Shuaiqi Wang

Shanghai Jiao Tong University, No.800 Dongchuan Road, Shanghai 200240, China

wangshuaiqi@sjtu.edu.cn • wsqwsq.github.io

Education

Shanghai Jiao Tong University (SJTU) **Shanghai, China**

Sep. 2016 - Jun. 2020 (Expected)

- Senior undergraduate, Dept. of Computer Science.
- Zhiyuan Honors Program of Engineering (an elite program for top 5% talented students)
- GPA: Major: 92.1/100 | Junior Year: 93.2/100

Research Interests

Network science, performance modeling, algorithms, optimization, networked and distributed systems

Publications and Manuscripts

- L. Fu, **S. Wang**, H. Long, X. Fu, X. Wang and S. Lu, "On Social Network De-anonymization with Communities: A Maximum A Posteriori Perspective", in ***IEEE/ACM Transactions on Networking***. (Minor Review)
- L. Fu, J. Zhang, **S. Wang**, Y. Zhang, Z. Hu and X. Wang, "De-anonymizing Social Networks with Overlapping Community Structure", in ***IEEE/ACM Transactions on Networking***. (Minor Review)
- **S. Wang**, L. Fu, S. Li, X. Lin and X. Wang, "Efficient Distributed Steiner Tree Construction in Wireless Sensor Networks with Unreliable Links". (Prepare for ***SIGMETRICS 2020***)
- B. Miao, **S. Wang**, L. Fu, X. Lin and X. Wang, "De-anonymizability of Social Network: Through the Lens of Symmetry". (Submitted to ***MobiHoc 2020***)
- X. Wu, **S. Wang**, Z. Hu, L. Fu and X. Wang, "De-anonymization of Social Networks: The Power of Symmetry".
- X. Wu, L. Fu, **S. Wang**, B. Jiang, X. Wang and G. Chen, "Collective Influence Boosts Influence Maximization".

Research Experiences

Distributed Steiner Tree Construction in Wireless Networks with Unreliable Links

Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, Prof. Xiaojun Lin, SJTU, Purdue *Sep. 2018 - Nov. 2019*

- Constructed approximate minimum-length multicast trees under unreliable links for the first time
- Analyzed the effect of link unreliability on data communication and proposed a protocol to search and communicate with others reliably and energy-efficiently under unreliable links
- Designed a distributed algorithm, whose time and message complexity are the lowest among state-of-art algorithms even under reliable links, to construct the energy-efficient multicast tree under unreliable links
- Quantitatively analyzed the performance of the algorithm and the constructed tree under general node distribution; conducted experiments which showed that the ratio between the tree length and that of Steiner tree is 1.061

Social Network De-anonymization with Communities

Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU *Jul. 2018 - Aug. 2019*

- Studied the de-anonymization issue in both analytical and algorithmic aspects via community information
- Derived the cost functions as metrics to quantify the structural mismappings between networks based on Maximum A Posteriori estimation in different settings distinguished by the availability of community information
- Figured out the conditions under which minimizing the cost function can perfectly recover the correct mapping; showed the superiority of the proposed cost functions
- Designed algorithms to approximately minimize the cost functions after converting them to quadratic assignment or matrix formulations

De-anonymizability of Social Network: Through the Lens of Symmetry
Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, Prof. Xiaojun Lin, SJTU, Purdue *Mar. 2019 - Aug. 2019*

- Defined the symmetry of networks by automorphism and homomorphism
- Built the relationship between symmetry and de-anonymizability, and quantitatively determined the de-anonymizability of given networks
- Designed an approximate algorithm to estimate de-anonymizability via sampling techniques

Seedless De-anonymization with Overlapping Community Structure
Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU *Feb. 2019 - Jul. 2019*

- Quantified the expected number of mismatched users in networks with overlapping communities by virtue of Minimum Mean Square Error (MMSE)
- Simplified MMSE problem by transforming it into a weighted-edge matching problem and proved the approximation ratio
- Proposed an approximate algorithm based on convex-concave optimization method

De-anonymization via Symmetry Property
Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU *Nov. 2018 - Apr. 2019*

- Revealed the significance of symmetry property to the de-anonymization issue for the first time
- Classified the symmetry property of networks as intra-symmetry and inter-symmetry; analyzed the de-anonymizability of classical network models based on these properties
- Designed an algorithm to de-anonymize graphs in an online manner based on the attribute of each node; showed the performance guarantee of the algorithm

Selected Project

PPT Ctrl: An Interactive Slide Control APP
National Competition Project *Sep. 2018 - Aug. 2019*

- Designed a smart phone APP to realize real-time computer screen display on phone and control slides in an interactive way with the functions of page switching, highlighting, magnifying and drawing
- Implemented the system based on Qt and Android platform in a team of four students as a main developer
- Won the first price in China Undergraduate Computer Design Competition, 2019 and the first price in Shanghai Undergraduate Computer Application Ability Competition, 2019

Honors and Awards

- **Zhiyuan College Honors Scholarship** (Top 5%) 2017, 2018 & 2019
- **Academic Excellence Scholarship** (Top 10%) 2017, 2018 & 2019
- **First Prize in China Undergraduate Computer Design Competition** (Top 5%) 2019