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Contents

1 General Information	2
1.1 Academic Qualifications	2
1.2 Awards and Honors	2
1.3 Work Experience	2
1.4 Consulting Experience	3
1.5 Professional Memberships	3
2 Research Activities	3
2.1 Ongoing Research Grants	3
2.2 Completed Research Grants	3
2.3 Published/Accepted Journal Papers	4
2.4 Refereed Conference Proceedings	9
2.5 Book Chapters and Monographs	17
2.6 Thesis	17
2.7 Other Publications	17
2.8 Patents and Disclosures	17
2.8.1 Patents Filed	17
2.8.2 Patents Granted	18
2.8.3 Technology Disclosures	18
2.9 Selected Invited Talks	18
3 Educational Activities	19
3.1 Completed Ph.D. Dissertation Supervisions	19
3.2 Current Ph.D. Dissertation Supervisions	20
3.3 Completed M.Eng. Dissertation Supervisions	20
3.4 Courses Taught	20
3.5 Courses Developed	21
4 Professional Activities	21
4.1 University/National Committee Activities	21
4.2 Professional Society Activities	21
4.3 Conference Organizing Committees	22
4.4 Technical Program Committees	22

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

- **Outstanding Editorial Board Member Award**, 2023.
IEEE Transactions on Signal and Information Processing Over Networks.
- **Excellent Paper Award**, International Conference on Smart Power & Internet Energy Systems, 2022.
- **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.

1.3 Work Experience

- Sep. 2023 – present, Professor of Signal and Information Processing, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore
- Sep. 2017 – Aug. 2023, Associate Professor (with tenure), School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore
- Mar. 2010 – Aug. 2017, Assistant Professor, School of Electrical and Electronic Engineering, 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
- Sep. 2004 – Dec. 2007, Research Assistant/Teaching Assistant, Massachusetts Institute of Technology
- Aug. 2002 – Jul. 2004, Various industry/academic positions due to scholarship bond, Singapore/US

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 Ongoing Research Grants

- PI, "PERCEPDROME", Ministry of Defence, Sep. 2025 – Mar. 2029, S\$1,245,640
- PI, "Project Nemo: UE Localization and Tracking", DSO National Laboratories, Sep. 2025 – Sep. 2026, S\$150,000
- PI, "Project Navigator: Aerial-ground Place Recognition with Pose Regression", National University of Singapore, May 2025 – May 2026, S\$146,300
- PI, "Project Trio", DSO National Laboratories, May 2025 – May 2026, S\$172,450
- PI, "Project Spyder", DSO National Laboratories, May 2025 – May 2026, S\$335,000

2.2 Completed Research Grants

- PI, "Generalized Message Passing for Federated Learning in Multi-Access Edge Computing", Future Communications Program, Jun. 2022 – May 2025, S\$461,538
- PI, "Project Ananke 2: Aerial-Ground Place Recognition for Drones", DSO National Laboratories, Jul. 2024 – Dec. 2024, S\$50,000
- PI, "Project Ananke: Robust Multi-Modal Neural Diffusion for Light-Weight Drone Perception", DSO National Laboratories, Jul. 2023 – Jun. 2024, S\$100,000
- PI, "Project LOCUS: RF Localization Using Donor Signals", DSO National Laboratories, Sep. 2022 – Nov. 2024, S\$499,999.50
- PI, "Graph Signal Processing for High Dimensional Structures and Spaces", Ministry of Education Academic Research Fund Tier 2, Nov. 2021 – Oct. 2024, S\$567,972
- PI, "Research and Applications of 5G-V2X Communication and Computing", NI Singapore Ltd, Oct. 2020 – Oct. 2022, S\$120,000
- PI, "5G-V2X Communication Trial and Use Cases Development", M1 Limited, Jan. 2020 – Dec. 2023, S\$98,040
- PI, "End to End Learned Localization for AV", NRF/Continental Corp Lab/NTU, Dec. 2019 – Nov. 2022, S\$595,909
- PI, "Next-Generation V2X Network Architecture and Ecosystem for Smart Mobility", A*Star Industry Alignment Fund - Pre Positioning (IAF-PP), Nov. 2019 – Oct. 2023, S\$21,240,000
- Co-PI, "Design and Reinforcement Security on Smart Grids Against Cyber-Physical Attack", NRF, Oct. 2019 – Mar. 2023, S\$271,700 (total grant: S\$997,460)
- PI, "Decentralized Privacy for the Internet of Things: Theory and Algorithms", Ministry of Education Academic Research Fund Tier 2, May 2019 – Jul. 2022, S\$568,512

- Co-PI, "Outdoor Geo-Localization and Navigation Using DVB and LTE Signals-of-Opportunity in GPS-denied Environments", Ministry of Defence, Aug. 2018 – Aug. 2020, S\$300,000 (total grant: S\$1,200,000)
- PI, "Relative Positions Determination Using Communication Signals", Defence Science Organization National Laboratories, Aug. 2018 – Apr. 2020, S\$479,159
- PI, "Energy Efficient Resilient Distributed Inference", NRF/Delta Electronics Corp Lab/NTU, Jul. 2016 – Aug. 2020, S\$434,600
- PI, "Fake News Detection: A Graph Signal Processing And Learning Approach", Ministry of Education Academic Research Fund Tier 1, Nov. 2017 – Jul. 2019, S\$80,000
- Co-PI, "Project Moscato: A Holistic Approach to Combatting Insider Threats", Ministry of Defence, Dec. 2015 – Jun. 2019, 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. 2019, S\$427,400 (total grant: S\$1,187,000)
- Co-PI, "Feasibility Study of Multi-Function Millimeter-Wave RaCoPo System", Huawei International Pte. Ltd., Oct. 2017 – Apr. 2019, S\$148,944 (total grant: S\$417,600)
- PI, "Multi-Target Track Before Detect On TDOA-FDOA Based Measurements", Defence Science Organization National Laboratories, Mar. 2015 – Feb. 2016, S\$100,000
- PI, "Robust Learning in Social Networks: Fundamental Limits and Strategies", Ministry of Education Academic Research Fund Tier 2, Jan. 2015 – Jun. 2018, S\$652,998
- Co-PI, "Development of NTU/NXP-Intelligent Transport System Test-Bed", Economic Development Board, Dec. 2014 – Nov. 2019, S\$2,568,300 (total grant: S\$14,098,000)
- 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, "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

2.3 Published/Accepted Journal Papers

- J1. X. Liu, Y. Yuan, Z. Zhang, Z. Ma, W. P. Tay, and P. Fan, "Customized OTFS pulse compression and waveform optimization for enhancing target sensing in ISAC systems," *IEEE Journal on Selected Areas in Communications*, 2025, in press

