

Weitao XU

Department of Computer Science

Visiting address:

YEUNG-B6421

Email: weitaoxu@cityu.edu.hk

Phone: +852 34428626, (+852)53492454

Web address: <https://sites.google.com/site/weitaoxuq/>



Biography

I'm an Assistant Professor at the Department of Computer Science at City University of Hong Kong. Before that, I worked as a Postdoctoral Research Associate at the School of Computer Science and Engineering (CSE) at UNSW Australia from June 2017 to August 2019. I obtained my PhD degree from the University of Queensland in 2017 (advised by Prof. Neil Bergmann and Dr. Wen Hu). I received my B.E. degree in Communication Engineering and M.E. degree in Communication and Information System (advised by Prof. Dongfeng Yuan) both from the School of Information Science and Engineering, Shandong University (SDU), China, in 2010 and 2013, respectively.

Employment

Department of Computer Science

City University of Hong Kong

16 Aug 2019 → present

Research outputs

Gait-Watch: A Gait-based context-aware authentication system for smart watch via sparse coding

Xu, W., Shen, Y., Luo, C., Li, J., Li, W. & Zomaya, A. Y., 1 Oct 2020, In : Ad Hoc Networks. 107, 102218.

EnTrans: Leveraging Kinetic Energy Harvesting Signal for Transportation Mode Detection

Lan, G., Xu, W., Ma, D., Khalifa, S., Hassan, M. & Hu, W., Jul 2020, In : IEEE Transactions on Intelligent Transportation Systems. 21, 7, p. 2816-2827 12 p., 8730510.

A multi-view CNN-based acoustic classification system for automatic animal species identification

Xu, W., Zhang, X., Yao, L., Xue, W. & Wei, B., 1 May 2020, In : Ad Hoc Networks. 102, 102115. Scopus citations: 1

Poster Abstract: A Novel Modeling Involved Security Approach for LoRa Key Generation

Gao, J., Xu, W., Kanhere, S., Jha, S. & Hu, W., Apr 2020, *Proceedings - 2020 19th ACM/IEEE International Conference on Information Processing in Sensor Networks, IPSN 2020*. IEEE, p. 327-328 (ACM/IEEE International Conference on Information Processing in Sensor Networks).

Securing Cyber-Physical Social Interactions on Wrist-Worn Devices

SHEN, Y., DU, B., XU, W., LUO, C., WEI, B., CUI, L. & WEN, H., Apr 2020, In : ACM Transactions on Sensor Networks. 16, 2, 19.

KEHKey: Kinetic Energy Harvester-based Authentication and Key Generation for Body Area Network

LIN, Q., XU, W., LAN, G., CUI, Y., JIA, H., HU, W., HASSAN, M. & 1 others, SENEVIRATNE, A., Mar 2020, In : Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies. 4, 1, 26 p., 41.

Capacitor-based Activity Sensing for Kinetic-powered Wearable IoTs

LAN, G., MA, D., XU, W., HASSAN, M. & HU, W., Feb 2020, In : ACM Transactions on Internet of Things. 1, 1, 26 p., 2.

Gait Recognition as a Service for Unobtrusive User Identification in Smart Spaces

LUO, C., WU, J., LI, J., WANG, J., XU, W., MING, Z., WEI, B. & 2 others, LI, W. & ZOMAYA, A. Y., Feb 2020, In : ACM Transactions on Internet of Things. 1, 1, 21 p., 5.

Measurement, Characterization, and Modeling of LoRa Technology in Multifloor Buildings

Xu, W., Kim, J. Y., Huang, W., Kanhere, S. S., Jha, S. K. & Hu, W., 1 Jan 2020, In : IEEE Internet of Things Journal. 7, 1, p. 298-310 8865092.Scopus citations: 2

WiEnhance: Towards Data Augmentation in Human Activity Recognition using WiFi signal

Zhang, J., Wu, F., Hu, W., Zhang, Q., Xu, W. & Cheng, J., Dec 2019, *Proceedings - 2019 15th International Conference on Mobile Ad-Hoc and Sensor Networks, MSN 2019*. Institute of Electrical and Electronics Engineers Inc., p. 309-314 9066101. (Proceedings - 2019 15th International Conference on Mobile Ad-Hoc and Sensor Networks, MSN 2019).

LoRa-Key: Secure Key Generation System for LoRa-Based Network

Xu, W., Jha, S. & Hu, W., Aug 2019, In : IEEE Internet of Things Journal. 6, 4, p. 6404-6416 13 p., 8580375.Scopus citations: 10

The Design, Implementation, and Deployment of a Smart Lighting System for Smart Buildings

Xu, W., Zhang, J., Kim, J. Y., Huang, W., Kanhere, S. S., Jha, S. K. & Hu, W., Aug 2019, In : IEEE Internet of Things Journal. 6, 4, p. 7266-7281 16 p., 8710297.Scopus citations: 5

Brush like a Dentist: Accurate Monitoring of Toothbrushing via Wrist-Worn Gesture Sensing

