Tim Tsz-Kit LAU

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Education

9/2018 – Present	**Doctor of Philosophy in Statistics**, *Northwestern University*, Evanston, Illinois, USA. *Adviser: Prof. Han Liu*; GPA: 4.00/4.00
9/2016 – 6/2017	**Master of Science in Big Data Technology**, *Departments of Mathematics and Computer Science & Engineering, The Hong Kong University of Science and Technology (HKUST)*, Hong Kong. Research Supervisors: Prof. Jianfeng Cai and Prof. Yuan Yao; GPA: 4.24/4.30 **(First in class)**
1/2017 – 6/2017	**Exchange Program for MSc in Big Data Technology, *Applied Mathematics Option—Data Track***, *CentraleSupélec (École Centrale Paris)*, Châtenay-Malabry (now Gif-sur-Yvette), Île-de-France, France. Research Supervisors: Dr. Émilie Chouzenoux and Prof. Jean-Christophe Pesquet; Option Average: 16/20, A+.
9/2015 – 7/2016	**Master of Statistics**, *The University of Hong Kong (HKU)*, Hong Kong.
9/2012 – 6/2015	**Bachelor of Science in Mathematics**, *The University of Hong Kong (HKU)*, Hong Kong.

Experience

8/2018	**Research Visit**, *RIKEN Center for Advanced Intelligence Project*, Tokyo, Japan. ○ Research in Bayesian neural network training algorithms (Host: Dr. Emtiyaz Khan)
8/2017 – 2/2018	**Research Assistant**, *Department of Mathematics, The Hong Kong University of Science and Technology*. ○ Research in optimization and machine learning; Supervisors: Prof. Jianfeng Cai and Prof. Yuan Yao

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Research Interests

Machine Learning & Statistics	I am interested in machine learning in general, from a more mathematical and statistical perspective. In particular, I am interested in ○ Optimization in machine learning, including deep learning and reinforcement learning ○ High-dimensional statistics and statistical learning ○ Deep learning and its mathematical theories

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Publications

Jinshan Zeng*, **Tim Tsz-Kit Lau***, Shaobo Lin, and Yuan Yao. Global convergence of block coordinate descent in deep learning. In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, 2019. URL `http://proceedings.mlr.press/v97/zeng19a.html`.

Émilie Chouzenoux, **Tim Tsz-Kit Lau**[†], Claire Lefort, and Jean-Christophe Pesquet. Optimal multivariate gaussian fitting with applications to PSF modeling in two-photon microscopy imaging. *Journal of Mathematical Imaging and Vision*, to appear, 2019+. URL `https://hal.archives-ouvertes.fr/hal-01985663/document`.

Tim Tsz-Kit Lau, Jinshan Zeng, Baoyuan Wu, and Yuan Yao. A proximal block coordinate descent algorithm for deep neural network training. In *International Conference on Learning Representations (ICLR), Workshop Track*, 2018a. URL `https://openreview.net/forum?id=HycIjFkPM`.

Tim Tsz-Kit Lau, Émilie Chouzenoux, Claire Lefort, and Jean-Christophe Pesquet. Optimal multivariate Gaussian fitting for PSF modeling in two-photon microscopy. In *IEEE 15th International Symposium on Biomedical Imaging (ISBI)*, 2018b. URL `https://goo.gl/GD9Eki`.

Tsz Kit Lau and Yuan Yao. Accelerated block coordinate proximal gradients with applications in high dimensional statistics. In *The 10th NIPS Workshop on Optimization for Machine Learning*, 2017. URL `https://arxiv.org/abs/1710.05338`.

*Equal contribution †Alphabetical order

Invited Talks

7/2019	**Global Convergence of Block Coordinate Descent in Deep Learning**, *Department of Mathematics, The Hong Kong University of Science and Technology*, Seminar on Data Science and Machine Learning.

Academic Achievements/Activities

2018 Data Science Summer School (DS³)

6/2018	**École Polytechnique and DATAIA Institute**, *Machine Learning and Data Science*, Palaiseau, Île-de-France, France.

○ Presented a poster based on the work **Tim Tsz-Kit Lau** et al. (2018a)

2017 Duke-Tsinghua Machine Learning Summer School

7–8/2017	**Duke University and Tsinghua University**, *Deep Learning for Big Data*, Kunshan, China.

○ Organized by Prof. Lawrence Carin and Prof. Jun Zhu
○ Completed with high honors (Top 10 students in class)

Completion of Two Summer Courses at YMSC, Tsinghua University

7–8/2015	**Yau Mathematical Science Centre, Tsinghua University**, *Advanced Mathematics Courses in Markov Chain & Brownian Motion*, Beijing, China.

○ Introduction to Markov Chain Mixing Times; Random Walks, Brownian Motion and Donsker's Invariance Principle

Scholarships & Awards

School of Engineering MSc Excellent Student Scholarship	**Master of Science in Big Data Technology MSc(BDT)**, *HKUST*, Hong Kong, 2017. ○ To encourage outstanding academic performance and to recognize academically well performed MSc(BDT) students (Top 10%; one of the eight awardees)
Top Students Award	**Master of Science in Big Data Technology MSc(BDT)**, *HKUST*, Hong Kong, 2017. ○ Awarded to the top 4 MSc(BDT) students in descending amounts of monetary awards ○ Ranked 1st in the graduating class of 65 students
Travel Awards	ICML 2019

Academic Services

Journal Reviewer	*IEEE Transactions on Signal Processing* (2018, 2019)

Professional Memberships

IMS	Institute of Mathematical Statistics	ASA	American Statistical Association
SIAM	Society for Industrial and Applied Mathematics	IEEE	Institute of Electrical and Electronics Engineers
ACM	Association for Computing Machinery		

Computer Skills

Computation & Programming	Python, Matlab, R, C++	Deep Learning	TensorFlow, PyTorch, Keras
Typesetting	LaTeX		

Languages

English	Fluent	French	Elementary
Cantonese	Native	Mandarin	Fluent