

# Chee Wei Tan

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## Education

Years	Institution	Qualification
2008	Princeton University	Ph.D. in Electrical Engineering and Computer Science
2006	Princeton University	M.A. with Honors
2004	National University of Singapore	M.S. in Computer Engineering
2002	National University of Singapore	B.S. in Computer Engineering (First Class Honors)

## Appointments

Period	Employment	Position
7/2015 – present	City University of Hong Kong	Associate Professor of Computer Science Cofounder
2/2018 – present	Nautilus Software Technologies Limited, HK Hong Kong Science Park Incu-Tech incubation program	
9/2018 – 12/2018	Institute for Pure and Applied Mathematics, UCLA	Senior Fellow
6/2018 – 10/2018	Tencent AI Lab, Shenzhen	Visiting Faculty
9/2009 – 6/2015	City University of Hong Kong	Assistant Professor of Computer Science
6/2011 – 8/2011	Qualcomm, Inc., San Diego, CA	Visiting Faculty
9/2008 – 9/2009	California Institute of Technology, Pasadena, CA	Postdoctoral Scholar
6/2007 – 11/2007	University of Illinois, Urbana-Champaign, IL	Visiting Scholar
6/2005 – 9/2005	Fraser Research Laboratory, Princeton, NJ	Research Intern

## Academic Interests

- Artificial Intelligence, Cognitive Cloud Computing, Networks and Cyber Intelligence
- Convex Optimization and Software, Online Learning Pedagogy and Technologies
- Tech Entrepreneurship Knowledge Transfer, Computer Science and Mathematics Education

## Honors and Awards

- Distinguished Lecturer, IEEE Communications Society, 2021-2022
- Innovative Learning Award, University Provost, 2020
- Outstanding Teaching Award, College of Engineering, 2020
- Google Faculty Award 2018

- Tencent AI Lab Visiting Faculty Award 2018
- MIT-Amazon Graph Challenge Honorable Mention Award 2018
- Youth Creative Entrepreneurship Award from Hong Kong General Chamber of Small-Medium Business 2020
- Technology Start-up Support Scheme for Universities (TSSSU) Award from Hong Kong Innovation and Technology Commission 2018
- Senior Fellowship, Institute for Pure and Applied Mathematics (IPAM) at UCLA, 2018
- IEEE Information Theory Society Chapter of the Year Award, 2015, awarded during my tenure as the Hong Kong Chapter Chairman in 2014 and 2015
- Selected Participant of U.S. National Academy of Engineering (NAE) China-America Frontiers of Engineering (CAFOE) Symposium, twice selected in 2013 and 2015
- National Research Foundation (NRF) Fellowship 2015
- International Union of Radio Science URSI Young Scientist Award, 2014
- IEEE Communications Society Outstanding Young Researcher Award, 2011
- Qualcomm R&D Visiting Faculty Award 2011
- Caltech Postdoctoral Fellowship, 2009
- Princeton University Wu Prize for Excellence, 2008

## Professional Services

- **Editor**, IEEE/ACM Transactions on Networking. Served from 2016 – 2020.
- **Editor**, IEEE Communications Surveys and Tutorials Communications. Served from 2020 – present.
- **Editor**, IEEE Transactions on Communications. Served from 2012 – 2018.
- **Director**, Hong Kong Education Bureau's Programme on Creative Mathematics and Computer Science Learning for Gifted Students (Gifted Education Fund), 2020-2021.
- **Director**, Julia Robinson Mathematics Festival in Hong Kong, 2017 –present.
- **Organizer**, NASA Space Apps Challenge Hackathon in Hong Kong, 2019 –present.

## Teaching

- Outstanding Teaching Award (College of Engineering), Innovative Learning Award (Provost), 2020
- Supervised and graduated seven PhD Students and three Postdoctoral Students.
- Developed a new freshman course “Artificial Intelligence: Past, Present and Future” in 2019 and a new postgraduate course “Topics in Optimization and its Applications in Computer Science” in 2020.
- Five Teaching Development Grants from University Grants Committee for the development of technology-enhanced learning.
- Google Education grant for teaching AI Software Tensorflow in 2019.
- Initiative Early Adopter Award from the National Science Foundation (NSF)/Technical Committee on Parallel Processing Curriculum to developed curriculum on computational network science.