Luo, C., Feng, X., Chen, J., Li, J., Xu, W., Li, W., Zhang, L. & 2 others, Tari, Z. & Zomaya, A. Y., May 2019, *INFOCOM 2019 - IEEE Conference on Computer Communications*. IEEE, p. 1234-1242 9 p. 8737513. (Proceedings - IEEE INFOCOM; vol. 2019).Scopus citations: 1

GaitLock: Protect Virtual and Augmented Reality Headsets Using Gait

Shen, Y., Wen, H., Luo, C., Xu, W., Zhang, T., Hu, W. & Rus, D., May 2019, In : IEEE Transactions on Dependable and Secure Computing. 16, 3, p. 484-497 14 p., 8276563.Scopus citations: 6

H2B: Heartbeat-based secret key generation using piezo vibration sensors

Lin, Q., Xu, W., Liu, J., Khamis, A., Hu, W., Hassan, M. & Seneviratne, A., 16 Apr 2019, *IPSN 2019 - Proceedings of the 2019 Information Processing in Sensor Networks*. ACM New York, p. 265-276 12 p. (IPSN - Proceedings of the ... Information Processing in Sensor Networks).Scopus citations: 7

KEH-Gait: Using Kinetic Energy Harvesting for Gait-based User Authentication Systems

Xu, W., Lan, G., Lin, Q., Khalifa, S., Hassan, M., Bergmann, N. & Hu, W., Jan 2019, In : IEEE Transactions on Mobile Computing. 18, 1, p. 139-152 14 p., 8344494.Scopus citations: 11

Energy Harvesting-Based Smart Transportation Mode Detection System via Attention-Based LSTM

Xu, W., Feng, X., Wang, J., Luo, C., Li, J. & Ming, Z., 2019, In : IEEE Access. 7, p. 66423-66434 12 p., 8721072.Scopus citations: 2

Poster abstract: Energy efficient LPWAN decoding via joint sparse approximation

Liu, J., Xu, W. & Hu, W., 4 Nov 2018, *SenSys 2018 - Proceedings of the 16th Conference on Embedded Networked Sensor Systems*. ACM New York, p. 325-326 2 p. (SenSys - Proceedings of the 16th Conference on Embedded Networked Sensor Systems).

Exploring the Feasibility of Physical Layer Key Generation for LoRaWAN

Xu, W., Jha, S. & Hu, W., Aug 2018, *Proceedings: The 17th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (IEEE TrustCom 2018) The 12th IEEE International Conference on Big Data Science and Engineering (IEEE BigDataSE 2018): 2018 IEEE Trustcom/BigDataSE*. IEEE, p. 231-236 6 p. 8455912. (Proceedings - IEEE International Conference on Trust, Security and Privacy in Computing and Communications and ... IEEE International Conference on Big Data Science and Engineering, Trustcom/BigDataSE).Scopus citations: 4

Demo abstract: simultaneous energy harvesting and sensing using piezoelectric energy harvester

Ma, D., Lan, G., Xu, W., Hassan, M. & Hu, W., Apr 2018, *PROCEEDINGS: ACM/IEEE International Conference on Internet of Things Design and Implementation: - IoTDI 2018 -*. IEEE, p. 308-309 2 p. (Proceedings - ACM/IEEE International Conference on Internet of Things Design and Implementation, IoTDI 2018).Scopus citations: 7

SEHS: Simultaneous Energy Harvesting and Sensing using Piezoelectric Energy Harvester

Ma, D., Lan, G., Xu, W., Hassan, M. & Hu, W., Apr 2018, *PROCEEDINGS - ACM/IEEE International Conference on Internet of Things Design and Implementation, IoTDI 2018*. Institute of Electrical and Electronics Engineers Inc., p. 201-212 12 p. (Proceedings - ACM/IEEE International Conference on Internet of Things Design and Implementation, IoTDI). Scopus citations: 5

Shake-n-Shack: Enabling Secure Data Exchange Between Smart Wearables via Handshakes

Shen, Y., Yang, F., Du, B., Xu, W., Luo, C. & Wen, H., Mar 2018, *2018 IEEE International Conference on Pervasive Computing and Communications (PerCom)*. Institute of Electrical and Electronics Engineers Inc., 8444579. (IEEE International Conference on Pervasive Computing and Communications, PerCom). Scopus citations: 9

Sensor-Assisted Multi-View Face Recognition System on Smart Glass

Xu, W., Shen, Y., Bergmann, N. & Hu, W., Jan 2018, In : *IEEE Transactions on Mobile Computing*. 17, 1, p. 197-210 14 p. Scopus citations: 3

CapSense: Capacitor-based activity sensing for kinetic energy harvesting powered wearable devices

Lan, G., Ma, D., Xu, W., Hassan, M. & Hu, W., 7 Nov 2017, *Proceedings of the 14th EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services*. ACM New York, p. 106-115 10 p. (ACM International Conference Proceeding Series). Scopus citations: 7

Poster: Unobtrusive user verification using piezoelectric energy harvesting

Ma, D., Lan, G., Xu, W., Hassan, M. & Hu, W., 7 Nov 2017, *Proceedings of the 14th EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services*. ACM New York, p. 541-542 2 p. (ACM International Conference Proceeding Series). Scopus citations: 2

