

Contact Information	<p>ERB 508 The Chinese University of Hong Kong, Shatin, Hong Kong SAR</p> <p><i>E-mail:</i> htwai@se.cuhk.edu.hk <i>Skype:</i> s360pf <i>Website:</i> http://www1.se.cuhk.edu.hk/~htwai/</p>
Research Highlights	<p>My research focuses on the modeling and learning of network systems, as well as developing provably efficient algorithms to handle the arisen optimization problems.</p>
Academic Positions Held	<p>The Chinese University of Hong Kong (CUHK), Shatin, Hong Kong Assistant Professor, Dept. of SE&EM, Dec. 2018 — Present</p> <p>Arizona State University (ASU), Tempe, AZ, USA Postdoctoral Scholar, Jan. 2018 — Nov., 2018</p> <ul style="list-style-type: none"> • Host: Prof. Anna Scaglione and Prof. Angelia Nedić <p>Massachusetts Institute of Technology (MIT), Cambridge, MA, USA Visiting Scholar, LIDS, May, 2017 — Aug., 2017 and June, 2018 — Nov., 2018</p> <ul style="list-style-type: none"> • Host: Prof. Asuman E. Ozdaglar <p>Télécom ParisTech (ENST), Paris, France Visiting Student, TSI/STA group, May, 2015 — Oct., 2015</p> <ul style="list-style-type: none"> • Host: Prof. Eric Moulines <p>École Polytechnique, Palaiseau, France Visiting Scholar, CMAP, April, 2018 — June, 2018</p> <ul style="list-style-type: none"> • Host: Prof. Eric Moulines
Education	<p>Arizona State University (ASU), Tempe, AZ, USA PhD in Electrical Engineering, Dec., 2017</p> <ul style="list-style-type: none"> • Dissertation Topic: “New and Provable Results for Network Inference Problems and Multi-agent Optimization Algorithms” • Advisor: Prof. Anna Scaglione <p>The Chinese University of Hong Kong (CUHK), Shatin, Hong Kong M. Phil, Electronic Engineering, Sept., 2012</p> <ul style="list-style-type: none"> • Advisor: Prof. Wing-kin (Ken) Ma <p>B. Eng, Electronic Engineering, June, 2010 (<i>with first class honour</i>)</p>
Honors & Awards (selected)	<p>Best student paper award at IEEE ICASSP 2018 (10 out of 2840 submissions)</p> <p>Dean’s Dissertation Award, Ira A. Fulton Schools of Engineering, ASU, 2017 (2 out of all PhD graduates in the Schools of Engineering for Academic Year 2017-2018).</p> <p>Best paper award finalist at IEEE SAM 2014, IEEE SAM Workshop, 2014</p> <p>Outstanding Tutor Award, Department of Electronic Engineering, CUHK, 2012</p> <p>Dean’s List, Faculty of Engineering, CUHK, 2006-2008, 2009-2010</p> <p>Sir Edward Youde Memorial Scholarship, 2008</p>

