Dr. Leong Hou U
(Associate Professor, SKL of IoTSC, Dept. CIS, UM)

General Information

CONTACT
INFORMATION

Centre for Data Science
State Key Lab of Internet of Things for Smart City
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RESEARCH
INTERESTS

Spatial and Spatio-Temporal Databases, Time Series Data Analysis and Processing, Crowdsourcing, Graph Theory, Optimization, Scalable Data Mining, Reinforcement Learning

EDUCATION

Ph.D. Computer Science, **University of Hong Kong**
MSc. E-Commerce Technology, **University of Macau**
BSc. Computer Science and Information Engineering, **National Chi Nan University**

WORKING
EXPERIENCE

University of Macau, Macau

Head of Centre for Data Science	**Aug 2023 to present**
Interim Head of Centre for Data Science	**Aug 2019 to Aug 2023**
Associate Professor	**September 2016 to present**
Assistant Professor	**August 2010 to August 2016**

University of Hong Kong, Hong Kong

Research Assistant	**November 2009 to July 2010**

Max-Planck Institute for Informatics, Germany

Internship	**February 2009 to May 2009**

Singapore Management University, Singapore

Visiting Research Fellow	**September 2008 to December 2008**
Visiting Research Fellow	**September 2007 to December 2007**

RESEARCH
EXPERIENCES

Dr. U's research interests encompass a wide range of areas, including spatial, spatio-temporal, graph, and high-dimensional data analysis. Within these domains, his research focuses on query optimization, graph theory and learning, as well as reinforcement learning applied to diverse applications in Big Data Engineering, Urban Data Mining, and Intelligent Transportation. Dr. U is a prolific researcher who consistently publishes in highly regarded conferences and journals, including SIGMOD, PVLDB, ICDE, NeurIPS, AAAI, SIGIR, IJCAI, TIST, TKDE, VLDB J, and many others.

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Research & Teaching

ACADEMIC
SERVICES

International Conference Steering/Organization Committee

General co-chair of ISET and ICBL 2024

ICPC Macau Regional Director 2021-2025

Program co-chair of APWeb-WAIM 2021, ICTE 2020, GeoRich 2018

Tutorial co-chair of APWeb-WAIM 2020

Local co-chair of HDIS 2023, HDIS 2021, ACM ICN 2019, WAIM 2014, WIC 2012

PhD consortium co-chair of DASFAA 2023

Workshop co-chair of WISE 2019, PAKDD 2019, APWeb-WAIM 2018

Finance chair of ICDE 2019

Local exhibition chair of IJCAI 2023, ICJAI 2019

Publication Chair of GoeRich 2014, 2015, 2016, 2017

International Conference Technical Program/Review Committee and Session Chair

SIGMOD, PVLDB, ICDE, KDD, ER, SIGMOD/PODS PhD Symposium, CIKM (KM Track), DASFAA, PAKDD, WAIM, APWeb, MobiGIS, WebDB

International Journal Reviews

IEEE Transactions on Knowledge and Data Engineering (TKDE), Knowledge and Information Systems (KAIS), Information Systems (IS), Information Sciences (INS), GeoInformatica, IEEE Transactions on Parallel and Distributed Systems (TPDS)

PUBLIC SERVICES

Macau Town Planning Board 2020-2026
Macau Academy of Public Security Forces Academic Committee 2020-2026

AWARDS

University of Macau

Faculty of Science and Technology Teaching Award 2022/2023

Best CIS Final Year Project 2022/2023, 2017/2018

External

Huawei ICT Global Competition, Runner-up @ Cloud Track, Coach, 2024

RECENT 3 YEARS SELECTED PUBLICATIONS *

[1] Tsz Nam Chan, Rui Zang, Bojian Zhu, Leong Hou U, Dingming Wu, and Jianliang Xu. LION: fast and high-resolution network kernel density visualization. *Proc. VLDB Endow.*, 17(6):1255–1268, 2024.

[2] Shunran Zhang, Xiubo Zhang, Tsz Nam Chan, Shenghui Zhang, and Leong Hou U. A computation-aware shape loss function for point cloud completion. In Michael J. Wooldridge, Jennifer G. Dy, and Sriraam Natarajan, editors, *Thirty-Eighth AAAI Conference on Artificial Intelligence, AAAI 2024, February 20-27, 2024, Vancouver, Canada*, pages 7287–7295. AAAI Press, 2024.

