

CURRICULUM VITAE

TING KEI PONG

ADDRESS

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AREA OF INTEREST

I am currently interested in continuous optimization, algorithms and related applications.

EDUCATION

- 07/2013–07/2014 PIMS postdoctoral fellow at University of British Columbia, Vancouver, BC, Canada.
Mentor: Professor Michael Friedlander
- 06/2011–07/2013 Postdoctoral fellow at University of Waterloo, Waterloo, ON, Canada.
Mentors: Professor Stephen Vavasis/ Professor Henry Wolkowicz
- 09/2006–06/2011 Ph.D. studies in Mathematics at University of Washington, Seattle, WA, USA.
Thesis: *Convex optimization in sensor network localization and multi-task learning*
Thesis Advisors: Professor Maryam Fazel/ Professor Rekha Thomas/ Professor Paul Tseng
- 09/2004–08/2006 M.Phil. studies in Mathematics at the Chinese University of Hong Kong, Hong Kong, China
Thesis: *The strong conical hull intersection property for systems of closed convex sets*
Thesis Advisor: Professor Kung Fu Ng
- 09/2001–08/2004 Undergraduate studies in Mathematics at the Chinese University of Hong Kong, Hong Kong, China

CONFERENCE TALKS

- 07/2024 ISMP 2024, *Kurdyka-Lojasiewicz exponent for a class of Hadamard-difference-parameterized models*
- 08/2023 ICIAM 2023, *Convergence rate analysis of a Dykstra-type projection algorithm*
- 06/2023 SIAM OP23, *Frank-Wolfe type methods for nonconvex inequality-constrained problems*
- 12/2020 AustMath Meeting 2020, *Convergence rate analysis of SCP_{1s} for a class of constrained difference-of-convex optimization problems*
- 08/2019 ICCOPT 2019, *Gauge optimization: Duality and polar envelope*
- 07/2018 EURO 2018, *Iteratively reweighted l_1 algorithms with extrapolation*
- 07/2018 ISMP 2018, *Iteratively reweighted l_1 algorithms with extrapolation*
- 06/2018 INFORMS international 2018, *A successive difference-of-convex approximation method for a class of nonconvex nonsmooth optimization problems*
- 05/2018 SIAM ALA 2018, *A non-monotone alternating updating method for a class of matrix factorization problems*
- 08/2016 ICCOPT 2016, *Explicit estimation of KL exponent and linear convergence of 1st-order methods*
- 07/2015 ISMP 2015, *Splitting methods for nonconvex feasibility problems*
- 05/2014 WCOM 2014, *Gauge Optimization and duality*
- 10/2013 WCOM 2013, *The proximal-proximal gradient algorithm*
- 05/2013 Optimization Days 2013, *Generalized trust region subproblem: Analysis and algorithm*
- 08/2012 ISMP 2012, *Generalized trust region subproblem: Analysis and algorithm*
- 10/2011 MWOM 2011, *Efficient solutions for large-scale trust region subproblem*
- 05/2010 WCOM 2010, *ESDP relaxation of sensor network localization: Analysis, extensions and algorithm*
- 08/2009 ISMP 2009, *ESDP relaxation of sensor network localization: Analysis, extensions and algorithm*
- 08/2008 MOPTA 2008, *ESDP relaxation of sensor network localization*

PREPRINTS

- 1 Wenqing Ouyang, Ting Kei Pong and Man-Chung Yue. *Burer-Monteiro factorizability of nuclear norm regularized optimization*. Submitted May 2025.
- 2 Peiran Yu, Liaoyuan Zeng and Ting Kei Pong. *Convergence analysis for a variant of manifold proximal point algorithm based on Kurdyka-Lojasiewicz property*. Submitted.
- 3 Ying Lin, Benjamin Poignard, Ting Kei Pong and Akiko Takeda. *Break recovery in graphical networks with D-trace loss*. Submitted Oct 2024.
- 4 Hao Zheng, Liaoyuan Zeng and Ting Kei Pong. *A single-loop proximal-conditional-gradient penalty method*. Submitted Sep 2024.