### Courses taught at university:

Semester	University	Course Code	Course Title
F19/20, F20/21	City University of Hong Kong	GE2340	Artificial Intelligence: Past, Present and Future

S19/20, S20/21	City University of Hong Kong	CS6491	Topics in Optimization and App. in Computer Science
S18/19	City University of Hong Kong	CS3334	Data Structure
S13/14, S14/15, S15/16, S16/17, S17/18	City University of Hong Kong	CS2115	Computer Organization
F11/12, F13/14, F14/15, F15/16, F16/17, F17/18	City University of Hong Kong	CS4284	Mobile Computing
F10/11, S11/12	City University of Hong Kong	CS2363	Computer Programming
S09/10	City University of Hong Kong	CS2333	Object-Oriented Programming
Winter 08/09	California Institute of Technology	CS/EE144	Networking
F07/08	Princeton University	ELE539(TA)	Optimization of Communication Systems
F05/06	Princeton University	ELE382(TA)	Distributed Optimization for Engineering Applications
F07/08	Princeton University	ELE386(TA)	Cyber Security

## Publications (H-Index: 29 in Scopus and 32 in Google Scholar)

### Refereed Journal Papers (all in top-tier and prestigious journals)

1. P. Yu, C. W. Tan and H. Fu, Epidemic Source Detection in Contact Tracing Networks: Epidemic Centrality and Message Passing Algorithms, **IEEE Transactions on Information Theory**, under submission, 2020.
2. S. W. Ho, L. Ling, C. W. Tan and R. W. Yeung, Proving and Disproving Information Inequalities: Theory and Scalable Algorithms, **IEEE Transactions on Information Theory**, Vol. 66, No. 9, pp. 5522-5536, 2020.  
*Impact Factor: 3.700, Ranking: 54/156= 34% in the category of Computer Science, Information Systems*
3. S. Liu, C. Joe-Wong, J. Chen, C. Brinton, C. W. Tan and L. Zheng, Economic Viability of a Virtual ISP, **IEEE/ACM Transactions on Networking**, Vol. 28, No. 2, pp. 902-916, 2020.  
*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*
4. P. Yu, C. W. Tan and H. Fu, Averting Cascading Failures in Networked Infrastructures: Poset-constrained Graph Algorithms, **IEEE Journal of Selected Topics in Signal Processing**, Vol. 12, No. 4, pp.733-748, 2018.  
*Impact Factor: 4.981, Ranking: 19/266= 7% in the category of Engineering, Electrical*
5. C. Li, X. Guang, C. W. Tan and R. W. Yeung, Fundamental Limits on a Class of Secure Asymmetric Multilevel Diversity Coding Systems, **IEEE Journal on Selected Areas in Communication**, Vol. 36, No. 4, pp. 737-747, 2018.  
*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*
6. D. Li, X. Guang, Z. Zhou, C. Li and C. W. Tan, Hierarchical Performance Analysis on Random Linear Network Coding, **IEEE Transactions on Communications**, Vol. 66, No. 5, pp.2009-2021, 2018.

*Impact Factor: 5.646, Ranking: 11/90= 12% in the category of Telecommunications*

7. L. Zheng, D. Cai and C. W. Tan, Max-min Fairness Rate Control in Wireless Networks: Optimality and Algorithms by Perron-Frobenius Theory, **IEEE Transactions on Mobile Computing**, Vol. 17, No. 1, pp.127-140, 2018.

*Impact Factor: 5.112, Ranking: 18/156= 11% in the category of Computer Science, Information Systems*

8. L. Zheng, C. Joe-Wong, C. W. Tan, S. Ha and M. Chiang, Customized Data Plans for Mobile Users: Feasibility and Benefits of Data Trading, **IEEE Journal on Selected Areas in Communication**, Vol. 35, No. 4, pp. 949-963, 2017.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

9. F. M. F. Wong, C. W. Tan, S. Sen and M. Chiang, Quantifying Political Leaning from Tweets, Retweets and Retweeters, **IEEE Transactions on Knowledge and Data Engineering**, Vol. 28, No. 8, pp. 2158-2172, 2016.

*Impact Factor: 4.935, Ranking: 20/156= 12% in the category of Computer Science, Information Systems*

10. C. W. Tan, Optimal Power Control in Rayleigh-fading Heterogeneous Wireless Networks, **IEEE/ACM Transactions on Networking**, Vol. 24, No. 2, pp. 940-953, 2016.

*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*

11. L. Zheng, Y. W. Hong, C. W. Tan, C. L. Hsieh and C. H. Lee, Wireless Max-min Utility Fairness with General Monotonic Constraints by Perron-Frobenius Theory, **IEEE Transactions on Information Theory**, Vol. 62, No. 12, pp. 7283-7298, 2016.

*Impact Factor: 3.700, Ranking: 54/156= 34% in the category of Computer Science, Information Systems*

12. Y. Gao, C. W. Tan, Y. Huang, Z. Zeng and P. R. Kumar, Characterization and Optimization of Delay Guarantees for Real-time Multimedia Traffic Flows in IEEE802.11 WLANs, **IEEE Transactions on Mobile Computing**, Vol. 15, No. 5, pp. 1090-1104, 2016.