- J2. C. X. Wang and W. P. Tay, "Data-driven regularized inference privacy," *IEEE Transactions on Dependable and Secure Computing*, vol. 22, no. 6, pp. 6862 – 6877, 2025
- J3. X. Jian, M. Golz, F. Ji, W. P. Tay, and A. M. Zoubir, "A graph signal processing perspective of network multiple hypothesis testing with false discovery rate control," *IEEE Transactions on Signal Processing*, vol. 73, pp. 3496 – 3512, 2025
- J4. F. Ji, Y. Zhao, S. H. Lee, K. Zhao, W. P. Tay, and J. Yang, "Graph distributional signals for regularization in graph neural networks," *IEEE Transactions on Signal and Information Processing over Networks*, vol. 11, pp. 670 – 682, 2025
- J5. X. Ran, W. P. Tay, and C. H. T. Lee, "High-performance optimization model based on novel conditional value at risk metric for power grids with high wind power penetration," *IEEE Transactions on Industrial Informatics*, vol. 21, no. 7, pp. 5689 – 5700, Jul. 2025
- J6. X. Ran, W. P. Tay, and C. H. T. Lee, "Uncertain interval-based risk dispatch approach of power systems under an unified framework of multiple uncertainties," *IEEE Transactions on Industrial Informatics*, vol. 21, no. 3, pp. 2053 – 2063, Mar. 2025
- J7. Y. Yuan, W. Li, Y. Liang, W. P. Tay, W. Gao, and F. Shen, "Lane-aware dynamic spatio-temporal transformer for unimodal trajectory prediction," *IEEE Transactions on Intelligent Vehicles*, vol. 10, no. 2, pp. 1156 – 1167, Feb. 2025
- J8. V. Mohan, W. P. Tay, and A. Basu, "Towards neuromorphic compression based neural sensing for next-generation wireless implantable brain machine interface," *Neuromorphic Computing and Engineering*, vol. 5, no. 1, p. 014004, Jan. 2025
- J9. S. H. Lee, F. Ji, and W. P. Tay, "Node-specific space selection via localized geometric hyperbolicity in graph neural networks," *Transactions on Machine Learning Research*, 2024. [Online]. Available: <https://openreview.net/forum?id=tHteJFeN1y>
- J10. S. Wang, Q. Kang, R. She, K. Zhao, Y. Song, and W. P. Tay, "PRFusion: Toward effective and robust multi-modal place recognition with image and point cloud fusion," *IEEE Transactions on Intelligent Transportation Systems*, vol. 25, no. 12, pp. 20523 – 20534, 2024
- J11. F. Ji, X. Jian, and W. P. Tay, "Modeling sparse graph sequences and signals using generalized graphons," *IEEE Transactions on Signal Processing*, vol. 72, pp. 5048 – 5064, 2024
- J12. Y. Lu, F. Ji, and W. P. Tay, "Heterogeneous graph adaptive flow network," *Transactions on Machine Learning Research*, 2024. [Online]. Available: <https://openreview.net/forum?id=usvg3yhjAx>
- J13. X. Ran, W. P. Tay, and C. H. T. Lee, "Robust data-driven adversarial false data injection attack detection method with deep Q-network in power systems," *IEEE Transactions on Industrial Informatics*, vol. 20, no. 8, pp. 10405 – 10418, 2024
- J14. X. Liu, Y. Yuan, T. Zhang, G. Cui, and W. P. Tay, "Integrated transmit waveform and RIS phase shift design for LPI detection and communication," *IEEE Transactions on Wireless Communications*, vol. 23, no. 6, pp. 5663 – 5679, Jun. 2024
- J15. X. Jian, W. P. Tay, and Y. Eldar, "Kernel based reconstruction for generalized graph signal processing," *IEEE Transactions on Signal Processing*, vol. 72, pp. 2308 – 2322, 2024
- J16. A. Darendeli, A. Sun, and W. P. Tay, "The geography of corporate fake news," *PLOS ONE*, vol. 19, no. 4, pp. 1 – 28, Apr. 2024
- J17. Q. Kang, W. P. Tay, R. She, S. Wang, X. Liu, and Y.-R. Yang, "Multi-armed linear bandits with latent biases," *Information Sciences*, vol. 660, p. 120103, 2024
- J18. R. She, Q. Kang, S. Wang, W. P. Tay, K. Zhao, Y. Song, T. Geng, Y. Xu, D. N. Navarro, and A. Hartmannsgruber, "PointDiffomer: Robust point cloud registration with neural diffusion and transformer," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 62, pp. 1 – 15, 2024

- J19. R. She, Q. Kang, S. Wang, Y.-R. Yang, K. Zhao, Y. Song, and W. P. Tay, "RobustMat: Neural diffusion for street landmark patch matching under challenging environments," *IEEE Transactions on Image Processing*, vol. 32, pp. 5550 – 5563, 2023
- J20. R. She, Q. Kang, S. Wang, W. P. Tay, Y. L. Guan, D. N. Navarro, and A. Hartmannsgruber, "Image patch-matching with graph-based learning in street scenes," *IEEE Transactions on Image Processing*, vol. 32, pp. 3465 – 3480, 2023
- J21. F. Ji, W. P. Tay, and A. Ortega, "Graph signal processing over a probability space of shift operators," *IEEE Transactions on Signal Processing*, vol. 71, pp. 1159 – 1174, 2023
- J22. W. Zhang, Z. Wang, and W. P. Tay, "Approximate maximum-likelihood RIS-aided positioning," *IEEE Transactions on Wireless Communications*, vol. 22, no. 12, pp. 8859 – 8875, Dec. 2023
- J23. H. Cheng, J. T. Zhou, W. P. Tay, and B. Wen, "Graph neural networks with triple attention for few-shot learning," *IEEE Transactions on Multimedia*, vol. 25, pp. 8225 – 8239, 2023
- J24. X. Liu, Y. Yuan, T. Zhang, G. Cui, and W. P. Tay, "LPI radar signal design resistant to identification by ESM systems," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 59, no. 6, pp. 9233 – 9246, Dec. 2023
- J25. P. Lin, C. Deng, Y. Yang, C. H. T. Lee, and W. P. Tay, "Resilience-oriented control for cyber-physical hybrid energy storage systems using a semi-consensus scheme: Design and practice," *IEEE Transactions on Industrial Electronics*, vol. 70, no. 3, pp. 2508 – 2519, Mar. 2023
- J26. X. Jian and W. P. Tay, "Wide-sense stationarity in generalized graph signal processing," *IEEE Transactions on Signal Processing*, vol. 70, pp. 3414 – 3428, 2022
- J27. Y. Yan, I. Bajaj, R. Rabiee, and W. P. Tay, "A tightly coupled integration approach for cooperative positioning enhancement in DSRC vehicular networks," *IEEE Transactions on Intelligent Transportation Systems*, vol. 23, no. 12, pp. 23 278 – 23 294, Dec. 2022
- J28. J. Yang and W. P. Tay, "An unsupervised Bayesian neural network for truth discovery in social networks," *IEEE Transactions on Knowledge and Data Engineering*, vol. 34, no. 11, pp. 5182 – 5195, Nov. 2022
- J29. A. B. Bhutto, X. S. Vu, E. Elmroth, W. P. Tay, and M. Bhuyan, "Reinforced transformer learning for VSI-DDoS detection in edge clouds," *IEEE Access*, vol. 10, pp. 94 677–94 690, 2022
- J30. Q. Kang and W. P. Tay, "Task recommendation in crowdsourcing based on learning preferences and reliabilities," *IEEE Transactions on Services Computing*, vol. 15, no. 4, pp. 1785–1798, 2022
- J31. F. Ji, Pratibha, and W. P. Tay, "Unlimited dynamic range signal recovery for folded graph signals," *Signal Processing*, vol. 198, p. 108574, 2022
- J32. F. Ji, G. Kahn, and W. P. Tay, "Signal processing on simplicial complexes with vertex signals," *IEEE Access*, vol. 10, pp. 41 889 – 41 901, 2022
- J33. C. Wang, W. P. Tay, Y. Wei, and Y. Wang, "Privacy-preserving distributed projection LMS for linear multitask networks," *IEEE Transactions on Signal Processing*, vol. 69, pp. 6530 – 6545, 2021
- J34. W. Zhang and W. P. Tay, "Cost-efficient RIS-aided channel estimation via rank-one matrix factorization," *IEEE Wireless Communications Letters*, vol. 10, no. 11, pp. 2562 – 2566, Nov. 2021
- J35. T. S. Lau and W. P. Tay, "Asymptotically optimal sampling policy for quickest change detection with observation-switching cost," *IEEE Transactions on Signal Processing*, vol. 69, pp. 1332 – 1346, 2021
- J36. C. X. Wang, Y. Song, and W. P. Tay, "Arbitrarily strong utility-privacy tradeoff in multi-agent systems," *IEEE Transactions on Information Forensics and Security*, vol. 16, pp. 671 – 684, 2021
- J37. Y. Song, C. X. Wang, and W. P. Tay, "Compressive privacy for a linear dynamical system," *IEEE Transactions on Information Forensics and Security*, vol. 15, pp. 895 – 910, 2020

