Shen Yan

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Education

Institute of Information Engineering, Chinese Academy of Sciences **Beijing, China**
Candidate for M.S. in Information Security *Sept. 2014–Present*
- State Key Laboratory of Information Security
- Major GPA: 91.7/100
- Research Interests: Social Computing, Privacy Preserving

Hebei University of Technology **Tianjin, China**
B.E. in Electronic Information Engineering *Sept. 2010–June 2014*
- Overall GPA: 3.81/4.0 Major GPA: 3.92/4.0
- Ranking: 1/57

Research Experience

Social-Aware Private-Preserving Recommender System **Beijing, China**
Research Assistant *Mar. 2016–Present*
- Designed a privacy-preserving collaborative filtering mechanism in recommender system, which aims to protect users' rating history from leakage.
- Used the social information and the principle of differential privacy to provide a rigorous as well as fine-grained protection.
- Compared with the state-of-the-art privacy-preserving mechanism, the proposed algorithm outperforms in both the quality of recommendations and the resistance to the inference attack.

Fine-grained Differential Privacy Data Mining Algorithm **Beijing, China**
Research Assistant *Dec. 2015–Mar. 2016*
- Designed a fine-grained differential privacy mechanism: more distant users get more perturbed information, and users can set different privacy levels for different items.
- Used the structure of online social networks to build the correlation between the noise additions, which provide a novel method to withstand the collusion attacks.
- The proposed method solves the problem that the privacy budget of previous work would increase under collusion attacks, which ensures that colluded users cannot deduce more accurate information.

Influential Users Mining in Online Social Networks **Beijing, China**
Team Leader *Mar. 2015–May 2015*
- Designed a interactive system that detects the influential users in online social networks. This system provided six measurement algorithms, and users can upload their own datasets for computing.
- Implemented six measurement algorithms, e.g., Degree, PageRank, Katz, Betweenness Centrality, etc.
- Designed an interactive interface, using D3.js and Sigma.js.
- Provided three demos on real-world social network datasets: Facebook, Twitter, and E-mail network.
- Responsibilities:
  - Implemented the algorithms via C++

Resource Allocation Methods in Wireless Sensor Networks **Tianjin, China**
Research Assistant *Dec. 2013–May 2014*
- Transplanted TinyOS system into CC2530.
- Analyzed the GTS mechanism in IEEE 802.15.4 protocol.
- Designed an allocation method of channels and time slots in IEEE 802.15.4 networks.

Internet of Things Based Health Monitoring System **Tianjin, China**
National Undergraduate Training Programs for Innovation and Entrepreneurship *Oct. 2013–May 2014*

- Implemented a health monitoring system that collect patients' healthy data, including heartbeat, blood pressure, and oxyhemoglobin saturation. The collected data can be demonstrated on the Android APP in real time.
- All data are collected by non-invasive sensors. and are analyzed by the embedded gateway.
- The communication between sensors and the gateway and the communication between the gateway and the smartphones are based on Zigbee protocol and the 2.4G WiFi, respectively.
- Responsibilities:
  - Systematic Framework Design
  - Developed the Android APP

Publications

- S. Pan, **S. Yan**, Y. Zheng, and W.-T. Zhu, **"PMDA: Privacy-preserving multi-functional data aggregation without TTP in smart grid,"** The 12th ACM Symposium on Information, Computer and Communications Security (AsiaCCS'17). (Under Review)
- **S. Yan**, S. Pan, W.-T. Zhu, and K. Chen, **"DynaEgo: Privacy-preserving collaborative filtering recommender system based on social-aware differential privacy,"** to appear in proc. 18th International Conference on Information and Communications Security (ICICS'16), Nov. 2016.
- L. Yang, F. Fang, X. Lu, W. T. Zhu, Q. Wang, **S. Yan**, and S. Pan, "**A secure and fast dispersal storage scheme based on the learning with errors problem,**" to appear in proc. 12th EAI International Conference on Security and Privacy in Communication Networks (SecureComm'16), Oct. 2016.
- S. Pan, **S. Yan**, and W.-T. Zhu, **"P2CABI: Privacy-preserving cloud aided biometric identification,"** *Computers & Security*, Elsevier. (Under Review)
- **S. Yan**, S. Pan, Y. Zhao, and W.-T. Zhu, **"Towards privacy-preserving data mining in online social networks: Distance-grained and item-grained differential privacy,"** in J. K. Liu and R. Steinfeld (Eds.): 21st Australasian Conference on Information Security and Privacy (ACISP'16), Part I, *Lecture Notes in Computer Science*, vol. 9722, pp. 141–157, July 2016.
- S. Pan, **S. Yan**, and W.-T. Zhu, **"Security analysis on privacy-preserving cloud aided biometric identification schemes,"** in J. K. Liu and R. Steinfeld (Eds.): 21st Australasian Conference on Information Security and Privacy (ACISP'16), Part II, *Lecture Notes in Computer Science*, vol. 9723, pp. 446–453, July 2016.
- S. R. Fan, **S. Yan**, and M. Gao, **"Guaranteed time slots allocation in multi-node wireless sensor networks,"** *Chinese Journal of Sensors and Actuators*, vol. 27, No. 7, pp. 976-981, July. 2014.

Honors & Awards

- Outstanding Graduation Thesis *June 2014*
- Third Prize of 1st Tianjin Undergraduate IoT Innovation and Application Design Competition *Dec. 2013*
- Honorable Mention of the Finals of 8th Tianjin Undergraduate MCU Application Design Competition *May 2013*
- Third Prize of Tianjin Undergraduate Physics Competition *2012*
- The First Prize Scholarship *2011-2014, Four times*
- Merit Student *2011-2012*

Computer Skills

- Programming Language: C/C++, Python, MATLAB
- Operating Systems: Windows, Linux (Ubuntu)
- Solid knowledge of networks, social network mining, cryptography, communication technology
- Familiar with machine learning, data analysis algorithms