*Impact Factor: 5.112, Ranking: 18/156= 11% in the category of Computer Science, Information Systems*

13. L. Zheng, C. Joe-Wong, C. W. Tan, M. Chiang and X. Wang, How to Bid the Cloud?, **ACM SIGCOMM Computer Communication Review**, Vol. 45, No. 5, pp. 71-84, 2015.

*Impact Factor: 1.951, Ranking: 22/148= 14% in the category of Computer Science, Information Systems*

14. Z. Wang, W. Dong, W. Zhang and C. W. Tan, Rooting out Rumor Sources in Online Social Networks: The Value of Diversity from Multiple Observations, **IEEE Journal of Selected Topics in Signal Processing**, special issue on signal processing for big data, Vol. 9, No. 4, pp. 663-677, 2015.

*Impact Factor: 4.981, Ranking: 19/266= 7% in the category of Engineering, Electrical*

15. C. W. Tan, Wireless Network Optimization by Perron-Frobenius Theory, **Foundations and Trends in Networking**, NOW Publishers, Vol. 9, No. 2-3, ISBN 978-1-680830507, 2015.

*Impact Factor: 8.830, Ranking: 17/156= 10% in the category of Computer Science, Information Systems*

16. I. Lai, L. Zheng, C.-H. Lee and C. W. Tan, Beamforming Duality and Algorithms for Weighted Sum Rate Maximization in Cognitive Radio Networks, **IEEE Journal on Selected Areas in Communications**, Vol. 33, No. 5, pp. 832-847, Jun. 2015.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

17. C. W. Tan, D. W. Cai and Lou, Resistive Network Optimal Power Flow: Uniqueness and Algorithms, **IEEE Transactions on Power Systems**, Vol. 30, No. 1, pp. 263-273, Jan. 2015.

*Impact Factor: 6.074, Ranking: 25/266= 9% in the category of Engineering, Electrical*

18. Y. Li, M. Sheng, C. W. Tan, Y. Zhang, Y. Sun, X. Wang, Y. Shi, J. Li, Energy-efficient subcarrier assignment and power allocation in OFDMA systems with max-min fairness guarantees, **IEEE Transactions on Communications**, Vol. 63, No. 9, pp. 3183-3195, Jun. 2015.

*Impact Factor: 5.646, Ranking: 11/90= 12% in the category of Telecommunications*

19. X. Lou and C. W. Tan, Optimization Decomposition of Resistive Power Networks with Energy Storage, **IEEE Journal on Selected Areas in Communications**, Vol. 32, No. 7, pp. 1371-1385, Jul. 2014.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

20. Lou, H. Yao, C. W. Tan and J. Wang, VANDER: Efficient Cooperative Watchdog Monitoring for Lossy Wireless Network Coding, **IEEE Transactions on Vehicular Technology**, Vol. 64, No. 2, pp. 702-713, 2014.

*Impact Factor: 5.379, Ranking: 6/36= 16% in the category of Transportation Science and Technology*

21. N. Chen, C. W. Tan and T. Quek, Electric Vehicle Charging in Smart Grid: Optimality and Valley-Filling Algorithms, **IEEE Journal of Selected Topics in Signal Processing**, Vol. 8, No. 6, pp. 1073-1083, Dec. 2014.

*Impact Factor: 4.981, Ranking: 19/266= 7% in the category of Engineering, Electrical*

22. L. Zheng and C. W. Tan, Maximizing Sum Rates in Cognitive Radio Networks: Convex Relaxation and Global Optimization Algorithms, **IEEE Journal on Selected Areas in Communications**, Vol. 32, No. 3, pp. 667-680, Mar. 2014.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

23. X. Zhai, L. Zheng and C. W. Tan, Energy-Infeasibility Tradeoff in Cognitive Radio Networks: Price-driven Spectrum Access Algorithms, **IEEE Journal on Selected Areas in Communications**, Vol. 32, No. 3, pp. 528-538, Mar. 2014.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

24. L. Zheng and C. W. Tan, Cognitive Radio Network Duality and Algorithms for Utility Maximization, **IEEE Journal on Selected Areas in Communications**, Vol. 31, No. 3, pp. 500-513, Mar. 2013.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

25. C. W. Tan, M. Chiang and R. Srikant, Fast Algorithms and Performance Bounds for Sum Rate Maximization in Wireless Networks, **IEEE/ACM Transactions on Networking**, Vol. 21, No. 3, pp. 706-719, Jun. 2013.

*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*

26. L. Yang, H. Kim, J. Zhang, M. Chiang and C. W. Tan, Pricing-based Spectrum Access Control in Cognitive Radio Networks with Random Access, **IEEE/ACM Transactions on Networking**, Vol. 21, No. 2, pp. 522-535, Apr. 2013.

*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*

27. L. Zheng and C. W. Tan, Optimal Algorithms in Wireless Utility Maximization: Fairness Decomposition and Nonlinear Perron-Frobenius Theory Framework, **IEEE Transactions on Wireless Communications**, Vol. 13, No. 4, pp. 2086-2095, 2013.