PUBLICATIONS

- 1 Ming Lei, Ting Kei Pong, Shuqin Sun and Man-Chung Yue. *Subdifferentially polynomially bounded functions and Gaussian smoothing-based zeroth-order optimization*. To appear in SIAM J. Optim.
- 2 Yongle Zhang, Ting Kei Pong and Shiqi Xu. *An extended sequential quadratic method with extrapolation*. To appear in Comput. Optim. Appl.
- 3 Ying Lin, Scott B. Lindstrom, Bruno F. Lourenço and Ting Kei Pong. *Tight error bounds for log-determinant cones without constraint qualifications*. J. Optim. Theory Appl. 205, 2025, Article number: 45.
- 4 Wenqing Ouyang, Yuncheng Liu, Ting Kei Pong and Hao Wang. *Kurdyka-Lojasiewicz exponent via Hadamard parametrization*. SIAM J. Optim. 35, 2025, pp. 62–91.
- 5 Scott B. Lindstrom, Bruno F. Lourenço and Ting Kei Pong. *Optimal error bounds in the absence of constraint qualifications with applications to the p -cones and beyond*. To appear in Math. Oper. Res.
- 6 Liaoyuan Zeng, Yongle Zhang, Guoyin Li, Ting Kei Pong and Xiaozhou Wang. *Frank-Wolfe-type methods for nonconvex inequality-constrained problems*. Math. Program. 208, 2024, pp. 717–761.
- 7 Ying Lin, Scott B. Lindstrom, Bruno F. Lourenço and Ting Kei Pong. *Generalized power cones: optimal error bounds and automorphisms*. SIAM J. Optim. 34, 2024, pp. 1316–1340.
- 8 Xiaozhou Wang and Ting Kei Pong. *Convergence rate analysis of a Dykstra-type projection algorithm*. SIAM J. Optim. 34, 2024, pp. 563–589.
- 9 Tianxiang Liu, Ting Kei Pong and Akiko Takeda. *Doubly majorized algorithm for sparsity-inducing optimization problems with regularizer-compatible constraints*. Comput. Optim. & Appl. 86, 2023, pp. 521–553.

- 10 Shuqin Sun and Ting Kei Pong. *Doubly iteratively reweighted algorithm for constrained compressed sensing models*. *Comput. Optim. & Appl.* 85, 2023, pp. 583–619.
- 11 Chuan He, Zhaosong Lu and Ting Kei Pong. *A Newton-CG based augmented Lagrangian method for finding a second-order stationary point of nonconvex equality constrained optimization with complexity guarantees*. *SIAM J. Optim.* 33, 2023, pp. 1734–1766.
- 12 Yongle Zhang, Guoyin Li, Ting Kei Pong and Shiqi Xu. *Retraction-based first-order feasible methods for difference-of-convex programs with smooth inequality and simple geometric constraints*. *Adv. Comput. Math.* 49, 2023, Article number: 8.
- 13 Scott B. Lindstrom, Bruno F. Lourenço and Ting Kei Pong. *Error bounds, facial residual functions and applications to the exponential cone*. *Math. Program.* 200, 2023, pp. 229–278.
- 14 Liaoyuan Zeng and Ting Kei Pong. *ρ -regularization subproblems: Strong duality and an eigensolver-based algorithm*. *Comput. Optim. & Appl.* 81, 2022, pp. 337–368.
- 15 Peiran Yu, Guoyin Li and Ting Kei Pong. *Kurdyka-Lojasiewicz exponent via inf-projection*. *Found. Comput. Math.* 22, 2022, pp. 1171–1217.
- 16 Peiran Yu, Ting Kei Pong and Zhaosong Lu. *Convergence rate analysis of a sequential convex programming method with line search for a class of constrained difference-of-convex optimization problems*. *SIAM J. Optim.* 31, 2021, pp. 2024–2054.
- 17 Liaoyuan Zeng, Peiran Yu and Ting Kei Pong. *Analysis and algorithms for some compressed sensing models based on $L1/L2$ minimization*. *SIAM J. Optim.* 31, 2021, pp. 1576–1603.
- 18 Xinxin Li, Ting Kei Pong, Hao Sun and Henry Wolkowicz. *A strictly contractive Peaceman-Rachford splitting method for the doubly nonnegative relaxation of the minimum cut problem*. *Comput. Optim. & Appl.* 78, 2021, pp. 853–891.
- 19 Tianxiang Liu, Ivan Markovsky, Ting Kei Pong and Akiko Takeda. *A hybrid penalty method for a class of optimization problems with multiple rank constraints*. *SIAM J. Matrix Anal. A.* 41, 2020, pp. 1260–1283.
- 20 Chen Chen, Ting Kei Pong, Lulin Tan and Liaoyuan Zeng. *A difference-of-convex approach for split feasibility with applications to matrix factorizations and outlier detection*. *J. Global Optim.* 78, 2020, pp. 107–136.
- 21 Minglu Ye and Ting Kei Pong. *A subgradient-based approach for finding the maximum feasible subsystem with respect to a set*. *SIAM J. Optim.* 30, 2020, pp. 1274–1299.
- 22 João Gouveia, Ting Kei Pong and Mina Saeed. *Inner approximating the completely positive cone via the cone of scaled diagonally dominant matrices*. *J. Global Optim.* 76, 2020, pp. 383–405.