- J38. M. Sun and W. P. Tay, "On the relationship between inference and data privacy in decentralized IoT networks," *IEEE Transactions on Information Forensics and Security*, vol. 15, pp. 852 – 866, 2020
- J39. M. Sun and W. P. Tay, "Decentralized detection with robust information privacy protection," *IEEE Transactions on Information Forensics and Security*, vol. 15, pp. 85–99, 2020
- J40. X. Liu, W. P. Tay, Z.-W. Liu, and G. Xiao, "Quasi-synchronization of heterogeneous networks with a generalized Markovian topology and event-triggered communication," *IEEE Transactions on Cybernetics*, vol. 50, no. 10, pp. 4200 – 4213, Oct. 2020
- J41. F. Ji, W. Tang, W. P. Tay, and E. K. P. Chong, "Network topology inference using information cascades with limited statistical knowledge," *Information and Inference: A Journal of the IMA*, vol. 9, no. 2, pp. 327 — 360, Jun. 2020
- J42. F. Ji and W. P. Tay, "A Hilbert space theory of generalized graph signal processing," *IEEE Transactions on Signal Processing*, vol. 67, no. 24, pp. 6188 – 6203, Dec. 2019
- J43. X. He, W. P. Tay, H. Lei, M. Sun, and Y. Gong, "Privacy-aware sensor network via multilayer nonlinear processing," *IEEE Internet of Things Journal*, vol. 6, no. 6, pp. 10 834 – 10 845, Dec. 2019
- J44. F. Wen, H. Wyneersch, B. Peng, W. P. Tay, H. C. So, and D. Yang, "A survey on 5G massive MIMO localization," *Digital Signal Processing*, vol. 94, pp. 21 – 28, Nov. 2019
- J45. Q. Kang and W. P. Tay, "Sequential multi-class labeling in crowdsourcing," *IEEE Transactions on Knowledge and Data Engineering*, vol. 31, no. 11, pp. 2190 – 2199, Nov. 2019
- J46. T. S. Lau and W. P. Tay, "Quickest change detection in the presence of a nuisance change," *IEEE Transactions on Signal Processing*, vol. 67, no. 20, pp. 5281 – 5296, Oct. 2019
- J47. L. Ma, W. P. Tay, and G. Xiao, "Iterative expectation maximization for reliable social sensing with information flows," *Information Sciences*, vol. 501, pp. 621 – 634, Oct. 2019
- J48. J. Yang, J. Wang, and W. P. Tay, "Using social network information in community-based Bayesian truth discovery," *IEEE Transactions on Signal and Information Processing over Networks*, vol. 5, no. 3, pp. 525 – 537, Sep. 2019
- J49. R. Rabiee, X. Zhong, Y. Yan, and W. P. Tay, "LaIF: A lane-level self-positioning scheme for vehicles in GNSS-denied environments," *IEEE Transactions on Intelligent Transportation Systems*, vol. 20, no. 8, pp. 2944 – 2961, Aug. 2019
- J50. F. Ji, W. Tang, and W. P. Tay, "On the properties of Gromov matrices and their applications in network inference," *IEEE Transactions on Signal Processing*, vol. 67, no. 10, pp. 2624 – 2638, May 2019
- J51. G. Yang, W. P. Tay, Y. L. Guan, and Y.-C. Liang, "Optimal power allocation for diffusion-type sensor networks with wireless information and power transfer," *IEEE Access*, vol. 7, pp. 32 408 – 32 422, Mar. 2019
- J52. T. S. Lau, W. P. Tay, and V. V. Veeravalli, "A binning approach to quickest change detection with unknown post-change distribution," *IEEE Transactions on Signal Processing*, vol. 67, no. 3, pp. 609 – 621, Feb. 2019
- J53. W. Tang, F. Ji, and W. P. Tay, "Estimating infection sources in networks using partial timestamps," *IEEE Transactions on Information Forensics and Security*, vol. 13, no. 2, pp. 3035 – 3049, Dec. 2018
- J54. J. Yang, X. Zhong, and W. P. Tay, "A dynamic Bayesian nonparametric model for blind calibration of sensor networks," *IEEE Internet of Things Journal*, vol. 5, no. 5, pp. 3942 – 3953, Oct. 2018
- J55. M. Z. A. Bhotto and W. P. Tay, "Non-Bayesian social learning with observation reuse and soft switching," *ACM Transactions on Sensor Networks*, vol. 14, no. 2, pp. 14:1–14:21, Jun. 2018
- J56. M. Sun, W. P. Tay, and X. He, "Toward information privacy for the Internet of Things: A non-parametric learning approach," *IEEE Transactions on Signal Processing*, vol. 66, no. 7, pp. 1734 – 1747, Apr. 2018