*Impact Factor: 6.779, Ranking: 8/90= 8% in the category of Telecommunications*

28. Y. Huang, C. W. Tan and B. D. Rao, Joint Beamforming and Power Control in Coordinated Multicell: Max-min Duality, Effective Networks and Large System Transition, **IEEE Transactions on Wireless Communications**, Vol. 12, No. 6, pp. 2730-2742, 2013.

*Impact Factor: 6.779, Ranking: 8/90= 8% in the category of Telecommunications*

29. D. W. H. Cai, T. Quek, C. W. Tan and S. H. Low, Max-Min SINR Coordinated Multipoint Downlink Transmission - Duality and Algorithms, **IEEE Transactions on Signal Processing**, Vol. 60, No. 10, pp. 5384-5395, Oct. 2012.

*Impact Factor: 5.028, Ranking: 36/266= 13% in the category of Engineering, Electrical*

30. S. Sorooshyari, C. W. Tan and M. Chiang, Power Control for Cognitive Radio Networks: Axioms, Algorithm, and Analysis, **IEEE/ACM Transactions on Networking**, Vol. 20, No. 3, pp. 878-891, Jun. 2012.

*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*

31. Y. Zhao, C. W. Tan, A. S. Avestimehr, S. N. Diggavi and G. J. Pottie, On the Maximum Achievable Sum-rate with Successive Decoding in Interference Channels, **IEEE Transactions on Information Theory**, Vol. 58, No. 6, pp. 3798-3820, Jun. 2012.

*Impact Factor: 3.700, Ranking: 54/156= 34% in the category of Computer Science, Information Systems*

32. C. W. Tan, S. Friedland and S. H. Low, Nonnegative Matrix Inequalities and Their Application to Nonconvex Power Control Optimization, **SIAM Journal on Matrix Analysis and Applications**, Vol. 32, No. 3, pp. 1030-1050, 2011.

*Impact Factor: 1.490, Ranking: 81/260= 31% in the category of Mathematics, Applied*

33. C. W. Tan, M. Chiang and R. Srikant, Maximizing Sum Rate and Minimizing MSE on Multiuser Downlink: Optimality, Fast Algorithms, and Equivalence via Max-min SINR, **IEEE Transactions on Signal Processing**, Vol. 59, No. 12, pp. 6127-6143, Dec. 2011.

*Impact Factor: 5.028, Ranking: 36/266= 13% in the category of Engineering, Electrical*

34. M. Wang, C. W. Tan, W. Xu and A. Tang, Cost of Not Splitting in Routing: Characterization and Estimation, **IEEE/ACM Transactions on Networking**, Vol. 19, No. 6, pp. 1849-1859, Dec. 2011.

*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*

35. D. W. H. Cai, T. Quek and C. W. Tan, A Unified Analysis of Max-min Weighted SINR for MIMO Downlink System, **IEEE Transactions on Signal Processing**, Vol. 59, No. 8, pp. 3850-3862, Aug. 2011.

*Impact Factor: 5.028, Ranking: 36/266= 13% in the category of Engineering, Electrical*

36. C. W. Tan, S. Friedland and S. H. Low, Spectrum Management in Multiuser Cognitive Wireless Networks: Optimality and Algorithms, **IEEE Journal on Selected Areas in Communications**, Vol. 29, No. 2, pp. 421-430, Feb. 2011.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

37. S. Sorooshyari, C. W. Tan and H. V. Poor, On Maximum-Likelihood SINR Estimation of MPSK in a Multiuser Fading Channel, **IEEE Transactions on Vehicular Technology**, Vol. 59, No. 8, pp. 4175-4181, Oct. 2010.

*Impact Factor: 5.379, Ranking: 6/36= 16% in the category of Transportation Science and Technology*

38. C. W. Tan and A. R. Calderbank, Multiuser Detection of Alamouti Signals, **IEEE Transactions on Communications**, Vol. 57, No. 7, pp. 2080-2089, Jul. 2009.

*Impact Factor: 5.646, Ranking: 11/90= 12% in the category of Telecommunications*

39. C. W. Tan, D. P. Palomar and M. Chiang, Energy-Robustness Tradeoff in Cellular Network Power Control, **IEEE/ACM Transactions on Networking**, Vol. 17, No. 3, pp. 912-925, Jun. 2009.

*Impact Factor: 3.036, Ranking: 11/105= 10% in the category of Computer Science, Theory and Methods*

40. M. Chiang, P. Hande, T. Lan and C. W. Tan, Power Control in Wireless Cellular Networks, **Foundations and Trends in Networking**, NOW Publishers, Vol. 2, No. 4, Jul. 2008.

