Tianxi Ji

Contact Information

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Education

- **Case Western Reserve University** — Cleveland, OH
  Ph.D. student in Computer Engineering; GPA: 4.00 — *Jan. 2017 – Present*
- **Carnegie Mellon University** — Pittsburgh, PA
  Master of Science in Electrical and Computer Engineering; GPA: 3.8 — *Jan. 2015 – June. 2016*
- **Nanjing University of Posts and Telecommunication** — Nanjing, China
  Bachelor of Engineering in Telecommunication Engineering; GPA: 3.8 — *Sept. 2010 – June. 2014*

Research Interests

- Algorithm design for data privacy, system security and robustness at large (with both theoretical significance and practical impacts)
- Wireless communication, big data analytics, graph theory, and their applications on secure and privacy-preserving Internet of Things and Cyber-physical Systems

Teaching Interests

- Fundamental courses in computer science and electrical engineering (e.g., combinatorics, probability theory, linear algebra, and signal processing)
- Upper level courses (e.g., graph theory, statistical inference, wireless communication, and optimization)

Selected Publications

Selected Conference Publications

8. **Tianxi Ji**, Emre Yilmaz, Erman Ayday, Pan Li, "The Curse of Correlations for Robust Fingerprinting of Relational Databases", 24th International Symposium on Research in Attacks, Intrusions and Defenses (**RAID**'21), San Sebastian, Spain, October 6-8, 2021.

7. **Tianxi Ji**, Pan Li, Emre Yilmaz, Erman Ayday, Yanfang (Fanny) Ye, Jinyuan Sun, "Differentially Private Binary- and Matrix-Valued Data Query: An XOR Mechanism," 47th International Conference on Very Large Data Bases (**VLDB**'21), Copenhagen, Denmark, August 16-20, 2021.

6. Yifan Guo, Lixing Yu, Qianlong Wang, **Tianxi Ji**, Yuguang Fang, Jin Wei-Kocsis, and Pan Li, "Weak Signal Detection in 5G+ Systems: A Distributed Deep Learning Framework," the Twenty-Second ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (**MobiHoc**'21), Shanghai, China, July 26-29, 2021.

5. Emre Yilmaz, Erman Ayday, **Tianxi Ji**, and Pan Li. "Preserving Genomic Privacy via Selective Sharing." In Proceedings of the 19th Workshop on Privacy in the Electronic Society (**WPES**'20), pp. 163-179. 2020.

4. **Tianxi Ji**, Changqing Luo, Yifan Guo, Jinlong Ji, Weixian Liao, Pan Li, "Differentially Private Community Detection in Attributed Social Networks," the 11th Asian Conference on Machine Learning (**ACML**'19), Nagoya, Japan, November 17 - 19, 2019.

3. Yifan Guo, **Tianxi Ji**, Qianlong Wang, Lixing Yu, and Pan Li, "Quantized Adversarial Training: An Iterative Quantized Local Search Approach," the 18th IEEE International Conference on Data Mining (**ICDM**'19), Beijing, China, November 8-11, 2019.

2. Xuhui Chen, Jinlong Ji, **Tianxi Ji**, and Pan Li, "Cost-Sensitive Deep Active Learning for Epileptic Seizure Detection," the 9th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (**BCB**'18), Washington, DC, August 29-September 1, 2018.

1. **Tianxi Ji**, Siheng Chen, Rohan Varma, and Jelena Kovacevic. "Energy-efficient route planning for autonomous aerial vehicles based on graph signal recovery." In 2015 53rd Annual Allerton Conference on Communication, Control, and Computing (**Allerton**), pp. 1414-1421. IEEE, 2015.

Selected Journal Publications

5. **Tianxi Ji**, Yifan Guo, Qianlong Wang, Xufei Wang, and Pan Li. "ECONOMY: Point Clouds-based Energy-efficient Autonomous Navigation for UAVs." IEEE Transactions on Network Science and Engineering (2021) to appear.