- 23 Michael P. Friedlander, Ives Macêdo and Ting Kei Pong. *Polar convolution*. SIAM J. Optim. 29, 2019, pp. 1366–1391.
- 24 Peiran Yu and Ting Kei Pong. *Iteratively reweighted ℓ_1 algorithms with extrapolation*. Comput. Optim. & Appl. 73, 2019, pp. 353–386.
- 25 Tianxiang Liu, Ting Kei Pong and Akiko Takeda. *A refined convergence analysis of $pDCA_e$ with applications to simultaneous sparse recovery and outlier detection*. Comput. Optim. & Appl. 73, 2019, pp. 69–100.
- 26 Lei Yang, Ting Kei Pong and Xiaojun Chen. *A nonmonotone alternating updating method for a class of matrix factorization problems*. SIAM J. Optim. 28, 2018, pp. 3402–3430.
- 27 Tianxiang Liu, Ting Kei Pong and Akiko Takeda. *A successive difference-of-convex approximation method for a class of nonconvex nonsmooth optimization problems*. Math. Program. 176, 2019, pp. 339–367.
- 28 Bo Wen, Xiaojun Chen and Ting Kei Pong. *A proximal difference-of-convex algorithm with extrapolation*. Comput. Optim. & Appl. 69, 2018, pp. 297–324.
- 29 Guoyin Li and Ting Kei Pong. *Calculus of the exponent of Kurdyka-Lojasiewicz inequality and its applications to linear convergence of first-order methods*. Found. Comput. Math. 18, 2018, pp. 1199–1232.
- 30 Guoyin Li, Tianxiang Liu and Ting Kei Pong. *Peaceman-Rachford splitting for a class of nonconvex optimization problems*. Comput. Optim. & Appl. 68, 2017, pp. 407–436.
- 31 Xiaojun Chen, Ting Kei Pong and Roger Wets. *Two-stage stochastic variational inequalities: an ERM-solution procedure*. Math. Program. 165, 2017, pp. 71–111.
- 32 Tianxiang Liu and Ting Kei Pong. *Further properties of the forward-backward envelope with applications to difference-of-convex programming*. Comput. Optim. & Appl. 67, 2017, pp. 489–520.
- 33 Bo Wen, Xiaojun Chen and Ting Kei Pong. *Linear convergence of proximal gradient algorithm with extrapolation for a class of nonconvex nonsmooth minimization problems*. SIAM J. Optim. 27, 2017, pp. 124–145.
- 34 Lei Yang, Ting Kei Pong and Xiaojun Chen. *Alternating direction method of multipliers for a class of nonconvex and nonsmooth optimization problems with applications to background/foreground extraction*. SIAM J. Imaging Sci. 10, 2017, pp. 74–110.
- 35 Xiaojun Chen, Zhaosong Lu and Ting Kei Pong. *Penalty methods for a class of non-Lipschitz optimization problems*. SIAM J. Optim. 26, 2016, pp. 1465–1492.
- 36 Guoyin Li and Ting Kei Pong. *Douglas-Rachford splitting for nonconvex optimization with application to nonconvex feasibility problems*. Math. Program. 159, 2016, pp. 371–401.