- Journal Publications [J9] S.-X. Wu, **H.-T. Wai** and A. Scaglione, “*Estimating Social Opinion Dynamics Models from Voting Records*”, accepted by IEEE Transactions on Signal Processing, to appear, 2018.
- [J8] M. Alizadeh, **H.-T. Wai**, A. Goldsmith and A. Scaglione, “*Retail and Wholesale Electricity Pricing Considering Electric Vehicle Mobility*”, accepted by IEEE Transaction on Control of Networked Systems, to appear, 2018.
- [J7] **H.-T. Wai**, J. Lafond, A. Scaglione and E. Moulines, “*Decentralized Frank-Wolfe Algorithm for Convex and Non-convex Optimization*”, IEEE Transactions on Automatic Control, Nov., 2017.
- [J6] R. Gentz, S.-X. Wu, **H.-T. Wai**, A. Scaglione and A. Leshem, “*Data injection attacks in randomized gossiping*”, IEEE Transactions on Signal and Information Processing over Networks, Dec., 2016.
- [J5] M. Alizadeh, **H.-T. Wai**, M. Chowdhury, A. Scaglione, A. Goldsmith, and T. Javidi, “*Optimal Pricing to Manage Electric Vehicles in Coupled Power and Transportation Networks*”, accepted by IEEE Transaction on Control of Networked Systems, Dec., 2017.
- [J4] **H.-T. Wai**, Q. Li and W.-K. Ma, “*Discrete Sum Rate Maximization for MISO Interference Broadcast Channels: Convex Approximations and Efficient Algorithms*”, IEEE Transaction on Signal Processing, Aug., 2016.
- [J3] **H.-T. Wai**, A. Scaglione and A. Leshem, “*Active Sensing of Social Networks*”, IEEE Transactions on Signal and Information Processing over Networks, Sept., 2016.
- [J2] **H.-T. Wai** and A. Scaglione, “*Consensus on State and Time: Decentralized Regression with Asynchronous Sampling*”, IEEE Transaction on Signal Processing, June, 2015.
- [J1] Q. Li, M. Hong, **H.-T. Wai**, W.-K. Ma, Y.-F. Liu, and Z.-Q. Luo, “*Transmit Solutions for MIMO Wiretap Channels using Alternating Optimization and Water-Filling*”, IEEE Journal on Selected Areas in Communications, vol. 31, no. 9, pp. 1714-1727, Sept. 2013.
- Book Chapters, Magazine Papers [B3] S.-X. Wu, **H.-T. Wai**, L. Li, and A. Scaglione, “*A Review of Distributed Algorithms for Principal Component Analysis*”, in Proceedings of the IEEE, 2018.
- [B2] **H.-T. Wai**, A. Scaglione and E. Moulines, contributed book chapter, “*Methods for decentralized signal processing with Big Data*”, chapter in Cooperative and Graph Signal Processing, edited by Petar Djuric and Cedric Richard, Elsevier, June, 2018.
- [B1] **H.-T. Wai**, A. Scaglione and A. Leshem, contributed book chapter, “*Active Sensing of Social Networks: Network Identification from Low Rank Data*”, chapter in Cooperative and Graph Signal Processing, edited by Petar Djuric and Cedric Richard, Elsevier, June, 2018.
- CS Conference Publications [D3] B. Karimi*, B. Miasojedow*, E. Moulines* and **H.-T. Wai***, “*Non-asymptotic Analysis of Biased Stochastic Approximation Scheme*”, in COLT 2019. (* equal contribution, Acceptance rate: ~30 %)
- [D2] G. Robin, **H.-T. Wai**, J. Josse, O. Klopp and E. Moulines, “*Low-rank Interaction with Sparse Additive Effects Model for Large Data Frames*”, in NeurIPS 2018. (**Spotlight**, Acceptance rate: ~4 %)
- [D1] **H.-T. Wai**, Z. Yang, Z. Wang and M. Hong, “*Multi-Agent Reinforcement Learning via Double Averaging Primal-Dual Optimization*”, in NeurIPS 2018. (Acceptance rate: ~20 %)
Available: <http://arxiv.org/abs/1806.00877>
- Working Papers [X2] **H.-T. Wai**, A. Scaglione, U. Harush, B. Barzel and A. Leshem, “*RIDS: Robust Identification of Sparse Gene Regulatory Networks from Perturbation Experiments*”, Technical Report. [Online].
Available: <http://arxiv.org/abs/1612.06565>
- [X1] J. Lafond*, **H.-T. Wai*** and E. Moulines, “*On the Online Frank-Wolfe Algorithms for Convex and Non-convex Optimizations*”, Technical Report. [Online].
Available: <http://arxiv.org/abs/1510.01171v2> (* equal contribution)