4. **Tianxi Ji**, Changqing Luo, Yifan Guo, Qianlong Wang, Lixing Yu, and Pan Li, "Community Detection in Online Social Networks: A Differentially Private and Parsimonious Approach," IEEE transactions on computational social systems 7, no. 1 (2020): 151-163.

3. Qianlong Wang, Yifan Guo, **Tianxi Ji**, Xufei Wang, Bingfang Hu, and Pan Li. "Towards Combatting COVID-19: A Risk Assessment System", IEEE Internet of Things Journal (2021) to appear.

2. Qianlong Wang, Yifan Guo, Xufei Wang, **Tianxi Ji**, Lixing Yu, and Pan Li, "AI at the Edge: Blockchain-Empowered Secure Multiparty Learning with Heterogeneous Models," IEEE Internet of Things Journal, Vol. 7, No. 10, pp. 9600-9610, October 2020.

1. Yifan Guo, **Tianxi Ji**, Qianlong Wang, Lixing Yu, Geyong Min, and Pan Li. "Unsupervised anomaly detection in IoT systems for smart cities." IEEE Transactions on Network Science and Engineering 7, no. 4 (2020): 2231-2242.

Currently Under Review

5. **Tianxi Ji**, Changqing Luo, Lixing Yu, Qianlong Wang, Siheng Chen, Arun Thapa, and Pan Li, "Energy-Efficient Computation Offloading in Mobile Edge Computing Systems with Uncertainties", IEEE Transactions on Wireless Communication, **minor revision**.

4. **Tianxi Ji**, Erman Ayday, Emre Yilmaz, and Pan Li, "Deferentially Private Fingerprinting of Relational Databases", arXiv preprint arXiv:2109.02768 (2021).

3. **Tianxi Ji**, Pan Li, Emre Yilmaz, Erman Ayday, Yanfang (Fanny) Ye, Jinyuan Sun, "An XOR Mechanism: Querying Binary- and Matrix-Valued Data under Differential Privacy", IEEE Transactions on Knowledge and Data Engineering, submitted.

2. **Tianxi Ji**, Erman Ayday, Emre Yilmaz, and Pan Li, "Towards Robust Fingerprinting of Relational Databases by Mitigating Correlation Attacks", IEEE Transactions on Dependable and Secure Computing, submitted.

1. Yifan Guo, **Tianxi Ji**, Xufei Wang, Qianlong Wang, Pan Li, Miao Pan, and Ying Ma, "Efficient Defense Against Adversarial Attacks: A Fast Quantized Adversarial Training Scheme", IEEE Transactions on Big Data, submitted.

Teaching Experience

- **Case Western Reserve University** — Cleveland, OH
  Teaching Assistant — *Jan. 2017 - Present*
  - **Discrete Signal Processing**: Held lectures, lab sessions and office hours. Graded assignments and exams.
  - **Wireless Communication**: Held lab sessions and lectures. Designed course project on blockchain-assisted intelligent Internet-of-things system supporting wireless communication and distributed ledger.
  - **Introduction to Data Science**: Participated in course design and content preparation. Held lab sessions and lectures. Instructed course projects.
- **Carnegie Mellon University** — Pittsburgh, PA
  Teaching Assistant — *Sept. 2016 - Dec. 2016*
  - **Networks in the Real World**: Participated in course design, content preparation and assignment grading. Instructed course projects.

Grant Writing

"AI for High Communication Efficiency in 5G Cellular Network", *NSF CNS Program*, 2020.
"Mobility Improvements to Achieve Transportation Equity in Communities", *NSF S&CC Program*, 2020.

Honors and Awards

Attendance Support, VLDB'21 — 2021

Professional Activities

Reviewer for journals

ACM/IEEE Transactions on Networking	IEEE Transactions on Network Science and Engineering
IEEE Transactions on Multimedia	IEEE Communication Letters
IEEE Transactions on Dependable and Secure Computing	IEEE Transactions on Big Data
Wiley Encyclopedia of Electrical and Electronics Engineering	Journal of Parallel and Distributed Computing

Reviewer for conferences

ICME'21	Infocom'20,'19	IEEE BigData'20,'19