*Impact Factor: 8.830, Ranking: 17/156= 10% in the category of Computer Science, Information Systems*

41. M. Chiang, C. W. Tan, D. P. Palomar, Dan O'Neill and David Julian, Power Control by Geometric Programming, **IEEE Transactions on Wireless Communications**, Vol. 6, No. 7, pp. 2640-2651, Jul. 2007.

*Impact Factor: 6.779, Ranking: 8/90= 8% in the category of Telecommunications*

42. C. W. Tan, D. M. Chiu, C. S. Lui and K. Yau, A Distributed Throttling Approach for Handling High Bandwidth Aggregates, **IEEE Transactions on Parallel and Distributed Systems**, Vol. 18, No. 7, pp. 983-995, Jul. 2007.

*Impact Factor: 2.60, Ranking: 16/105= 15% in the category of Telecommunications*

43. C. W. Tan, G. Mohan and C. S. Lui, Achieving Multi-Class Service Differentiation in WDM Optical Burst Switching Networks: A Probabilistic Preemptive Burst Segmentation Scheme, **IEEE Journal on Selected Areas in Communications**, Vol. 24, No. 12, pp. 106-119, Dec. 2006.

*Impact Factor: 11.420, Ranking: 2/90= 2.2% in the category of Telecommunications*

#### **Refereed Conference Papers (ACM SIGCOMM, SIGMETRICS, INFOCOM 10-18% acceptance rate)**

##### **Conference Papers – 2020**

1. C. W. Tan and L. Ling, Automated Reasoning by Convex Optimization: Proof Simplicity, Duality and Sparsity, 54th Conference on Information Sciences and Systems (CISS), 2020.
2. C. W. Tan, P. Yu, L. Ling, C. N. Hang and M. F. Wong, Mathematics Gamification in Mobile App Software for Personalized Learning at Scale, IEEE Integrated STEM Education Conference, 2020.

##### **Conference Papers – 2019**

3. L. Ling and C. W. Tan, Scalable Automated Proving of Information-Theoretic Inequalities with Proximal Algorithms, IEEE International Symposium on Information Theory, 2019.

##### **Conference Papers – 2018**



4. L. Ling and C. W. Tan, Human-Assisted Computation for Auto-grading, IEEE ICDM Workshop on Machine Learning for Education 2018.
5. L. Ling and C. W. Tan, Pilot Study on Optimal Task Scheduling in Learning, ACM Learning at Scale 2018.
6. C. Kuo, C.-N. Hang, P. D. Yu and C. W. Tan, Parallel Counting of Triangles in Large Graphs: Pruning and Hierarchical Clustering Algorithms, IEEE High Performance Extreme Computing **MIT-Amazon Graph Challenge (Honorable Mention)** Award, 2018.
7. P. D. Yu, C. W. Tan and H. L. Fu, Graph Algorithms for Preventing Cascading Failures in Networks, 52nd Conference on Information Sciences and Systems (CISS), 2018.

#### Conference Papers – 2017

1. L. Zheng, C. Joe-Wong, J. Chen, C. Brinton, C. W. Tan and M. Chiang, Economic Viability of a Virtual Internet Service Provider, **IEEE INFOCOM** 2017.
2. P. D. Yu, C. W. Tan and H. Fu, Rumor Source Detection in Finite Graphs with Boundary Effects by Message-passing Algorithms, ACM/IEEE ASONAM 2017.
3. P. D. Yu, C. W. Tan and H. Fu, Rumor Source Detection in Unicyclic Graphs, IEEE Information Theory Workshop 2017.
4. C. Li, X. Guang, C. W. Tan, R. W. Yeung, On Secure Asymmetric Multilevel Diversity Coding Systems, IEEE ISIT, 2017.
5. C. Li, F. Ye, X. Guang, Z. Zhou, C. W. Tan, R. W. Yeung, On Independent Distributed Source Coding Problems with Exact Repair, IEEE Information Theory Workshop, 2017.

#### Conference Papers – 2016

6. L. Zheng, C. Joe-Wong, C. Brinton, C. W. Tan, S. Ha and M. Chiang, On the Viability of a Cloud Virtual Service Provider, **ACM SIGMETRICS** 2016.
7. C. W. Tan, P. D. Yu, C. Lai, W. Zhang and H. L. Fu, Optimal Detection of Influential Spreaders in Online Social Networks, 50th Conference on Information Sciences and Systems (CISS), 2016.

8. Y. Bi, C. W. Tan and A. Tang, Network Utility Maximization with Path Cardinality Constraints, **IEEE INFOCOM** 2016.

#### Conference Papers – 2015

9. L. Zheng, C. Joe-Wong, C. W. Tan, M. Chiang and X. Wang, How to Bid the Cloud? **ACM SIGCOMM**, 2015.
10. L. Zheng, C. Joe-Wong, C. W. Tan, S. Ha and M. Chiang, Secondary Markets for Mobile Data: Feasibility and Benefits of Traded Data Plans, **IEEE INFOCOM**, 2015.
11. L. Zheng and C. W. Tan, A Probabilistic Characterization of the Rumor Graph Boundary in Rumor Source Detection, Proc. of IEEE DSP, 2015.
12. Z. Wang, W. Dong, W. Zhang and C. W. Tan, On Inferring Rumor Source for SIS Model under Multiple Observations, Proc. of IEEE DSP, 2015.

