Wanli Xue

Curriculum Vitae

Research Interests

My research interests rotate around the broad aspects of cyber-physical information systems, privacy enhancing technologies and intelligent IoT system. I am particularly interested in developing efficient and robust privacy-preserving IoT information systems to provide useful AI-based services for people's everyday life without violating their privacy.

Education

Mar. 2015 – Apr. 2019 **University of New South Wales, Australia**.
Ph.D., Computer Science & Engineering,
Supervisor: *Prof. Aruna Seneviratne* and *A/Prof. Wen Hu*
Dissertation:"*Privacy-preserving Internet of Things Analysis Architecture*."

June. 2011 – Dec. 2013 **University of Tasmania, Australia**.
M.Sc., Computer Science,
Supervisor: *Prof. Byeong Kang*
Dissertation: "*Arduface: An Embedded System Analysis Tool*."

Sep. 2007 – Jul. 2011 **University of Tasmania, Australia & Shanghai Ocean University, China** .
B.Sc., Computer Information System, B.Bm., Business Information System

Working Experience

Jan. 2019 – Now **Cybersecurity Cooperative Research Centre Program**.
CybersecurityCRC & UNSW, Sydney, Australia
Senior Research Associate (Level B)
- lead cybersecurity CRC projects by working closely with research teams and partners to achieve the targeted goals. - carry out innovative, impactful research of strategic importance to cyber security that will lead to novel and important scientific outcomes. - provide leadership to the development of innovative concepts and ideas for further research. - help in commercialising cybersecurity products in alignment with industry needs.

Mar. 2015 – Dec. 2018 **Networks Research Group**.
DATA61 (formerly National ICT Australia), CSIRO, Sydney, Australia
Research Assistant

Mar. 2013 – Feb. 2015 **Smart Services and Systems research group**.
Department of Computer Science, UTAS, Hobart, Australia
Postgraduate Research Assistant

Awards and Honors

- April 2020 **Best Paper Runner-Up Award**, ETSecIoT 2020.
- March 2017 **IEEE&ACM IPSN Student Travel Award**, IEEE&ACM IPSN 2017.
- March 2017 **Postgraduate Research Support Scheme** , UNSW.
- 2015 – 2018 **Australian Postgraduate Award**, Australia.
- 2015 – 2018 **Research Project Top-up Scholarship**, CSIRO-Data61.
- June 2012 **Golden Key International Honour Society**, *Top 15% Students Invited*, Worldwide.
- 2011 – 2013 **Postgraduate Scholarship**, UTAS.

Training and Skills

Professional Training: Essentials of Supervision, Responsible Employee Refresher, Sexual Misconduct Awareness, Health & Safety Awareness, Ergonomic & Manual Task, UNSW Research integrity-Staff.
Programming Languages: Python, C/C++, Matlab, Java(Android), objective-C, PHP, Javascipt, C#.
Deep Learning Framework: Tensorflow2.0 (Keras), Caffe1
Platform: MacOS, Linux

Teaching/Supervising Experience

- 2019, 2021 S1 **Support-Teaching Lecturer for COMP4337/9337 Securing Wireless Networks**, *assignment setup*, online teaching management support, guest lecture about Privacy-related Topic.
  School of Computer Science & Engineering, UNSW
  Lecturer in Charge: Professor Sanjay Jha.

- 2017,2018 S1 **Tutor for BIOM9450: Clinical Information System**.
  Graduate School of Biomedical Science & Engineering, UNSW
  Lecturer in Charge: Scientia Professor Nigel Lovell.

- 2016- **Supervise Undergraduates (Honour project)**.
  School of Computer Science & Engineering, UNSW
  Andrew Peacock with thesis titled: "Benchmarking for different privacy-preserving systems". (Join Microsoft, Seattle)
  Albert Kerr with thesis titled: "Privacy-preserving cloud services for Internet of Things". (Join AU network company)
  Chen Sheng with Summer Scholarship thesis titled: Privacy issue in federated learning (Joint Honour degree at UNSW EE)
  Sean Douglas Watt with thesis titled: "Event camera-based privacy-preserving surveillance system".

- 2021- **PhD Supervision**, *Privacy-preserving Machine Learning*.
  Zakia Zaman, School of Computer Science & Engineering, UNSW
  successful granted obtained from TCS, formally commenced
  supported by Research Grants item 2

Publications

J.1 <u>W. Xue</u>, D. Vatsalan, W. Hu and A. Seneviratne, "*Sequence Data Matchings and Beyond: New Privacy-preserving Primitives based on Bloom Filters*," In **IEEE Transactions on Information Forensics and Security**, 2020: 2973-2987, IF:6.211, CCF A.

J.2 Xu, W., Zhang, X., Yao, L., <u>Xue, W</u>. and Wei, B, "*A multi-view CNN-based acoustic classification system for automatic animal species identification*," **Elsevier Ad Hoc Networks**, 2020, IF:3.49, CCF C.

J.3 <u>W. Xue</u>, C. Luo, Y. Shen, C. Luo, R. Rana, G. Lan, S. Jha, A. Senveviratne and W. Hu, "*Towards A Compressive-Sensing-Based Lightweight Encryption Scheme for the Internet of Things,*" **IEEE Transactions on Mobile Computing**, 2020, IF:5.11, CCF A.