- J57. 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 Transactions on Vehicular Technology*, vol. 67, no. 2, pp. 1510 – 1520, Feb. 2018
- J58. Y. Yu, G. Xiao, G. Li, W. P. Tay, and H. F. Teoh, "Opinion diversity and community formation in adaptive networks," *Chaos: An Interdisciplinary Journal of Nonlinear Science*, vol. 27, no. 20, p. 103115, Oct. 2017
- J59. W. Luo, W. P. Tay, and M. Leng, "On the universality of Jordan centers for estimating infection sources in tree networks," *IEEE Transactions on Information Theory*, vol. 63, no. 7, pp. 4634 – 4657, Jul. 2017
- J60. F. Ji, W. P. Tay, and L. Varshney, "An algorithmic framework for estimating rumor sources with different start times," *IEEE Transactions on Signal Processing*, vol. 65, no. 10, pp. 2517 – 2530, May 2017
- J61. J. Tang, W. P. Tay, T. Q. S. Quek, and B. Liang, "System cost minimization in cloud RAN with limited fronthaul capacity," *IEEE Transactions on Wireless Communications*, vol. 16, no. 5, pp. 3371 – 3384, May 2017
- J62. Y. Wang, W. P. Tay, and W. Hu, "A multitask diffusion strategy with optimized inter-cluster cooperation," *IEEE Journal of Selected Topics in Signal Processing*, vol. 11, no. 3, pp. 504 – 517, Mar. 2017
- J63. 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 Transactions on Wireless Communications*, vol. 15, no. 11, pp. 7670 – 7685, Nov. 2016
- J64. Y. Zhang, W. P. Tay, K. H. Li, M. Esseghir, and D. Gaiti, "Learning temporal-spatial spectrum reuse," *IEEE Transactions on Communications*, vol. 64, no. 7, pp. 3092 – 3103, Jul. 2016
- J65. W. Luo, W. P. Tay, and M. Leng, "Infection spreading and source identification: A hide and seek game," *IEEE Transactions on Signal Processing*, vol. 64, no. 16, pp. 4228 – 4243, Aug. 2016
- J66. J. Ho, W. P. Tay, T. Q. S. Quek, and E. K. P. Chong, "Robust decentralized detection and social learning in tandem networks," *IEEE Transactions on Signal Processing*, vol. 63, no. 19, pp. 5019 – 5032, Oct. 2015, **IEEE Signal Processing Society Young Author Best Paper Award**
- J67. J. Tang, W. P. Tay, and T. Q. S. Quek, "Cross-layer resource allocation with elastic service scaling in cloud radio access network," *IEEE Transactions on Wireless Communications*, vol. 14, no. 9, pp. 5068 – 5081, Sep. 2015
- J68. W. Hu and W. P. Tay, "Multi-hop diffusion LMS for energy-constrained distributed estimation," *IEEE Transactions on Signal Processing*, vol. 63, no. 15, pp. 4022 – 4036, Aug. 2015
- J69. W. Xu, F. Quitin, M. Leng, W. P. Tay, and S. G. Razul, "Distributed localization of a RF target in NLOS environments," *IEEE Journal on Selected Areas in Communications*, vol. 33, no. 7, pp. 1 – 14, Jul. 2015
- J70. W. P. Tay, "Whose opinion to follow in multihypothesis social learning? A large deviations perspective," *IEEE Journal of Selected Topics in Signal Processing*, vol. 9, no. 2, pp. 344 – 359, Mar. 2015
- J71. M. Leng, W. P. Tay, T. Q. S. Quek, and H. Shin, "Distributed local linear parameter estimation using Gaussian SPAWN," *IEEE Transactions on Signal Processing*, vol. 63, no. 1, pp. 244 – 257, Jan. 2015
- J72. Y. Zhang, W. P. Tay, K. H. Li, and D. Gaiti, "Distributed boundary estimation for spectrum sensing in cognitive radio networks," *IEEE Journal on Selected Areas in Communications*, vol. 32, no. 11, pp. 1961 – 1973, Nov. 2014
- J73. W. Luo, W. P. Tay, and M. Leng, "How to identify an infection source with limited observations," *IEEE Journal of Selected Topics in Signal Processing*, vol. 8, no. 4, pp. 586 – 597, Aug. 2014
- J74. J. Tang, W. P. Tay, and Y. Wen, "Dynamic request redirection and elastic service scaling in cloud-centric media networks," *IEEE Transactions on Multimedia*, vol. 16, no. 5, pp. 1434 – 1445, Aug. 2014
- J75. 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 Transactions on Wireless Communications*, vol. 13, no. 7, pp. 3636 – 3649, Jul. 2014

- J76. W. Hu and W. P. Tay, "An integer linear programming approach for a class of bilinear integer programs," *Operations Research Letters*, vol. 42, no. 3, pp. 226 — 230, May 2014
- J77. W. Luo, W. P. Tay, and M. Leng, "Identifying infection sources and regions in large networks," *IEEE Transactions on Signal Processing*, vol. 61, no. 11, pp. 2850 – 2865, Jun. 2013
- J78. D. W. Soh, W. P. Tay, and T. Q. S. Quek, "Randomized information dissemination in dynamic environments," *IEEE/ACM Transactions on Networking*, vol. 21, no. 3, pp. 681 – 691, Jun. 2013
- J79. 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 Transactions on Wireless Communications*, vol. 12, no. 6, pp. 2633 – 2645, Jun. 2013
- J80. Y. Nijsure, W. P. Tay, E. Gunawan, F. Wen, Y. Zhang, Y. L. Guan, and A. P. Chua, "An impulse radio ultrawideband system for contactless noninvasive respiratory monitoring," *IEEE Transactions on Biomedical Engineering*, vol. 60, no. 6, pp. 1509 – 1517, Jun. 2013
- J81. W. P. Tay, "The value of feedback in decentralized detection," *IEEE Transactions on Information Theory*, vol. 58, no. 12, pp. 7226 – 7239, Dec. 2012
- J82. 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
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- C1. X. Jian, P. Zhang, T. Lan, F. Ji, W. Liang, W. P. Tay, B. Wen, and F. Krahmer, "Conformal prediction for multi-source detection on a network," in *Proc. AAAI Conference on Artificial Intelligence*, Singapore, Jan. 2026, **oral**
- C2. Q. Kang, W. Cui, X. Li, Y. Ma, X. Fu, W. P. Tay, Y. Li, and Z.-J. Zha, "Neural fractional attention differential equations," in *Advances in Neural Information Processing Systems*, San Diego, USA, Dec. 2025
- C3. W. Liang, Y. Zhao, R. She, Y. Li, and W. P. Tay, "Personalized subgraph federated learning with sheaf collaboration," in *Proc. European Conference on Artificial Intelligence*, Bologna, Italy, Oct. 2025
- C4. P. Zhang, F. Ji, Y. Zhao, W. P. Tay, and B. Wen, "Distance-based laplacian algebra for effective subgraph filter learning," in *Asia Pacific Signal and Information Processing Association Annual Summit and Conference*, Singapore, Oct. 2025
- C5. S. Wang, S. Li, Y. Zhang, S. Yu, S. Yuan, R. She, Q. Guo, J. Zheng, O. K. Howe, L. Chandra, S. Srijeyan, A. Sivadas, T. Aggarwal, H. Liu, H. Zhang, C. Chen, J. Jiang, L. Xie, and W. P. Tay, "UAVScenes: A multi-modal dataset for UAVs," in *Proc. International Conference on Computer Vision*, Honolulu, USA, Oct. 2025