#### Conference Papers – 2014

13. Z. Wang, W. Dong, W. Zhang and C. W. Tan, Rumor Source Detection with Multiple Observations: Fundamental Limits and Algorithms, **ACM SIGMETRICS**, 2014.
14. Y. Chen, J. Zhang, X. Wang, X. Tian, W. Wu, F. Wu and C. W. Tan, Secrecy Capacity Scaling of Large-scale Cognitive Networks, **ACM MobiHoc**, 2014.
15. Y. W. Hong, C. W. Tan, L. Zheng, C. Hsieh and C.-H. Lee, A Unified Framework for Wireless Max-min Utility Optimization with General Monotonic Constraints, **IEEE INFOCOM** 2014.
16. C. W. Tan, Wireless Network Optimization by Perron-Frobenius Theory, 48<sup>th</sup> Conference on Information Sciences and Systems (CISS), 2014.
17. S. W. Ho, C. W. Tan and R. W. Yeung, Proving and Disproving Information Inequalities, IEEE ISIT 2014.
18. C. W. Tan, S. W. Ho, S. Lin and R. W. Yeung, Finding the Capacity of Next-Generation Networks by Linear Programming, IEEE ICCS 2014.

#### Conference Papers – 2013

19. W. Dong, W. Zhang and C. W. Tan, Rooting Out the Rumor Culprit from Suspects, Proc. IEEE ISIT 2013, Turkey.
20. F. M. Wong, C. W. Tan, S. Sen and M. Chiang, Quantifying Political Leaning from Tweets and Retweets, Seventh International AAAI Conference on Weblogs and Social Media (ICWSM), 2013.
21. X. Zhai, L. Zheng and C. W. Tan, Optimization Algorithms for Epidemic Evolution in Broadcast Networks, Proc. IEEE WCNC 2013.
22. L. Zheng and C. W. Tan, Optimal Fixed-Point Algorithms for Service Differentiation in Wireless Networks, Proc. IEEE WiOpt 2013.
23. X. Zhai, L. Zheng and C. W. Tan, Convex Relaxation Algorithms for Energy-Infeasibility Tradeoff in Cognitive Radio Networks, Proc. IEEE WiOpt 2013.

#### Conference Papers – 2012

24. D. W. H. Cai, C. W. Tan and S. H. Low, Optimal Max-min Fairness Rate Control in Wireless Networks: Perron-Frobenius Characterization and Algorithms, Proc. **IEEE INFOCOM 2012**, Orlando.
25. C. W. Tan, D. W. H. Cai and X. Lou, DC Optimal Power Flow: Uniqueness and Algorithms, Proc. IEEE Smart Grid Comms, Taiwan, 2012.
26. N. Chen, T. Quek and C. W. Tan, Optimal Charging of Electric Vehicles in Smart Grid: Characterization and Valley-filling Algorithms, Proc. IEEE Smart Grid Comms, Taiwan, 2012.
27. Y. Huang, C. W. Tan and B. D. Rao, Outage Balancing in Multiuser MISO Networks: Network duality and Algorithms, Proc. IEEE Globecom 2012, Hawaii.
28. Y. Huang, C. W. Tan and B. D. Rao, Cooperative Beamforming in Multiuser MIMO Networks: Fast SINR Fairness Algorithms, Proc. IEEE Globecom 2012, Hawaii.
29. Y. Huang, C. W. Tan and B. D. Rao, Asymptotic Analysis of Max-min Weighted SINR in Multiuser Downlink, Proc. IEEE CISS 2012, Princeton.
30. Y. Huang, C. W. Tan and B. D. Rao, Multicell Network Duality with Instantaneous and Statistical Channel Information, Proc. IEEE CISS 2012, Princeton.

#### Conference Papers – 2011

31. C. W. Tan, Optimal Power Control in Rayleigh-fading Heterogeneous Networks, Proc. **IEEE INFOCOM 2011**, Shanghai.
32. Y. Gao, C. W. Tan, Y. Huang, Z. Zeng and P. R. Kumar, Feasibility and Optimization of Delay Guarantees for Non-homogeneous Flows in IEEE 802.11 WLANs, Proc. **IEEE INFOCOM 2011**, Shanghai.
33. L. Yang, H. Kim, J. Zhang, M. Chiang and C. W. Tan, Pricing-based Spectrum Access Control in Cognitive Radio Networks with Random Access, Proc. **IEEE INFOCOM 2011**, Shanghai.
34. D. W. H. Cai, T. Quek, C. W. Tan and S. H. Low, Max-min Weighted SIR in Coordinated Multicell MIMO Downlink System, Proc. IEEE WiOpt, Princeton, NJ, May 2011.

