational Activities

3.1 Completed Ph.D. Dissertation Supervisions

1. Luo Wuqiong, 08/2010 – 05/2015 *Identifying infection sources in a network.*
2. Tang Jianhua, 01/2011 – 10/2015, *Elastic service scaling optimization in cloud-based communication systems.*
3. Muhammad Sibtain Hamayun, 08/2010 – 06/2016, *Exploiting statistical side information to optimize secondary spectrum access.*
4. Zhang Yi, 01/2011 – 06/2017, *Learning methods for temporal-spatial opportunistic spectrum access in cognitive radio networks.*

3.2 Current Ph.D. Dissertation Supervisions

1. Ho Jun Feng Jack, 08/2012 – present, *Robust sensing in social networks*
2. Wang Yuan, 08/2012 – present, *Spatio-temporal sensing in sensor networks*
3. Sun Meng, 08/2014 – present, *Privacy preserving distributed detection and estimation methods*
4. Lau Tze Siong, 08/2015 – present, *Sampling and learning in social networks*
5. Kang Qiyu, 08/2015 – present, *Fundamental limits and strategies for crowdsourcing*
6. Tang Wenchang, 08/2015 – present, *Sequential and distributed infection detection and estimation*
7. Yang Jielong, 08/2015 – present, *Collaboration in the Internet of Things*
8. Wang Chongxiao, 08/2016 – present, *Distributed signal processing methods for localization systems*

3.3 Completed M.Eng. Dissertation Supervisions

1. Cheng Chi, 08/2011 – 05/2015, *Exploring the use of signals-of-opportunity for practical localization.*

3.4 Other Student Supervisions

1. **Supervision of MSc students:** Have successfully supervised 9 MSc students. Currently supervising 1 MSc student.
2. **Supervision of undergraduate students in last 3 years:** Have supervised 3 Undergraduate Research Experience on Campus (URECA) students, 10 Final Year Project (FYP) students, 10 Design and Innovation Project (DIP) students, and 15 Industrial Attachment/Orientation students.

3.5 Thesis and Oral Examinations

- Panel member for 12 internal Qualifying Examination cum Confirmation Exercises.
- Panel member for 8 external Qualifying Examination cum Confirmation Exercises.
- Internal examiner for 6 Ph.D. thesis.
- Panel member for 6 Ph.D. Oral Examinations.

3.6 Courses Taught

- EE2008/IM1001, Data Structures and Algorithms (about 400 students per course).
- EE4105/IM4105, Cellular Communication System Design (about 110 students per course).
- EE6713, Network Design and Simulation (about 40 students per course).
- EE7101, Fundamentals of Information Theory (about 10 students per course).

3.7 Courses Developed

- 2012, proposed new course EE7101 – Fundamentals of Information Theory. First developer of course materials for this class.
- 2015, developed new course materials for EE2008/IM1001 – Data Structures and Algorithms due to increase of weekly lecture hours from 2 hours to 3 hours.
- 2015, developed Technology Enabled Learning video lectures and online learning activities for EE2008/IM1001 – Data Structures and Algorithms.
- 2015, coordinated and developed online assessment and practice (OASIS) for EE2008/IM1001 – Data Structures and Algorithms.

4 Professional Activities

4.1 University Committee and Administrative Activities

1. Assistant Chair (Academic), School of Electrical and Electronic Engineering, Jun. 2017 – present.
2. Program director, Cyber and Network Security, INFINITUS, Centre for Infocomm Technology, Jan. 2015 – Sep. 2016.
3. Program director, Communications and Network Systems, INFINITUS, Centre for Infocomm Technology, Jan. 2013 – Dec. 2014.
4. Member, School of EEE outreach committee Jan. 2013 – Dec. 2013.

