Shuaiqi Wang

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Education

Shanghai Jiao Tong University **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: 90.7/100 | Final Year: 93.2/100

Research Interests

Netowrk science, performance analysis, algorithms, optimization, distributed systems

Publications

- 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)

Research Experiences

Distributed Multicast Tree Construction in WSNs with unreliable links

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

- The first work constructing approximate minimum-length multicast trees under unreliable links
- Analyzed the effect of unrealiable links on data communication and proposed a search protocol to search and communicate with others successfully and energy-efficiently
- 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, and empirical results showed that the ratio between the tree length and that of Steiner tree is 1.061
- In preparation for ***SIGMETRICS 2020***

On Social Network De-anonymization with Communities: MAP

Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU *Mar. 2019 - Oct. 2019*

- Derived the cost functions, which is superior to previous works', 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
- Designed algorithms to approximately minimize the proposed MAP-based cost functions

Social Network De-anonymization with Overlapping Communities

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

- Quantified the expected number of mismatched users in seedless networks with overlapping communities by virtue of Minimum Mean Square Error (MMSE)
- Simplified MMSE by transforming it into a weighted-edge matching problem after proving minimizing it to be NP-hard
- Proposed an approximate algorithm and figured out the approximation ratio

De-anonymizability of Social Network: Through the Lens of Symmetry

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

- Conducted the theoretical study on de-anonymizability through the lens of symmetry, which is captured by concepts of automorphism and homomorphism
- Proposed a method to quantitatively determine the de-anonymizability of given networks
- Designed an approximate algorithm to estimate de-anonymizability via sampling techniques

De-anonymization of Social Networks: The Power of Symmetry
Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU *Jul. 2018 - Nov. 2018*

- Theoretically derived parametric bounds determining de-anonymization effect in three classic models based on the symmetry property
- Designed an algorithm, which leverages the attribute of each node and also relies on the symmetry property, to de-anonymize graphs with high accuracy

Collective Influence Maximization in Random Networks
Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU *Jun. 2018 - Sep. 2018*

- Qualified the condition for minimizing the uninfluenced size and formalize its relation with the Collective Influence of users under the Independent Cascading model
- Proposed an algorithm to select users with high collective influences to achieve influence maximization in networks

Selected Project

PPT Ctrl: an interactive PPT control APP
National Competition Project *Sep. 2018 - Aug. 2019*

- Designed a smart phone APP to enable 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 team member and the advisor
- 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** Awarded to top 5% students 2017, 2018 & 2019
- **Academic Excellence Scholarship** Awarded to top 10% students 2017, 2018 & 2019
- **First Prize in China Undergraduate Computer Design Competition** 2019
  Awarded to top 5% participants