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- C14. K. Zhao, Q. Kang, F. Ji, X. Li, Q. Ding, Y. Zhao, W. Liang, and W. P. Tay, "Distributed-order fractional graph operating network," in *Advances in Neural Information Processing Systems*, Vancouver, Canada, Dec. 2024, **spotlight**
- C15. D. Li, K. Zhao, J. Lu, Y. Zhang, X. An, W. P. Tay, and S. Gulam Razul, "Transfer learning with knowledge distillation for urban localization using LTE signals," in *IEEE Vehicular Technology Conference*, Washington DC, USA, Oct. 2024
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- C32. X. Jian and W. P. Tay, "Kernel ridge regression for generalized graph signal processing," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Rhodes Island, Greece, Jun. 2023
- C33. T. Geng, F. Ji, and W. P. Tay, "Modulo EEG signal recovery using transformers," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Rhodes Island, Greece, Jun. 2023
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- C35. C. Jin, W. P. Tay, K. Zhao, K. V. Ling, J. Lu, and Y. Wang, "A sub-meter accurate positioning using 5G double-difference carrier phase measurements," in *Proc. IEEE/ION Position, Location and Navigation Symposium*, Monterey, USA, Apr. 2023
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- C48. Y. Song, I. Bajaj, R. Rabiee, and W. P. Tay, "Anchor-free multi-level self-localization in ad-hoc networks," in *Proc. IEEE Wireless Communications and Networking Conference*, Nanjing, China, Mar. 2021
- C49. Y. Song, Q. Kang, and W. P. Tay, "Error-correcting output codes with ensemble diversity for robust learning in neural networks," in *Proc. AAAI Conference on Artificial Intelligence*, virtual, Feb. 2021
- C50. C. X. Wang and W. P. Tay, "Data-driven privacy with domain regularization," in *Proc. IEEE Global Telecomm. Conference*, Taipei, Taiwan, Dec. 2020
- C51. C. Wang, W. P. Tay, Y. Wei, and Y. Wang, "Resilient multitask distributed adaptation over networks with noisy exchanges," in *Proc. IEEE Sensor Array and Multichannel Signal Processing Workshop*, Hangzhou, China, Jun. 2020
- C52. C. X. Wang, W. P. Tay, and Y. Song, "Maximum privacy under perfect utility in sensor networks," in *Proc. IEEE Sensor Array and Multichannel Signal Processing Workshop*, Hangzhou, China, Jun. 2020
- C53. T. S. Lau and W. P. Tay, "Privacy-aware quickest change detection," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Barcelona, Spain, May 2020
- C54. F. Ji, J. Yang, Q. Zhang, and W. P. Tay, "GFCN : A new graph convolutional network based on parallel flows," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Barcelona, Spain, May 2020
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- C56. Q. Kang and W. P. Tay, "Orthogonal projection in linear bandits," in *Proc. IEEE Global Conference on Signal and Information Processing*, Ottawa, Canada, Nov. 2019
- C57. C. Wang, W. P. Tay, Y. Wang, and Y. Wei, "A privacy-preserving diffusion strategy over multitask networks," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Brighton, UK, May 2019

- C58. T. S. Lau and W. P. Tay, "Asymptotically optimal quickest change detection under a nuisance change," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Brighton, UK, May 2019
- C59. Y. Song, M. Guan, W. P. Tay, C. L. Law, and C. Wen, "UWB/LiDAR fusion for cooperative range-only SLAM," in *Int. Conf. on Robotics and Automation*, Montreal, Canada, May 2019
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- C62. W. Qiu, A. Khong, and W. P. Tay, "Hidden Markov model for masquerade detection based on sequence alignment," in *Proc. IEEE Cyber Science and Technology Congress*, Athens, Greece, Aug. 2018
- C63. Y. Wang, W. Hu, and W. P. Tay, "An event-based diffusion LMS strategy," in *Proc. IEEE Sensor Array and Multichannel Signal Processing Workshop*, Sheffield, UK, Jul. 2018
- C64. Pratibha, J. Wang, S. Aggarwal, F. Ji, and W. P. Tay, "Learning correlation graph and anomalous employee behavior for insider threat detection," in *Proc. International Conference on Information Fusion*, Cambridge, UK, Jul. 2018
- C65. F. Ji, W. Tang, and W. P. Tay, "Properties and applications of Gromov matrices in network inference," in *Proc. IEEE Workshop on Statistical Signal Processing*, Freiburg, Germany, Jun. 2018
- C66. T. S. Lau and W. P. Tay, "Quickest change detection under a nuisance change," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Calgary, Canada, Apr. 2018
- C67. Y. Song, C. X. Wang, and W. P. Tay, "Privacy-aware Kalman filtering," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Calgary, Canada, Apr. 2018
- C68. W. Tang, F. Ji, and W. P. Tay, "Multiple sources identification in networks with partial timestamps," in *Proc. IEEE Global Conference on Signal and Information Processing*, Montreal, Canada, Nov. 2017
- C69. T. S. Lau and W. P. Tay, "Optimal sampling policy for quickest change detection," in *Proc. IEEE Global Conference on Signal and Information Processing*, Montreal, Canada, Nov. 2017
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- C73. M. Sun and W. P. Tay, "Inference and data privacy in IoT networks," in *Proc. IEEE Workshop on Signal Processing Advances in Wireless Communications*, Hokkaido, Japan, Jul. 2017, **invited paper**
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- C76. X. He and W. P. Tay, "Multilayer sensor network for information privacy," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017
- C77. T. S. Lau, W. P. Tay, and V. V. Veeravalli, "Quickest change detection with unknown post-change distribution," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017
- C78. W. Tang and W. P. Tay, "A particle filter for sequential infection source estimation," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017

- C79. J. Yang, W. P. Tay, and X. Zhong, "A dynamic Bayesian nonparametric model for blind calibration of sensor networks," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, New Orleans, USA, Mar. 2017
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- C81. 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
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- C85. 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
- C86. 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 Communications*, Edinburgh, UK, Jul. 2016, **invited paper**
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- C89. 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
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- C92. Y. Zhang, W. P. Tay, K. H. Li, M. Esseghir, and D. Gaiti, "Opportunistic spectrum access with temporal-spatial reuse in cognitive radio networks," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Shanghai, China, Mar. 2016
- C93. Y. Wang, W. P. Tay, and W. Hu, "An energy-efficient diffusion strategy over adaptive networks," in *Proc. International Conference on Information, Communications and Signal Processing*, Singapore, Dec. 2015
- C94. 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 Conference on Signal and Information Processing*, Orlando, USA, Dec. 2015
- C95. J. Tang, W. P. Tay, T. Q. S. Quek, and B. Liang, "Towards system cost minimization in cloud radio access network," in *Proc. Asilomar Conference on Signals, Systems and Computers*, Asilomar, USA, Nov. 2015, **invited paper**

