Basic information

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Language	Mandarin, English, C++, MATLAB
Personal website	https://yahuisun.github.io/personal-website
Current position	Research fellow, School of Computer Science and Engineering, Nanyang Technological University

Education and positions

2019-	**Research fellow, Nanyang Technological University, Singapore**
2018-2019	**Postdoctoral fellow, Australian National University, Australia**
2014-2018	**Ph.D. in Steiner trees, University of Melbourne, Australia**
	Thesis title: Classical, prize-collecting and node-weighted Steiner tree problems in graphs
2012-2014	**M.S. in Aerospace Engineering, Harbin Institute of Technology, China**
2008-2012	**B.S. in Aerospace Engineering, Harbin Institute of Technology, China**

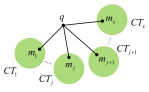
Scholarships and awards

2014-2018	Melbourne International Research Scholarship, University of Melbourne, Australia
2014-2018	Melbourne International Fee Remission Scholarship, University of Melbourne, Australia
2013	National Scholarship, China
2008-2014	First-level Scholarship (multiple), Harbin Institute of Technology, China

Research interests

Graph analytics, graph mining, computer networks, networking, data engineering.

Selected publications



Yahui Sun, Marcus Brazil, Doreen Thomas, and Saman Halgamuge. "The Fast Heuristic Algorithms and Post-Processing Techniques to Design Large and Low-Cost Communication Networks." **IEEE/ACM Transactions on Networking** (2019).
[**PDF**] [**Codes&Datasets**]
We propose two fast algorithms for the Prize-Collecting Steiner Tree Problem: the first one is a quasilinear-time heuristic algorithm that is faster and consumes less memory than any other algorithm; and the second one is an improvement of a state-of-the-art polynomial-time approximation algorithm that can produce near-optimal solutions at a speed that is only inferior to the first one. We demonstrate the competitiveness of our algorithms by comparing them with the state-of-the-art ones on large graphs with up to 1,000,000 vertices and 10,000,000 edges. We also propose some post-processing techniques to update the best-known solution for a notoriously difficult benchmark instance.

Yahui Sun, Chenkai Ma, and Saman Halgamuge. "The node-weighted Steiner tree approach to identify elements of cancer-related signaling pathways." **International Conference on Bioinformatics** (Best Paper Awards; published in BMC Bioinformatics) (2017).
[**PDF**] [**Codes&Datasets**]
We propose the node-weighted Steiner tree approach to identifying important elements of cancer-related signaling pathways at the level of proteins. We apply this approach to identify important elements of two well-known cancer-related signaling pathways: PI3K/Akt and MAPK. On a commonly used personal computer, this new approach takes less than 2s to identify the important elements of PI3K/Akt and MAPK signaling pathways in a large node-weighted protein-protein interaction network with 16,843 vertices and 1,736,922 edges.

Other publications

The full publication list is at my **Google Scholar**. The related codes and datasets are at my **GitHub**.

Yahui Sun, and Saman Halgamuge. "Minimum-cost heterogeneous node placement in wireless sensor networks." IEEE Access (2019).
[**PDF**] [**Codes&Datasets**]

Yahui Sun, Pathima Nusrath Hameed, Karin Verspoor, and Saman Halgamuge. "A physarum-inspired prize-collecting steiner tree approach to identify subnetworks for drug repositioning." International Conference on Bioinformatics (published in BMC Systems Biology) (2016).
[**PDF**] [**Codes&Datasets**]

Yahui Sun, and Saman Halgamuge. "Fast algorithms inspired by physarum polycephalum for node weighted steiner tree problem with multiple terminals." In 2016 IEEE Congress on Evolutionary Computation (CEC), pp. 3254-3260. IEEE, 2016.
[**PDF**] [**Codes&Datasets**]

Yahui Sun, Yunhai Geng, and Shuang Wang. "Analysis and calibration of star sensor's image plane displacement." Infrared and Laser Engineering 10 (2014): 26.
[**PDF**]

Yahui Sun, Yingying Xiao, and Yunhai Geng. "On-orbit calibration of star sensor based on a new lens distortion model." In Proceedings of the 32nd Chinese Control Conference, pp. 4989-4994. IEEE, 2013.
[**PDF**]

(timestamp: 03/2019)