

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: 90.1/100 | Final Year: 93.2/100

Research Interests

Wireless networks, social networks, network privacy, performance analysis, computer networking

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*. (Third-round 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*. (Second-round 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 considering multicast routing with unreliable links for wireless sensor networks
- Analyzed the effect of unreliable links on data communication and proposed a search protocol which can search nodes and communicate with them successfully and energy efficiently under unreliable links
- Designed a distributed algorithm, whose time and message complexity is the lowest among those state-of-art algorithms even under reliable links, to construct the energy-efficient multicast tree under unreliable links
- Quantitatively evaluated the performance of the construction algorithm and the constructed tree under general node distribution
- In preparation for *SIGMETRICS 2020*

On Social Network De-anonymization with Communities: MAP

Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU Dr. Xinzhe Fu, MIT Mar. 2019 - present

- Derived the cost functions, which is superior to previous ones, as metrics quantifying 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 for the first time to approximately minimize the proposed MAP-based cost functions

Social Network De-anonymization with Overlapping Communities

Guide: Prof. Luoyi Fu, Prof. Xinbing Wang, SJTU Dr. Xinyu Wu, MIT Sep. 2018 - present

- Derived the cost function of expected number of mismapped users for seedless anonymized networks with overlapping communities based on Minimum Mean Square Error for the first time
- 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

- o Analyzes how the symmetry of graphs will affect the de-anonymizability without any network model assumption for the first time
- o Proposed a method to quantify the de-anonymizability of given networks based on concepts of automorphism and homomorphism
- o 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 Dr. Xinyu Wu, MIT

Jul. 2018 - Nov. 2018

- o Theoretically derived parametric bounds determining de-anonymization effect in three classic models based on the symmetry property
- o 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, Dr. Xudong Wu, SJTU

Jun. 2018 - Sep. 2018

- o Qualified the condition for minimizing the uninfluenced size and formalize its relation with the Collective Influence of users under the Independent Cascading model
- o 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

- o Designed a smart phone APP to enable real-time computer screen display on phone and control slides in an interactive way with the function of page switching, highlighting, magnifying and drawing
- o Implemented the system based on Qt and Android platform in a team of four students as a team member as well as the advisor
- o 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

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|---|-------------------|
| o Zhiyuan College Honors Scholarship Awarded to top 5% students | 2017, 2018 & 2019 |
| o Academic Excellence Scholarship Awarded to top 10% students | 2017, 2018 & 2019 |
| o First Prize in China Undergraduate Computer Design Competition
Awarded to top 5% participants | 2019 |