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- C102. W. Hu, W. P. Tay, A. Harilal, and G. Xiao, "Network infection source identification under the SIRI model," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Brisbane, Australia, Apr. 2015
- C103. Z. Madadi, F. Quitin, and W. P. Tay, "Periodic RF transmitter geolocation using a mobile receiver," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Brisbane, Australia, Apr. 2015
- C104. Y. Zhang, W. P. Tay, K. H. Li, M. Esseghir, and D. Gaiti, "Distributed opportunistic spectrum access with spatial reuse in cognitive radio networks," in *Proc. IEEE Global Conference on Signal and Information Processing*, Atlanta, US, Dec. 2014
- C105. J. Tang, W. P. Tay, and T. Q. S. Quek, "Cross-layer resource allocation in cloud radio access network," in *Proc. IEEE Global Conference on Signal and Information Processing*, Atlanta, US, Dec. 2014, **invited paper**
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- C108. J. Ho, W. P. Tay, and T. Q. S. Quek, "Robust detection and social learning in tandem networks," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Florence, Italy, May 2014
- C109. W. Luo and W. P. Tay, "Estimating infection sources in a network with incomplete observations," in *Proc. IEEE Global Conference on Signal and Information Processing*, Austin, USA, Dec. 2013
- C110. W. Xu, M. Leng, W. P. Tay, and S. G. Razul, "Distributed localization of an unknown target in NLOS environments," in *Proc. International Conference on Information, Communications and Signal Processing*, Tainan, Taiwan, Dec. 2013
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- C114. 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**
- C115. W. Luo and W. P. Tay, "Identifying multiple infection sources in a network," in *Proc. Asilomar Conference on Signals, Systems and Computers*, Asilomar, USA, Nov. 2012, **invited paper, best student paper award**
- C116. Y. Nijssure, W. P. Tay, E. Gunawan, and J. Lai, "A Bayesian nonparametric approach to tumor detection using UWB imaging," in *Proc. of IEEE International Conference on Ubiquitous Wireless Broadband*, New York, USA, Sep. 2012
- C117. F. Wen and W. P. Tay, "Localization for mixed near-field and far-field sources using data supported optimization," in *Proc. International Conference on Information Fusion*, Singapore, Jul. 2012
- C118. F. Wen and W. P. Tay, "Tensor decomposition based R-dimensional matrix pencil method," in *Proc. International Conference on Information Fusion*, Singapore, Jul. 2012
- C119. W. Luo and W. P. Tay, "Identifying infection sources in large tree networks," in *Proc. IEEE International Conference on Sensing, Communication, and Networking*, Seoul, Korea, Jun. 2012
- C120. 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
- C121. M. Leng, W. P. Tay, and T. Q. S. Quek, "Cooperative and distributed localization for wireless sensor networks in multipath environments," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Kyoto, Japan, Mar. 2012
- C122. M. Leng, W. P. Tay, and T. Q. S. Quek, "Cooperative and distributed localization for wireless sensor networks in multipath environments," in *Proc. International Conference on Information, Communications and Signal Processing*, Singapore, Dec. 2011
- C123. 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**
- C124. 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 Communications*, San Francisco, USA, Jun. 2011
- C125. W. P. Tay and J. N. Tsitsiklis, "Error exponents for decentralized detection in feedback architectures," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Prague, Czech Republic, May 2011
- C126. W. P. Tay and J. N. Tsitsiklis, "The value of feedback for decentralized detection in large sensor networks," in *Proc. Int. Symp. on Wireless and Pervasive Computing*, Hong Kong, Feb. 2011
- C127. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "On the sub-exponential decay of detection probabilities in long tandems," in *Proc. IEEE International Conference Acoustics, Speech, and Signal Processing*, Honolulu, USA, Apr. 2007, pp. 837–840
- C128. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Bayesian detection in bounded height tree networks," in *Proc. of Data Compression Conference*, Snowbird, USA, Mar. 2007, pp. 243–252
- C129. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Detection in dense wireless sensor networks," in *Proc. IEEE Wireless Communications and Networking Conference*, Hong Kong, Mar. 2007, pp. 3483–3488
- C130. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Data fusion trees for detection: Does architecture matter?" in *Proc. Allerton Conference on Communications, Control and Computing*, Monticello, USA, Sep. 2006

- C131. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Asymptotically optimal distributed censoring," in *Proc. IEEE International Symposium on Information Theory*, Seattle, USA, Jul. 2006, pp. 625–629
- C132. W. P. Tay, J. N. Tsitsiklis, and M. Z. Win, "Censoring sensors: Asymptotics and the value of cooperation," in *Proc. Conference on Information Science and Systems*, Princeton, USA, Mar. 2006, pp. 62–67

2.5 Book Chapters and Monographs

- B1. X. Jian, F. Ji, and W. P. Tay, "Generalizing graph signal processing: High dimensional spaces, models and structures," *Foundations and Trends® in Signal Processing*, vol. 17, no. 3, pp. 209–290, 2023. [Online]. Available: <http://dx.doi.org/10.1561/2000000119>
- B2. F. Ji, W. Tang, J. Yang, and W. P. Tay, "Online information spreading and source identification," in *Online Social Networks: Perspectives, Applications and Developments*, C. W. Tan, Ed. Hauppauge, NY: Nova Science Publishers, Inc., 2020, ch. 4
- B3. R. Rabiee, I. Bajaj, and W. P. Tay, "Vehicle localization in GNSS-denied environments," in *Cooperative Localization and Navigation: Theory, Research, and Practice*, C. Gao, G. Zhao, and H. Fourati, Eds. Boca Raton, FL: CRC Press, 2019, ch. 11, pp. 199 – 222
- B4. 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 2015*, ser. Studies in Computational Intelligence, A. Koubâa and J. R. M. de Dios, Eds. Cham: Springer, 2015, vol. 604, pp. 159 – 181
- B5. W. P. Tay and J. N. Tsitsiklis, "Error exponents for decentralized detection in tree networks," in *Networked Sensing Information and Control*, V. Saligrama, Ed. Boston, MA: Springer, 2008, pp. 73 – 92

2.6 Thesis

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

2.7 Other Publications

- O1. Z. Madadi, F. Qutin, 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
- O2. 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

2.8 Patents and Disclosures

2.8.1 Patents Filed

- PF1. S. Wang, R. She, Q. Kang, T. Geng, and W. P. Tay, "System and method for processing image data," Singapore PCT SG2025/050 428, Jun. 25, 2025
- PF2. C. Jin, W. P. Tay, K. Zhao, K. V. Ling, and J. Lu, "Device, positioning system and method of determining a position of the device for vehicular communication," Singapore Patent Application 11 202 501 107V, Sep. 19, 2023
- PF3. Q. Kang, R. She, W. P. Tay, N. D. Navarro, R. Khurana, A. Hartmannsgruber, and Y. L. Guan, "Position determination of a vehicle using image segmentations," PCT EP2023/063 085, May 16, 2023
- PF4. R. She, Q. Kang, S. Wang, W. P. Tay, N. D. Navarro, and A. Hartmannsgruber, "Computer-implemented method for estimating a position and/or pose of a vehicle," PCT EP2024/061 019, Apr. 23, 2024