35. D. W. H. Cai, T. Quek and C. W. Tan, Coordinated Max-Min SIR Optimization in Multicell Downlink - Duality and Algorithm, Proc. IEEE ICC, Kyoto, Japan, Jun 2011.
36. Y. Zhao, C. W. Tan, A. S. Avestimehr, Suhas N. Diggavi and G. J. Pottie, On the Sum-Capacity with Successive Decoding in Interference Channels, Proc. IEEE ISIT, Jul 31-Aug 5, 2011.

#### **Conference Papers – 2010**

37. D. W. H. Cai, T. Quek and C. W. Tan, Max-min Weighted SIR in Coordinated Multicell MIMO Downlink System, Proc. Asilomar Conference, Pacific Grove, CA, Nov 2010.
38. D. W. H. Cai, T. Quek and C. W. Tan, Max-min Weighted SIR for MIMO Downlink System: Optimality and Algorithms, Proc. IEEE ISIT, Austin, Texas, Jun 13-Jun 18, 2010.

#### **Conference Papers – 2009**

39. M. Wang, C. W. Tan, A. Tang and S. H. Low, How Bad is Single Path Routing? Proc. IEEE Globecom, Honolulu, Hawaii, Nov 30-Dec 4, 2009.
40. C. W. Tan, S. Friedland and S. H. Low, Maximizing Sum Rates in Multiuser Communication Systems: Theory and Algorithms, 20<sup>th</sup> International Symposium on Mathematical Programming, Chicago, IL, Aug 23-28, 2009.
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#### **Conference Papers – 2008**

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44. C. W. Tan, D. P. Palomar and M. Chiang, Exploiting Hidden Convexity for Flexible and Robust Resource Allocation in Cellular Networks, Proc. **IEEE INFOCOM 2007**, Anchorage, 2007.
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47. C. W. Tan, D. P. Palomar, and M. Chiang, Solving Nonconvex Power Control Problems in Wireless Networks: Low SIR Regime and Distributed Algorithms,” Proc. IEEE Globecom, St. Louis, MO, USA, Nov. 28 – Dec. 2, 2005.

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48. C. W. Tan, G. Mohan, and C. S. Lui, Achieving Proportional Loss Differentiation using Probabilistic Preemptive Burst Segmentation in Optical Burst Switching WDM Networks,” Proc. IEEE Globecom, Dallas, TX, USA, Nov., 2004.

### Books

- C. W. Tan and P. Yu, “Network Inference for Cyber Security in Complex Networks”, Springer Nature, ISBN: 978-981-13-9897-1 2021
- C. W. Tan (Ed.), “Online Social Networks: Perspectives, Applications and Developments,” Nova Science Publishers, ISBN: 978-1-536173871, 2020.
- C. W. Tan (Ed.), “Cognitive Radio Networks: Performance, Applications and Technology,” Nova Science Publishers, ISBN: 978-1-536130683, 2017.
- C. W. Tan, “Wireless Network Optimization by Perron-Frobenius Theory,” Foundations and Trends in Networking, Now Publishers, ISBN 978-1-680830507, 2015.
- C. W. Tan and L. Zheng, “Smart Data Pricing by Wireless Network Duality,” in *Smart Data Pricing*, Chapter 13, S. Sen, J. Carlee-Wong, Editors, John Wiley & Sons, Apr. 2013.

## Competitive Project Grants and Funds as Principal Investigator (PI)

External Grant Agency	Project Title	Duration	Amount
Education Bureau (EDB) Gifted Education Fund GEF2019-001	Creative Mathematics and Computer Science Learning for Gifted Students	2020-2021	HK\$1,260,000 ~US\$162,560
Google Inc.	Google Tensorflow Software Technologies Research Development Grant plus RGC Matching Grant	2019-2020	HK\$110,100 ~US\$14,200
Innovation and Technology Commission (HK ITC) TSSSU/18/03/1	Technology Start-up Support Scheme for Universities	2018-2019	HK\$746,667 ~US\$100,000
Innovation and Technology Commission (HK ITC) ITS/180/16	Development of Viral Marketing Techniques in Online Social Networks for E-commerce automated by Data Analytics Software	2017 -2019	HK\$1,363,250 ~US\$176,000