4.2 Professional Society Activities

1. Editor, IEEE Transactions on Wireless Communications, 2017 – present.
2. Associate Editor, IEEE Transactions on Signal Processing, 2015 – present.
3. Guest Editor, IEEE Transactions on Signal and Information Processing over Networks Special Issue on Distributed Information Processing in Social Networks, 2016 – 2017.
4. Member, Machine Learning for Signal Processing Technical Committee, IEEE Signal Processing Society, Jan. 2015 – present.
5. Member, Internet of Things Special Interest Group, IEEE Signal Processing Society, Mar. 2015 – present.
6. Chair, Interest Group on Distributed and Sensor Networks for Mobile Media Computing and Applications, IEEE Communications Society Technical Committee on Multimedia Communications, Oct. 2014 – present.
7. Vice-Chair, Interest Group on Green Multimedia Communications, IEEE Communications Society Technical Committee on Multimedia Communications, Oct. 2012 – Sep. 2014.

4.3 Conference organizing committees

1. Web chair, IEEE GLOBECOM, 2017.
2. Tutorial chair, International Conference on Information, Communications and Signal Processing, 2015.
3. Organizer of special session on “Signal processing for social networks” in IEEE Conference on Digital Signal Processing, 2015.
4. Publicity chair, International Conference on Information, Communications and Signal Processing, 2013.
5. Organizer of special session on “Emerging technologies in cooperative communication networks” in IEEE International Conference on Information, Communications and Signal Processing, 2011.
6. Session chair
 - IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2015, 2016
 - IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM) 2015
 - IEEE Wireless Communications and Networking Conference (WCNC) 2013
 - Asilomar Conference on Signals, Systems, and Computers 2012
 - International Conference on Information, Communications and Signal Processing (ICICS) 2011

4.4 Technical program committees

- ACM Sigmetrics 2015
- European Signal Processing Conference (EUSIPCO) 2017
- IEEE Global Communications Conference (Globecom) 2011, 2012, 2014, 2015, 2016
- IEEE International Conference on Communications (ICC) 2008, 2015, 2016, 2017
- IEEE International Conference on Communication, Networks and Satellite (COMNETSAT) 2015
- IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) 2015, 2016
- IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2015, 2017
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2016, 2017
- IEEE/CIC International Conference on Communications in China (ICCC) 2013
- IEEE International Conference on Communication Systems (ICCS) 2012, 2014, 2016
- IEEE International Conference on Mobile Ad-hoc and Sensor Networks (MSN) 2012
- IEEE International Symposium on Information Theory (ISIT) 2012
- IEEE World Forum on Internet of Things 2016
- International Conference on Advanced Technologies for Communications (ATC) 2014
- International Conference on Communications and Networking in China (Chinacom) 2014
- International Conference on Computing, Management and Telecommunications (ComManTel) 2015
- International Conference on Computer Communication and Networks (ICCCN) 2013, 2014
- International Conference on Information and Communication Technology (ICoICT) 2014
- International Conference on Information Fusion (Fusion) 2012, 2013, 2014, 2015, 2016
- International Conference on Localization and GNSS (ICL-GNSS) 2015

- International Conference on Wireless Communications and Signal Processing (WCSP) 2014
- International Workshop on Robots and Sensor Clouds (RSC) 2014
- International Workshop on Smart Complex Engineered Networks (SCENE) 2014
- Wireless Telecommunications Symposium (WTS) 2014
- NAFOSTED Conference on Information and Computer Science (NICS) 2016

4.5 Expert Reviewer

1. External expert grant proposal reviewer in 2012 for the Information and Communication Technology Call by the Vienna Science and Technology Fund.
2. External expert book reviewer in 2013 for the book titled "Special Integral Functions Used in Wireless Communications Theory," published by World Scientific Publishing Co. Pte. Ltd.
3. Reviewer for various top tier journals, including:
 - IEEE Transactions on Information Theory
 - IEEE Transactions on Signal Processing
 - IEEE Transactions on Communications
 - IEEE Transactions on Wireless Communications
 - IEEE Journal of Selected Topics in Signal Processing
 - IEEE Journal on Selected Areas in Communications
 - IEEE Transactions on Vehicular Technology