- PF5. S. Wang, Q. Kang, R. She, W. P. Tay, N. D. Navarro, and A. Hartmannsgruber, "A computer-implemented method for camera pose regression in a challenging traffic environment," UK Patent Application 202 216 510, Nov. 7, 2022
- PF6. Q. Kang, R. She, W. P. Tay, R. Khuarana, N. D. Navarro, S. Wang, and A. Hartmannsgruber, "Method for image segmentation matching," PCT EP2023/063 041, May 17, 2022
- PF7. F. Ji, Pratibha, and W. P. Tay, "Methods and systems for recovering folded signals," PCT SG2020/050 631, May 14, 2021
- PF8. C. Jin, I. Bajaj, K. Zhao, W. P. Tay, and K. V. Ling, "5G positioning using code phase and carrier phase receiver," PCT SG2021/050 732, Nov. 27, 2020

2.8.2 Patents Granted

- PG1. Y. Wang, W. P. Tay, J. S. Kee, and K. Thangamariappan, "Wireless sensor network, parameter optimization method thereof and warehouse system," China Patent 111 148 109, May 12, 2020
- PG2. Y. Wang, W. P. Tay, J. S. Kee, and K. Thangamariappan, "Wireless sensor network and parameter optimization method thereof, and warehouse system," U.S. Patent 20 200 146 103, May 7, 2020

2.8.3 Technology Disclosures

- TD1. X. Ran, W. P. Tay, and C. H. T. Lee, "A deep reinforcement learning-based novel false data injection attack detection in power systems," Singapore Technology Disclosure NTU Ref: 2022-411, Nov. 9, 2022
- TD2. W. Wang, M. Yang, Y. L. Guan, and W. P. Tay, "Intelligent transportation system runtime middleware," Singapore Technology Disclosure NTU Ref: 2021-269, May 31, 2021
- TD3. C. Wang, Q. Zhang, and W. P. Tay, "Energy efficient decentralized real-time multi-camera multi-target recognition and tracking system," Singapore Technology Disclosure NTU Ref: 2020-388, Dec. 1, 2020
- TD4. C. Yang, M. Yang, Y. L. Guan, and W. P. Tay, "Intelligent transportation system use-case software package," Singapore Technology Disclosure NTU Ref: 2020-028, Feb. 6, 2020
- TD5. W. P. Tay, X. Zhong, R. Rabiee, and Y. Yan, "Lane-level vehicle tracker for V2X communication systems," NTU Copyright TD/206/17, Oct. 12, 2017
- TD6. X. He, W. P. Tay, and M. Sun, "Privacy engine for IoT device networks," NTU Copyright TD/071/16, May 26, 2016
- TD7. W. P. Tay, F. Qutin, and Z. Madadi, "Geolocation using virtual TDOA with asynchronous clocks," NTU Copyright TD/249/14, Jan. 9, 2015
- TD8. W. P. Tay and F. Qutin, "Localization of non-cooperative RF targets in cluttered environments," NTU Copyright TD/078/14, Jun. 24, 2014
- TD9. W. Hu and W. P. Tay, "A generalized diffusion adaptation strategy for energy-constrained estimation," NTU Copyright TD/077/14, May 30, 2014
- TD10. 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

2.9 Selected Invited Talks

- "Advanced graph signal processing," IEEE International Conference on Acoustics, Speech and Signal Processing, May 2022, tutorial
- "Data-driven privacy sanitization with regularization," invited talk at Kookmin University, South Korea, Feb. 2022

- “Privacy for IoT: Signal processing theories and methods,” 7th IEEE World Forum on the Internet of Things, New Orleans, USA, Jun. 2021, tutorial
- “COSMO: Next gen V2X architecture & ecosystem for smart mobility,” Advanced Manufacturing and Engineering Day, Feb. 2021, invited presentation
- “Generalized graph signal processing,” 7th IEEE Global Conference on Signal and Information Processing (GlobalSIP), Ottawa, Canada, Nov. 2019, keynote speaker (distinguished presentation)
- “Inference and data privacy in IoT networks,” IEEE Workshop on Signal Processing Advances in Wireless Commun., Hokkaido, Japan, Jul. 2017, invited presentation
- “Posterior Cramér-Rao lower bound for mobile emitter tracking based on a TDOA-FDOA multi-measurement model,” IEEE Int. Conf. on Ubiquitous Wireless Broadband, Nanjing, China, Oct. 2016, invited presentation
- “TDOA-FDOA multiple target detection and tracking in the presence of measurement errors and biases,” IEEE Workshop on Signal Proc. Advances in Wireless Commun., Edinburgh, UK, Jul. 2016, invited presentation
- “Joint resource segmentation and transmission rate adaptation in cloud RAN with caching as a service,” IEEE Workshop on Signal Proc. Advances in Wireless Commun., Edinburgh, UK, Jul. 2016, invited presentation
- “Algorithms for network infection sources estimation,” Chongqing University, Jun. 2016, invited presentation
- “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, invited presentation
- “Towards information privacy for the Internet of Things,” International Conference on Communications and Networking in China (Chinacom), Chonqing, China, Jun. 2016, invited presentation
- “Towards system cost minimization in cloud radio access network,” Asilomar Conf. on Signals, Systems and Computers, Asilomar, USA, Nov. 2015, invited presentation
- “Network infection sources estimation,” University of Illinois at Urbana-Champaign, USA, Jul. 2015, Tan Chin Tuan Fellow seminar
- “Asymptotics in social learning”, University of Illinois at Urbana-Champaign, USA, Jul. 2015, Tan Chin Tuan Fellow seminar
- “Joint scheduling and localization in UWB networks,” IEEE Int. Conf. on Commun., London, UK, Jun. 2015, invited presentation
- “Whose opinion to follow in social learning?”, IEEE Taiwan-Hong Kong Joint Workshop on Information Theory and Communications, Hong Kong, Jan. 2015, invited presentation
- “Cross-layer resource allocation in cloud radio access network,” IEEE Global Conf. on Signal and Information Processing, Atlanta, US, Dec. 2014, invited presentation
- “GPS-free localization using asynchronous beacons,” IEEE Int. Conf. on Mobile Ad-hoc and Sensor Networks, Chengdu, China, Dec. 2012, invited presentation
- “Identifying multiple infection sources in a network,” Asilomar Conf. on Signals, Systems and Computers, Asilomar, USA, Nov. 2012, invited presentation
- “Randomized rumor spreading in non-static networks,” IEEE Int. Conf. on ICT Convergence, Seoul, Korea, Sep. 2011, invited presentation

3 Educational Activities

3.1 Completed Ph.D. Dissertation Supervisions

1. Luo Wuqiong, 08/2010 – 08/2014, “Identifying infection sources in a network.”
2. Tang Jianhua, 01/2011 – 01/2015, “Elastic service scaling optimization in cloud-based communication systems.”