- [C29] **H.-T. Wai**, N. Freris, A. Nedić and A. Scaglione, “*SUCAG: Stochastic Unbiased Curvature-aided Gradient Method for Distributed Optimization*”, Invited paper, accepted by IEEE CDC 2018.
- [C28] N. Raviv, R. Ramakrishna, **H.-T. Wai** and A. Scaglione, “*Network Inference and its Application to the Estimation of Crowd Dynamics from IoT Sensors*”, accepted by IEEE SPAWC 2018, to appear.
- [C27] G. Li, S.-X. Wu, S. Zhang, **H.-T. Wai** and A. Scaglione, “*Detecting and Localizing Adversarial Nodes Using Neural Networks*”, accepted by IEEE SPAWC 2018, to appear.
- [C26] **H.-T. Wai**, A. Scaglione, B. Barzel and A. Leshem, “*Network inference from complex systems steady states observations: theory and methods*”, accepted by IEEE DSW 2018, to appear.
- [C25] **H.-T. Wai**, S. Segarra, A. E. Ozdaglar, A. Scaglione and A. Jadbabaie, “*Community Detection from Low Rank Excitations of a Graph Filter*”, in Proc. ICASSP 2018. (**Best student paper**)
- [C24] **H.-T. Wai**, A. E. Ozdaglar and A. Scaglione, “*Identifying Susceptible Agents in Time Varying Opinion Dynamics through Compressive Measurements*”, in Proc. ICASSP 2018.
- [C23] R. Wu, C. H. Chan, **H.-T. Wai**, W.-K. Ma and X. Fu, “*HI, BCD! Hybrid Inexact Block Coordinate Descent for Hyperspectral Super-resolution*”, in Proc. ICASSP 2018.
- [C22] S.-X. Wu, **H.-T. Wai**, A. Scaglione, A. Nedić and A. Leshem, “*Data Injection Attack on Decentralized Optimization*”, in Proc. ICASSP 2018.
- [C21] **H.-T. Wai**, W. Shi, A. Nedić and A. Scaglione, “*Curvature-aided Incremental Aggregated Gradient Method*”, Invited paper, Allerton Conference, Oct. 2017.
- [C20] M. Alizadeh, **H.-T. Wai**, A. Goldsmith, and A. Scaglione, “*Marginal Charging Station Pricing in an Intelligent Electric Transportation System*”, in Proc. ACC 2017.
- [C19] **H.-T. Wai**, A. Scaglione, J. Lafond and E. Moulines, “*Fast and Privacy Preserving Distributed Low Rank Regression*”, in Proc. ICASSP 2017.
- [C18] S.-X. Wu, **H.-T. Wai**, A. Scaglione and N. Jacklin, “*The Power-Oja Method for Decentralized Subspace Estimation/Tracking*”, in Proc. ICASSP 2017.
- [C17] J. Lafond*, **H.-T. Wai*** and E. Moulines, “*Non-convex Optimization with Frank-Wolfe Algorithm and Its Variants*”, in *NIPS 2016 Workshop on Nonconvex Optimization for Machine Learning: Theory and Practice*. (* equal contribution)
- [C16] S.-X. Wu, **H.-T. Wai** and A. Scaglione, “*Data Mining the Underlying Trust in the US Congress*”, in Proc. GlobalSIP 2016.
- [C15] **H.-T. Wai**, A. Scaglione, J. Lafond and E. Moulines, “*A Projection-free Decentralized Algorithm for Non-convex Optimization*”, in Proc. GlobalSIP 2016.
- [C14] M. Alizadeh, **H.-T. Wai**, A. Goldsmith, and A. Scaglione, “*Optimal Electricity Pricing for Societal Infrastructure Systems*”, in Proc. 50th HICSS Conference.
- [C13] J. Lafond*, **H.-T. Wai*** and E. Moulines, “*D-FW: Communication Efficient Distributed Algorithms for High-dimensional Sparse Optimization*”, in Proc. ICASSP 2016. (* equal contribution)
- [C12] **H.-T. Wai**, A. Scaglione and A. Leshem, “*Active Online Learning of Trusts in Social Networks*”, in Proc. ICASSP 2016.
- [C11] **H.-T. Wai**, A. Scaglione and A. Leshem, “*Identifying trust in social networks with stubborn agents, with application to market decisions*”, Invited paper, Allerton Conference, Oct. 2015.