[3] Jian Zeng, Leong Hou U, Xiao Yan, Yan Li, Mingji Han, and Bo Tang. Extracting top-frequent and diversified patterns in knowledge graphs. *IEEE Trans. Knowl. Data Eng.*, 36(2):608–626, 2024.

[4] Yiming Wang, Ming Yang, Renzhi Dong, Binbin Sun, Furui Liu, and Leong Hou U. Efficient potential-based exploration in reinforcement learning using inverse dynamic bisimulation metric. In Alice Oh, Tristan Naumann, Amir Globerson, Kate Saenko, Moritz Hardt, and Sergey Levine, editors, *Advances in Neural Information Processing Systems 36: Annual Conference on Neural Information Processing Systems 2023, NeurIPS 2023, New Orleans, LA, USA, December 10 - 16, 2023*, 2023.

[5] Siyuan Wu, Leong Hou U, and Panagiotis Karras. k-best egalitarian stable marriages for task assignment. *Proc. VLDB Endow.*, 16(11):3240–3252, 2023.

[6] Tsz Nam Chan, Zhe Li, Leong Hou U, and Reynold Cheng. PLAME: piecewise-linear approximate measure for additive kernel SVM. *IEEE Trans. Knowl. Data Eng.*, 35(10):9985–9997, 2023.

[7] Hanlin Li, Xiaowei Wu, Leong Hou U, and Kun Pang Kou. Near-optimal scheduling for crowdsourced transit system with skip-stop tactic. *IEEE Trans. Knowl. Data Eng.*, 35(11):11668–11680, 2023.

[8] Tsz Nam Chan, Leong Hou U, Byron Choi, Jianliang Xu, and Reynold Cheng. Large-scale geospatial analytics: Problems, challenges, and opportunities. In Sudipto Das, Ippokratis Pandis, K. Selçuk Candan, and Sihem Amer-Yahia, editors, *Companion of the 2023 International Conference on Management of Data, SIGMOD/PODS 2023, Seattle, WA, USA, June 18-23, 2023*, pages 21–29. ACM, 2023.

[9] Rongqin Chen, Shenghui Zhang, Leong Hou U, and Ye Li. Redundancy-free message passing for graph neural networks. In Sanmi Koyejo, S. Mohamed, A. Agarwal, Danielle Belgrave, K. Cho, and A. Oh, editors, *Advances in Neural Information Processing Systems 35: Annual Conference on Neural Information Processing Systems 2022, NeurIPS 2022, New Orleans, LA, USA, November 28 - December 9, 2022*, 2022.

[10] Tsz Nam Chan, Pak Lon Ip, Kaiyan Zhao, Leong Hou U, Byron Choi, and Jianliang Xu. LIBKDV: A versatile kernel density visualization library for geospatial analytics. *Proc. VLDB Endow.*, 15(12):3606–3609, 2022.

[11] Tsz Nam Chan, Leong Hou U, Yun Peng, Byron Choi, and Jianliang Xu. Fast network k-function-based spatial analysis. *Proc. VLDB Endow.*, 15(11):2853–2866, 2022.

[12] Tsz Nam Chan, Leong Hou U, Reynold Cheng, Man Lung Yiu, and Shivansh Mittal. Efficient algorithms for kernel aggregation queries. *IEEE Trans. Knowl. Data Eng.*, 34(6):2726–2739, 2022.

[13] Bo Tang, Jian Zeng, Qiandong Tang, Chuan Yang, Qiaomu Shen, Leong Hou U, Xiao Yan, and Dan Zeng. Cheetahkg: A demonstration for core-based top-k frequent pattern discovery on knowledge graphs. In *38th IEEE International Conference on Data Engineering, ICDE 2022, Kuala Lumpur, Malaysia, May 9-12, 2022*, pages 3134–3137. IEEE, 2022.

[14] Tsz Nam Chan, Leong Hou U, Byron Choi, and Jianliang Xu. SLAM: efficient sweep line algorithms for kernel density visualization. In Zachary G. Ives, Angela Bonifati, and Amr El Abbadi, editors, *SIGMOD '22: International Conference on Management of Data, Philadelphia, PA, USA, June 12 - 17, 2022*, pages 2120–2134. ACM, 2022.