Xuliang Zhu

Department of Computer Science, Hong Kong Baptist University
Kowloon Tong, Hong Kong
Email: csxlzhu@comp.hkbu.edu.hk
Web: https://www.comp.hkbu.edu.hk/~csxlzhu/

Education

2020-Present	**Ph.D.**, *Department of Computer Science*, Hong Kong Baptist University, Hong Kong.
2015-2019	**B.Sc.**, *Faculty of Mathematical Science*, East China Normal University, Shanghai, China. Major in Information and Computation (Mathematics)
2011-2015	Shanghai High School, Shanghai, China

Research Interests

Graph Data Management, Graph Algorithms, Hierarchical Structure, Logic Synthesis etc.

Publications

[1] **Xuliang Zhu**, Xin Huang, Longxu Sun, Jiming Liu, A Novel Graph Indexing Approach for Uncovering Potential COVID-19 Transmission Clusters. ACM Transactions on Knowledge Discovery in Data **(TKDD)**, 2022.

[2] **Xuliang Zhu**, Xin Huang, Byron Choi, Jianliang Xu, William K. Cheung, Yanchun Zhang, and Jiming Liu. Efficient and Optimal Algorithms for Tree Summarization with Weighted Terminologies. IEEE Transactions on Knowledge and Data Engineering **(TKDE)**, 2022.

[3] Qing Liu, **Xuliang Zhu**, Xin Huang, Jianliang Xu. Local Algorithms for Distance-generalized Core Decomposition over Large Dynamic Graphs. Proceedings of the VLDB Endowment **(PVLDB'21)**, 2021.

[4] **Xuliang Zhu**, Xin Huang, Byron Choi, Jiaxin Jiang, Zhaonian Zou, Jianliang Xu. Budget Constrained Interactive Search for Multiple Targets. Proceedings of the VLDB Endowment **(PVLDB'21)**, 2021.

[5] **Xuliang Zhu**. Data Summarization with Hierarchical Taxonomy. SIGMOD Student Research Competition **(SIGMOD SRC'21)**, 2021.

[6] **Xuliang Zhu**, Xin Huang, Byron Choi, Jianliang Xu, Top-k Graph Summarization on Hierarchical DAGs, ACM International Conference on Information and Knowledge Management **(CIKM'20)**, 2020. **[Best Full Paper Nomination]**

[7] **Xuliang Zhu**, Xin Huang, Jinbin Huang, Byron Choi, Jianliang Xu, HDAG-explorer: a system for hierarchical DAG summarization and exploration, Proceedings of the VLDB Endowment **(PVLDB'20)**, Demo Track, 2020.

Awards & Honors

Research Excellence Award, PG Day, HKBU COMP, 2022.

Wai Tak Land Investment & Loan Co., Ltd. Research Scholarship (2 students each year), HKBU, 2022.

Computer Science Department RPg Performance Award, HKBU COMP, 2021, 2022.

Honorable Mention of Research Excellence Award, PG Day, HKBU COMP, 2021.

Best Paper Nomination(5 out of 920 full paper submissions), ACM CIKM, 2020.
SIGIR Student Travel Grant, ACM CIKM, 2020.
VLDB Student Travel Award, VLDB, 2020, 2021.
Gold Medal, ICPC Asia-East Continent Final, ACM/ICPC, 2018.
Champion, 2017 Shanghai STEED Programming Contest, 2017.

Professional Experience

2021-Present **Logic Synthesis on And-Inverter Graphs**, *HKBU & HUAWEI Noah's Ark Lab.*

In this work, we study the logic synthesis on And-Inverter Graphs(AIG). We propose a novel reverse-cut structure instead of traditional cut. Different from cut rewrite algorithm on AIG, our method could be more effective on logic synthesis problems.

2020-Present **Interactive Search on Hierarchical Graphs**, *HKBU.*

In this work, we propose a new problem of budget constrained interactive graph search for multiple targets called kBM-IGS problem. It is allowed algorithm to ask user few questions to detect multiple targets on hierarchical graphs. To tackle it, we develop a novel framework to ask questions using the best vertex with the largest expected gain.

2019-Present **Top-k Summarization on Hierarchical Graphs**, *HKBU.*

In this work, we study a new problem of finding k representative vertices to summarize a hierarchical graph. We proof the NP-hardness of the problem on DAG and propose a greedy algorithm with an approximation guarantee. To further improve the effectiveness and efficiency, we develop two improved algorithms EXT-Greedy and k-PCGS.

2020-2021 **COVID-19 Transmission Clusters Tracing**, *HKBU.*

In this work, we study a problem of tracing potential transmission clusters based on the spatio-temporal logs. We formulate the potential transmission cluster model and develop a graph based index. It achieves a good balance of index construction and online query processing and fast discovers potential transmission cluster in theory and practice.

2020 **Core Decomposition over Large Graphs**, *HKBU.*

In this work, we study distance-generalized core decomposition over large graphs. We propose a parallelizable local algorithm based on H-index. Compared with traditional peeling method, our local algorithm reduces the time by 1-3 orders of magnitude on real-world graphs.

Teaching

2019-Present **Seminar Lecturer & Student Coach**, *ACM/ICPC Competition*, Hong Kong Baptist University.

Spring 2022 **Teaching Assistant (Excellent TA Performance Award)**, *COMP7650 Data Mining and Knowledge Discovery*, Hong Kong Baptist University.

Fall 2021 **Teaching Assistant**, *COMP3047 Software Engineering*, Hong Kong Baptist University.

Fall 2020 **Teaching Assistant**, *COMP3047 Software Engineering*, Hong Kong Baptist University.

Other Activities

2019-Present **External Reviewer**, *VLDB 2023, 2022, 2020, 2019, ICDE 2022, KDD 2022, 2021, WWW 2022, SDM 2022, WSDM 2021, EDBT 2020, CIKM 2020, and TKDE.*

2018-Present **Writer of Contests**, *ICPC Shanghai Regional Contest (2019), Multi-University Training (2021, 2020, 2019), ECNU Campus Invitational Contest (2022, 2021, 2020, 2019), EOJ Monthly (2021, 2020, 2019, 2018).*

2021 **Conference Presentation**, *Budget Constrained Interactive Search for Multiple Targets. Online, VLDB 2021, August.*

2021	**Conference Presentation**, *Data Summarization with Hierarchical Taxonomy. Online, SIGMOD 2021, June.*
2020	**Conference Presentation**, *Top-k Graph Summarization on Hierarchical DAGs. Online, CIKM 2020, October.*
2020	**Conference Presentation**, *HDAG-explorer: a system for hierarchical DAG summarization and exploration. Online, VLDB 2020, September.*
2019-2020	**Research Assistant**, *Department of Computer Science*, Hong Kong Baptist University.
2018	**Algorithm Engineer Internship**, Shanghai Yitu Technology Co., Ltd.
2016-2019	**ECNU ACM/ICPC Competition Club President**, East China Normal University.