J.4 Q.Yang, Y. Shen, F. Yang, J. Zhang, <u>W. Xue</u>, and H. Wen, "*HealCam: Energy-efficient and privacy-preserving human vital cycles monitoring on camera-enabled smart devices,*" **Elsevier Computer Networks**, 2018, IF:3.03, CCF B.

J.5 C. Luo, X. Liu, <u>W. Xue</u>,Y. Shen, J. Li, W. Hu, and Alex X. Liu, " *Predictable Privacy-Preserving Mobile Crowd Sensing: A Tale of Two Roles,*" **IEEE/ACM Transactions on Networking**, 2019, IF:3.597, CCF A.

C.1 W. Xu, C. Luo, X.Yu, <u>W. Xue</u>, B. Wei, Z. Li, J. Wang and A. Zomaya, "*InaudibleKey: Generic Inaudible Acoustic Signal based Key Generation Protocol for Mobile Devices*", In ACM/IEEE International Conference on InformationProcessing on Sensor Networks (**IPSN**), May 2021. (Core Rank A*, CCF B)

C.2 C. Shen*, <u>W. Xue</u>, "*An Experiment Study on Federated Learning Testbed*", In Sixth International Conference on Smart Trends in Computing and Communications (**SmartCom**), March 2021. Work under my supervision.

C.3 <u>W. Xue</u>, Y. Shen, W. Hu, and A. Seneviratne, "*Acies: A Privacy-Preserving System for Edge-based Classification,*" In The 17th IEEE International Conference On Trust, Security And Privacy In Computing And Communications (**Trustcom**), April 2018. (Core Rank A, CCF C)

C.4 <u>W. Xue</u>, C. Luo, G. Lan, R. Rana, W. Hu, and A. Seneviratne, "*Kryptein: A Compressive-Sensing-Based Encryption Scheme for the Internet of Things,*" In ACM/IEEE International Conference on Information Processing on Sensor Networks (**IPSN**), April 2017. (Acceptance rate: 19/104=18% Core Rank A*, CCF B)

C.5 <u>W. Xue</u>, H. Chung, SC. Han, Y. Kim, and BH. Kang, "*Arduface: An Embedded System Analysis Tool,*" In Pacific Rim International Conference on Artificial Intelligence (**PRICAI**), Dec 2014. (Core Rank B ,CCF C)

W.1 N. Ahmed, R. A. Michelin, <u>W. Xue</u>, W. Song, G. Purtra, S. Ruj, S. S. Kanhere, and S.Jha, "*Towards Privacy-preserving Digital Contact Tracing,*" In IEEE International Conference on Blockchain and Cryptocurrency. (**ICBC**), accepted demo, May 2021.

W.2 W. Xu, Z. Li, <u>W. Xue</u>, X. Yu, J. Wang, C. Luo, W. Li and AY. Zomaya, "*Inaudible acoustic signal based key agreement system for IoT devices: Poster Abstract,*" In Proceedings of the 18th Conference on Embedded Networked Sensor Systems, 689-690. (**Sensys**, CCF B), Nov 2020.

W.3 <u>Xue, W.</u>, Hu, W., Gauranvaram, P., Seneviratne, A. and Jha, S., "*An Efficient Privacy-preserving IoT System for Face Recognition,*" In 2020 Workshop on Emerging Technologies for Security in IoT (**ETSecIoT**) (pp. 7-11). IEEE, Apr 2020, **Best paper runner up . click here to view**

W.4 <u>W. Xue</u>, C. Luo, R. Rana, W. Hu and A. Seneviratne, "*CScrypt: A Compressive-Sensing-Based Encryption Engine for the Internet of Things: Demo Abstract,*" In Proceedings of the 14th ACM Conference on Embedded Network Sensor Systems, (**Sensys**, CCF B) , Nov 2016. **click here to view** .

Research Grants

Professional Activities

Conference/Workshop Program Committee

- Technical Program Committee: ETSecIoT2020 (co-located with CPS-IoT2020), CPD2021 (part of Ubicomp2021).
- Local Arrangement Chair: CPS-IoT Week, 2020, which is including top conferences: HSCC, ICCPS, IPSN and RTAS and three guest conferences, IC2E, ICFC and IoTDI.

Review Service for Journal and Conference

- IEEE Access, IEEE Trans. on Internet of Things, IEEE IoT Journal, IEEE Trans. on Dependable and Secure Computing, ACM Trans. on Sensor Networks, Elsevier Pervasive and Mobile Computing, Elsevier Ad hoc Nwtworks, Journal of Network and Computer Applications
- COMSNET, IEEE ICDCS, ACM/EEE IoTDI, ACM Sensys, ACM/IEEE IPSN, IEEE SECON

Keynotes Presentations

- "*Privacy-preserving Data Analysis Architecture for the Internet of Things*,"
  Oral Presentation at UNSW Engineering Postgraduate Research Symposium, 2018, ISBN: 978-0-9953910-2-4.
- "*Kryptein: A Compressive-Sensing-Based Encryption Scheme for the Internet of Things*,"
  Oral Presentation at IEEE&ACM IPSN'17, Pittsburgh, Pennsylvania, USA, April 2017.
- "*CScrypt: A Compressive-Sensing-Based Encryption Engine for the Internet of Things*,"
  Demo Presentation at IEEE Sensys'16, Stanford, CA, USA, November 2016.

References

Can be provided upon request.