[C10] **H.-T. Wai**, A. Scaglione and A. Leshem, “*The Social System Identification Problem*”, in Proc. IEEE CDC 2015, Dec., 2015. [Online]. Available: <http://arxiv.org/abs/1503.07288>

[C9] R. Gentz, **H.-T. Wai**, A. Scaglione and A. Leshem, “*Detection of data injection attacks in decentralized learning*”, Invited paper, Asilomar Conf. 2015, Nov., 2015.

[C8] **H.-T. Wai**, T.-H. Chang and A. Scaglione, “*A Consensus-based Decentralized Algorithm for Non-convex Optimization with Application to Dictionary Learning*”, IEEE ICASSP 2015, Apr., 2015.

[C7] **H.-T. Wai** and A. Scaglione, “*Decentralized Regression Under Asynchronous sub-Nyquist Sampling*”, Invited paper, Asilomar Conf. 2014, Nov., 2014.

[C6] M. Alizadeh, **H.-T. Wai**, A. Scaglione, A. Goldsmith, Y. Fan, and T. Javidi, “*Optimized Path Planning for Electric Vehicle Routing and Charging*”, Invited paper, Allerton Conference, Oct. 2014.

[C5] **H.-T. Wai** and A. Scaglione, “*State Estimation with Sampling Offsets in Wide Area Measurements Systems*”, in Proc. IEEE SAM 2014, A Coruna, Spain, June 22-26, 2014.

[C4] **H.-T. Wai**, Q. Li, and W.-K. Ma, “*A convex approximation method for multiuser MISO sum rate maximization under discrete rate constraints*,” in Proc. ICASSP 2013, Vancouver, Canada, May 26-31, 2013.

[C3] Q. Li, M. Hong, **H.-T. Wai**, W.-K. Ma, Y.-F. Liu, and Z.-Q. Luo, “*An alternating optimization algorithm for the MIMO secrecy capacity problem under sum power and per-antenna power constraints*,” in Proc. ICASSP 2013, Vancouver, Canada, May 26-31, 2013.

[C2] **H.-T. Wai** and W.-K. Ma, “*A Decentralized Method for Joint Admission Control and Beamforming in Coordinated Multicell Downlink*,” in Proc. Asilomar Conf. 2012. Pacific Grove, CA, Nov. 4-7, 2012. [Online]. Available: <http://arxiv.org/abs/1211.4665>

[C1] **H.-T. Wai**, W.-K. Ma, and A. M.-C. So. “*Cheap semidefinite relaxation MIMO detection using row-by-row block coordinate descent*,” in Proc. ICASSP 2011, pp. 3256-3259, Prague, Czech Republic, May 22-27, 2011.

Teaching *FTEC2101 Optimization Methods for FinTech (Class size: 45)* **Spring Semester, 2019**

Remark: New course developed for the FinTech program students (Year 2).

Invited Talks *Distributed Incremental Methods for Finite-sum Optimization Problems*

School of CS, University of Science and Technology of China April, 2019.

Department of EE, National Tsinghua University Jan, 2019.

Inferring Features of the Graph Topology without the Topology

Annual Telecom Meeting, Taichung, Taiwan Jan, 2019.

Identifying latent network structures embedded in high-dimensional data — challenges and solutions

Department of EE, University of Minnesota April, 2018.

Department of CIE, Shenzhen University November, 2017.

Department of SEEM, CUHK August, 2017.

First-order Optimization Methods for Large-scale Problems

CMAF, École Polytechnique June, 2018.

EECS Colloquium, Oregon State University Jan, 2018.

Professional
Activities

Reviewer for Journals: *Scientific Reports, Applied Energy, IEEE Transactions on Signal Processing, IEEE Signal Processing Letters, IEEE Transactions on Networking, IEEE Transactions on Network Science and Engineering, IEEE Transactions on Signal and Information Processing over Networks, IEEE Transactions on Control of Network Systems, IEEE Journal on Internet of Things, Journal of Machine Learning Research*

Reviewer for Conferences: *ICASSP 2017–2019, GlobalSIP 2016–2019, MLSP 2018 & 2019, NeurIPS 2016 & 2019.*

Programming
Languages

C/C++, MATLAB, MEX-C (MATLAB C), Python

Reference

Available upon request.