- 37 Ting Kei Pong, Hao Sun, Ningchuan Wang and Henry Wolkowicz. *Eigenvalue, quadratic programming, and semidefinite programming relaxations for a cut minimization problem*. *Comput. Optim. & Appl.* 63, 2016, pp. 333–364.
- 38 Guoyin Li and Ting Kei Pong. *Global convergence of splitting methods for nonconvex composite optimization*. *SIAM. J. Optim.* 25, 2015, pp. 2434–2460.
- 39 Michael P. Friedlander, Ives Macêdo and Ting Kei Pong. *Gauge optimization and duality*. *SIAM. J. Optim.* 24, 2014, pp. 1999–2022.
- 40 Ting Kei Pong and Henry Wolkowicz. *The generalized trust region subproblem*. *Comput. Optim. & Appl.* 58, 2014, pp. 273–322.
- 41 Guoyin Li, Alfred Ka Chun Ma and Ting Kei Pong. *Robust least square semidefinite programming with applications*. *Comput. Optim. & Appl.* 58, 2014, pp. 347–379.
- 42 Zhaosong Lu and Ting Kei Pong. *Computing optimal experimental designs via interior point method*. *SIAM. J. Matrix Anal. A.* 34, 2013, pp. 1556–1580.
- 43 Maryam Fazel, Ting Kei Pong, Defeng Sun and Paul Tseng. *Hankel matrix rank minimization with applications in system identification and realization*. *SIAM. J. Matrix Anal. A.* 34, 2013, pp. 946–977.
- 44 Zhaosong Lu, Ting Kei Pong and Yong Zhang. *An alternating direction method for finding Dantzig selectors*. *Comput. Stat. Data An.* 56, 2012, pp. 4037–4946.
- 45 Ting Kei Pong. *Edge-based semidefinite programming relaxation of sensor network localization with lower bound constraints*. *Comput. Optim. & Appl.* 53, 2012, pp. 23–44.
- 46 João Gouveia and Ting Kei Pong. *Comparing SOS and SDP relaxations of sensor network localization*. *Comput. Optim. & Appl.* 52, 2012, pp. 609–627.
- 47 Zhaosong Lu and Ting Kei Pong. *Minimizing condition number via convex programming*. *SIAM J. Matrix Anal. A.* 32, 2011, pp. 1193–1211.
- 48 Ting Kei Pong and Paul Tseng. *(Robust) Edge-based semidefinite programming relaxation of sensor network localization*. *Math. Program.* 130, 2011, pp. 321–358.
- 49 Ting Kei Pong, Paul Tseng, Shuiwang Ji and Jieping Ye. *Trace norm regularization: reformulations, algorithms, and multi-task learning*. *SIAM J. Optim.* 20, 2010, pp. 3465–3489.
- 50 Chong Li, Kung Fu Ng and Ting Kei Pong. *Constraint qualifications for convex inequality systems with applications in constrained optimization*. *SIAM J. Optim.* 19, 2008, pp. 163–187.
- 51 Chong Li, Kung Fu Ng and Ting Kei Pong. *The SECQ, linear regularity, and the strong CHIP for an infinite system of closed convex sets in normed linear spaces*. *SIAM J. Optim.* 18, 2007, pp. 643–665.