Hong Kong RGC General Research Fund (GRF) 9042196 (11207615)	To prove or to disprove: Information inequalities prover, computational algorithms and cloud computing software	2015 –2018	HK\$696,029 ~US\$90,000
Hong Kong RGC General Research Fund (GRF) 9042059 (11212114)	Network resilience against cascading failures in the Internet of Things: Theories, algorithms and cyber-security protocol design	2014 –2017	HK\$692,894 ~US\$89,000
Hong Kong-Mainland SRFDP/RGC Joint Research 9051102 (M-CityU107/13)	Inference of large epidemic-like information spreading: Theories and network forensics	2014 –2016	HK\$333,500 ~US\$43,000
Hong Kong RGC General Research Fund (GRF) 9041912 (122013)	Dynamic optimization of power flow and electric vehicle resources in Smart Grid	2013 –2016	HK\$645,500 ~US\$84,000
Hong Kong RGC Early Career Scheme Fund (ECS) 9041808 (125212)	Adaptive radio resource optimization in Femtocell	2012 –2015	HK\$761,250 ~US\$99,000
Hong Kong RGC General Research Fund (GRF) 9041489 (112909)	Algorithms for Fisher equilibrium with various constrained market equilibrium	2009 –2012	HK\$945,000 ~US\$122,000
National Natural Science Foundation of China (NSFC) 61771018	Cyber-intelligence in online social networks 互网络中对信息传播源推断的理论与算法研究 (国家自然科学基金-面上项目)	2017–2021	CNY500,000
Shenzhen Municipal Government Science Technology and Innovation Committee 深圳市科技计划	Cyber-intelligence in the web and statistical inference 网络中信息传播源的推断与网络取证算法的研究	2017– 2020	CNY500,000
Shenzhen Municipal Government Science Technology and Innovation Committee 深圳市科技计划	Cybersecurity in communication and data storage 通信网络和存储系统中绝对信息安全的研究	2018 –2021	CNY500,000
Shenzhen Municipal Government Science Technology and Innovation Committee 深圳市科技计划	Energy-efficient communication in next-generation high-speed mobile cellular networks networks 《基于蜂窝网络支持的下一代网络高速率大规模的绿色研究》	2016 –2019	CNY300,000 ~US\$50,000
Shenzhen Municipal Government Science Technology and Innovation Committee 深圳市科技计划	Adaptive spectrum access resource allocation in cognitive radio networks 《动态资源优化分配在认知蜂窝网络中的研究》	2013 –2015	CNY50,000 ~US\$8200
Shenzhen Municipal Government Science Technology and Innovation Committee 深圳市科技计划	Green communications in small-cell mobile networks 《绿色通信中家用无线基店资源分配的优化研究》	2012 –2015	CNY100,000 ~US\$16,300
Huawei Research Lab	New routing schemes optimization and design for future information networks	2014 –2015	CNY270,000 ~US\$44,000
Qualcomm R&D Office of the Chief Scientist	Optimization and control of wireless networks	2011 –2011	US\$30,000

## International Services to Community

- **Distinguished Lecturer**, giving distinguished lectures as a renowned communications technology expert invited to IEEE Communications Society chapters to share their knowledge, expertise, and insights into the future of communications technology. Served from 2021 – 2022.
- **Editor**, IEEE/ACM Transactions on Networking. Served from 2016 – 2020.
- **Editor**, IEEE Communications Surveys and Tutorials Communications. Served from 2020 – present.
- **Editor**, IEEE Transactions on Communications. Served from 2012 – 2018.
- **General Chair** of the 2015 Croucher Foundation Workshop on Information Theory and Communications in Hong Kong.
- **Program Co-Chair**, 2019 IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), 2013 IEEE SmartGridComm, 2013 IEEE Taiwan-Hong Kong Joint Workshop on Information Theory and Communications, Special Session on Optimization in Wireless Networks, 2012 IEEE International Conference on Communications Systems, Singapore.
- **Technical Program Committee Member**, ACM SIGMETRICS 2019, 2020, ACM MOBIHOC 2018, 2019, IEEE INFOCOM 2012-2016, IEEE SmartGridComm 2012-13, IEEE WCNC 2012-2013, IEEE ICDCS 2012, IEEE Globecom 2010-2013, IEEE ICC 2011-2013, IEEE WiOpt 2011-2013, QTNA 2009-2013.
- **Chairman**, IEEE Information Theory Society Hong Kong Chapter in 2014 and 2015. The Hong Kong chapter received the 2015 Information Theory Society Chapter of the Year Award during my tenure.
- **Faculty Coordinator and Coach**, Intel Cup Embedded System Design Invitational Contest for Undergraduates, 2014, 2016, 2018 and ACM Collegiate Programming Contest 2012-2014.
- **Tutorial Speaker**, Tutorial on “Network Statistical Inference in Complex Engineered Networks” at the 2016 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) in Shanghai, 2014 IEEE International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP) in Singapore, Tutorial on “Convex Optimization of Cognitive Radio Networks” at the 2010 IEEE International Dynamic Spectrum Access Networks (DySPAN) Symposium and 2012 IEEE International Conference on Communications in China.