3. Muhammad Sibtain Hamayun, 08/2010 – 08/2015, “Exploiting statistical side information to optimize secondary spectrum access.”
4. Zhang Yi, 01/2011 – 01/2015, “Learning methods for temporal-spatial opportunistic spectrum access in cognitive radio networks.”
5. Sun Meng, 08/2014 – 08/2018, “Privacy-preserving decentralized detection in sensor networks.”
6. Wang Yuan, 08/2012 – 08/2018, “Cooperative inference and learning for Internet-of-Things with limited resources.”
7. Ho Jun Feng Jack, 08/2012 – 11/2018, “Learning models in social networks.”
8. Yang Jielong, 08/2015 – 08/2019, “On truth finding in multi-agent networks.”
9. Tang Wenchang, 08/2015 – 08/2019, “Identifying misinformation and their sources in social networks.”
10. Kang Qiyu, 08/2015 – 08/2019, “Sequential crowdsourcing and recommendation strategies.”
11. Lau Tze Siong, 08/2015 – 01/2020, “Operationally constrained quickest change detection with multiple post-change distributions.” Commendation for EEE Doctorate Research Excellence Award.
12. Wang Chongxiao, 08/2016 – 12/2021, “Inference privacy preservation in linear and computational systems.”

3.2 Current Ph.D. Dissertation Supervisions

1. Lu Yiqi, 08/2018 – present, “Machine learning for inference in graphs.”
2. Lee See Hian, 08/2019 – present, “E-commerce knowledge graphs.”
3. Vivek Mohan, 01/2020 – present, “Unconventional sampling algorithms and hardware for brain-machine interfaces.”
4. Jian Xingchao, 08/2020 – present, “Processing stochastic time-varying signals over graphs.”
5. Zhao Kai, 01/2021 – present, “Graph neural networks for multi-sensor pattern recognition.”
6. Wang Sijie, 08/2021 – present, “Segmentation in autonomous driving environment.”
7. Zhang Purui, 08/2022 – present, “High-order graph signal processing and neural networks.”
8. Li Disheng, 01/2023 – present, “Machine learning methods for urban localization.”
9. Liang Wenfei, 01/2023 – present, “Federated learning for graph neural networks.”
10. Zhao Yanan, 01/2023 – present, “Generalized graph signal processing over simplicial complexes.”

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 Courses Taught

- EE7401, Probability and Random Processes (about 70 students per course).
- IE4497, Pattern Recognition and Deep Learning (about 25 students per course).
- IE0005, Introduction to Data Science and Artificial Intelligence (about 500 students per course).
- EE2008/IM1001, Data Structures and Algorithms (about 300 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).

3.5 Courses Developed

- 2012, proposed and developed new course EE7101 – Fundamentals of Information Theory.
- 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.
- 2021, revamped and developed new course materials for EE4497 Pattern Recognition and Machine Learning.

4 Professional Activities

4.1 University/National Committee Activities

- Member, School Review Committee for Promotion and Tenure, School of Art, Design and Media, Jul. 2024 – present.
- Member, Technical Committee on Intelligent Transport System, Enterprise Singapore, Jul. 2022 – Dec. 2024.
- Member, Academic Institutions Curriculum Advisory Committee, Singapore 5G & Telecoms Academy, Jun. 2021 – Dec. 2023.
- Associate Chair (Faculty), School of Electrical and Electronic Engineering, Jul. 2025 – present.
- Associate Chair (Academic), School of Electrical and Electronic Engineering, Feb. 2020 – Jun. 2025.
- Assistant Chair (Academic), School of Electrical and Electronic Engineering, Jun. 2017 – Jan. 2020.
- Member, NTU Presidential Postdoctoral Fellowship 2023 Evaluation Committee, Jun. 2023.
- Cluster Director, Cyber Physical System for Critical Information Infra-structure Research Program, Energy Research Institute, Apr. 2019 – 31 Mar. 2025.
- Program Director, Advanced Sensing Technologies, Centre for Information Sciences and Systems, Jan. 2020 – present.
- Program Director, Cyber and Network Security, INFINITUS, Centre for Infocomm Technology, Jan. 2015 – Sep. 2016.
- Program Director, Communications and Network Systems, INFINITUS, Centre for Infocomm Technology, Jan. 2013 – Dec. 2014.
- Member, School of EEE outreach committee Jan. 2013 – Dec. 2013.

4.2 Professional Society Activities

- Academy Mentor, EURASIP Academy, 2024 – present.
- Subject Editor, Signal Processing, Elsevier, 2024 – present.
- Associate Editor, IEEE Internet of Things Journal, 2023 – present.
- Associate Member, Signal Processing Theory and Methods Technical Committee, IEEE Signal Processing Society, 2023 – present.
- Associate Editor, IEEE Transactions on Signal and Information Processing over Networks, 2019 – 2024.

- Editor, IEEE Open Journal of Vehicular Technology, 2019 – 2023.
- Editor, IEEE Transactions on Wireless Communications, 2017 – 2023.
- Associate Editor, IEEE Transactions on Signal Processing, 2015 – 2019.
- Guest Editor, IEEE Transactions on Signal and Information Processing over Networks Special Issue on Distributed Information Processing in Social Networks, 2016 – 2017.
- Member, Machine Learning for Signal Processing Technical Committee, IEEE Signal Processing Society, 2015 – 2020.
- Member, Internet of Things Special Interest Group, IEEE Signal Processing Society, 2015 – 2019.
- Chair, Interest Group on Distributed and Sensor Networks for Mobile Media Computing and Applications, IEEE Communications Society Technical Committee on Multimedia Communications, 2014.
- Vice-Chair, Interest Group on Green Multimedia Communications, IEEE Communications Society Technical Committee on Multimedia Communications, 2012 – 2014.

4.3 Conference Organizing Committees

- Program Co-Chair, International Conference on Signal Processing and Information Communications (ICSPIC), 2023.
- Signal Processing Grand Challenges Co-chair, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2022.
- Web Chair, IEEE Global Communications Conference (Globecom), 2017.
- Tutorial Chair, International Conference on Information, Communications and Signal Processing, 2015.
- Organizer of special session on “Signal processing for social networks” in IEEE Conference on Digital Signal Processing, 2015.
- Publicity Chair, International Conference on Information, Communications and Signal Processing, 2013.
- Organizer of special session on “Emerging technologies in cooperative communication networks” in IEEE International Conference on Information, Communications and Signal Processing, 2011.
- Session chair
 - IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2015, 2016, 2017, 2018, 2019, 2020, 2022
 - IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2018, 2019

4.4 Technical Program Committees

- International Conference on Machine Learning (ICML) 2024 – present
- International Conference on Learning Representations (ICLR) 2024 – present
- Neural Information Processing Systems (NeurIPS) 2023 – present
- International Joint Conference on Artificial Intelligence (IJCAI) 2022 – present
- AAAI Conference on Artificial Intelligence 2021 – present
- European Signal Processing Conference (EUSIPCO) 2017 – present
- IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2017, 2018, 2019
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2016 – present
- IEEE International Workshop on Machine Learning for Signal Processing (MLSP) 2015 – present