EDUCATION RELATED PUBLICATIONS

- 1 Michael Friedlander, Nathan Krislock and Ting Kei Pong. *Social resistance*. Comput. Sci. Eng. 18(2), 2016, pp. 98–103.

WORK EXPERIENCE

2024–	Professor, the Hong Kong Polytechnic University.
2020–2024	Associate Professor, the Hong Kong Polytechnic University.
2014–2020	Assistant Professor, the Hong Kong Polytechnic University.
2013–2014	PIMS postdoctoral fellow, University of British Columbia.
2011–2013	Postdoctoral fellow, University of Waterloo.
2010–2011	Visiting researcher, Simon Fraser University.
2006–2011	Teaching assistant & lecturer, University of Washington.
2004–2006	Teaching assistant, Chinese University of Hong Kong.

AWARDS

2019	The 2019 International Consortium of Chinese Mathematicians (ICCM) Best Paper Award (Joint with Guoyin Li). <i>Global convergence of splitting methods for nonconvex composite optimization</i> . SIAM. J. Optim. 25, 2015, pp. 2434–2460.
2015	The 2015–2016 Early Career Award, the Research Grants Council of Hong Kong.

RESEARCH FUNDING

01/2024–12/2026	Principal Investigator, GRF grant, “Frank-Wolfe type projection-free first-order methods for non-convex constrained optimization problems”
01/2023–12/2025	Principal Investigator, GRF grant, “Novel approach on error bounds for a large class of conic feasibility problems without explicit nondegeneracy assumptions”.
01/2022–12/2026	Co-Principal Investigator, TRS grant, “Healthy and resilient city with pervasive LoCHs”. (PC: Professor Jianlei Niu)

- 01/2022–12/2024 Principal Investigator, GRF grant,
“Novel solution methods for a class of split feasibility problems”.
- 01/2021–12/2023 Principal Investigator, GRF grant,
“Gauge-based solution method for a large class of structure-inducing constrained optimization problems”.
- 01/2020–12/2022 Principal Investigator, GRF grant,
“Efficient methods for solving optimization models that induce simultaneous structures”.
- 01/2019–12/2021 Principal Investigator, GRF grant,
“Accelerating optimization algorithms for structured problems of large scale”.
- 01/2018–12/2020 Principal Investigator, GRF grant,
“Convergence rate analysis of solution methods for a large class of optimization problems”.
- 01/2017–12/2019 Principal Investigator, GRF grant,
“New Approaches for Nonconvex Feasibility Problems”.
- 01/2016–12/2018 Principal Investigator, ECS grant,
“New Solution Methods for a Class of Structured Optimization Problems”.
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GRADUATE STUDENTS

- 09/2024– Chief advisor of Yanbo Wang
- 09/2023– Chief advisor of Hao Zhang
- 09/2021–08/2024 Chief advisor of Ying Lin
- 08/2016–08/2021 Chief advisor of Peiran Yu
- 08/2014–07/2017 Co-advisor of Lei Yang
-

POSTDOCTORAL FELLOWS

- 05/2022– Xiaozhou Wang
- 08/2024–12/2024 Yiding Zhou
- 01/2023–12/2024 Ming Lei
- 07/2023–08/2024 Yuncheng Liu
- 08/2021–05/2023 Shuqin Sun

01/2020–09/2022 Liaoyuan Zeng
02/2019–04/2021 Scott Lindstrom
06/2017–06/2018 Minglu Ye
04/2016–08/2018 Tianxiang Liu

JOURNAL EDITORSHIP

01/2019– Associate Editor, Mathematics of Operations Research.
05/2022– Editorial Board member, Computational Optimization and Applications.
05/2022– Editorial Board member, Pacific Journal of Optimization.
02/2023– Associate Editor, Open Journal of Mathematical Optimization.

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