WiCare: Towards In-Situ breath monitoring

Zhang, J., Xu, W., Hu, W. & Kanhere, S. S., Nov 2017, *14th EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services, MobiQuitous 2017*. Association for Computing Machinery, p. 126-135 10 p. (ACM International Conference Proceeding Series). Scopus citations: 4

Accelerometer and Fuzzy Vault-Based Secure Group Key Generation and Sharing Protocol for Smart Wearables

Revadigar, G., Javali, C., Xu, W., Vasilakos, A. V., Hu, W. & Jha, S., Oct 2017, In : *IEEE Transactions on Information Forensics and Security*. 12, 10, p. 2467-2482 16 p., 7934407. Scopus citations: 16

Gait-watch: A context-aware authentication system for smart watch based on gait recognition

Xu, W., Shen, Y., Zhang, Y., Bergmann, N. & Hu, W., 18 Apr 2017, *Proceedings - 2017 IEEE/ACM 2nd International Conference on Internet-of-Things Design and Implementation, IoTDI 2017 (part of CPS Week)*. ACM New York, p. 59-70 12 p. (Proceedings - IEEE/ACM ... International Conference on Internet-of-Things Design and Implementation, IoTDI). Scopus citations: 26

VEH-COM: Demodulating Vibration Energy Harvesting for Short Range Communication

Lan, G., Xu, W., Khalifa, S., Hassan, M. & Hu, W., Mar 2017, *2017 IEEE International Conference on Pervasive Computing and Communications (PerCom)*. Institute of Electrical and Electronics Engineers Inc., p. 170-179 10 p. 7917863. (IEEE International Conference on Pervasive Computing and Communications, PerCom). Scopus citations: 9

Automatic Key Generation Using Motion Energy Harvesters

Lin, Q., Cui, Y., Jiang, S., Ma, T., XU, W. & Hu, W., Feb 2017.

Gait-key: a gait-based shared secret key generation protocol for wearable devices

Xu, W., Javali, C., Revadigar, G., Luo, C., Bergmann, N. & Hu, W., Feb 2017, In : *ACM Transactions on Sensor Networks*. 13, 1, 6. Scopus citations: 21

KEH-Gait: Towards a Mobile Healthcare User Authentication System by Kinetic Energy Harvesting

Xu, W., Lan, G., Lin, Q., Khalifa, S., Bergmann, N., Hassan, M. & Hu, W., Feb 2017.

Sensor-assisted Face Recognition System on Smart Glass via Multi-view Sparse Representation Classification

Xu, W., Shen, Y., Bergmann, N. & Hu, W., Apr 2016, *2016 15th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN) - Proceedings*. Institute of Electrical and Electronics Engineers Inc., 7460721. (ACM/IEEE International Conference on Information Processing in Sensor Networks, IPSN - Proceedings).Scopus citations: 15

Walkie-Talkie: Motion-Assisted Automatic Key Generation for Secure On-Body Device Communication

Xu, W., Revadigar, G., Luo, C., Bergmann, N. & Hu, W., Apr 2016, *2016 15th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN) - Proceedings*. Institute of Electrical and Electronics Engineers Inc., 7460726. (ACM/IEEE International Conference on Information Processing in Sensor Networks, IPSN - Proceedings).Scopus citations: 39

Secure Key Generation and Distribution Protocol for Wearable Devices

Revadigar, G., Javali, C., Xu, W., Hu, W. & Jha, S., Mar 2016, *2016 IEEE International Conference on Pervasive Computing and Communication Workshops (PerCom Workshops)*. Institute of Electrical and Electronics Engineers Inc., 7457058. (IEEE International Conference on Pervasive Computing and Communication Workshops, PerCom Workshops).Scopus citations: 10

Transportation Mode Detection Using Kinetic Energy Harvesting Wearables

Lan, G., Xu, W., Khalifa, S., Hassan, M. & Hu, W., Mar 2016, *2016 IEEE International Conference on Pervasive Computing and Communication Workshops (PerCom Workshops)*. Institute of Electrical and Electronics Engineers Inc., 7457048. (IEEE International Conference on Pervasive Computing and Communication Workshops, PerCom Workshops).Scopus citations: 15

Mobile applications based on smart wearable devices

Xu, W., 1 Nov 2015, *SenSys 2015 - Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*. ACM New York, p. 505-506 2 p. (SenSys - Proceedings of the ... ACM Conference on Embedded Networked Sensor Systems).Scopus citations: 5

Poster abstract: An online approach for gait recognition on smart glasses

Shen, Y., Luo, C., Xu, W. & Hu, W., 1 Nov 2015, *SenSys 2015 - Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*. ACM New York, p. 389-390 2 p. (SenSys - Proceedings of the ... ACM Conference on Embedded Networked Sensor Systems).Scopus citations: 1

Poster abstract: Robust and efficient sensor-assisted face recognition system on smart glass

Xu, W., Shen, Y., Bergmann, N. & Hu, W., 1 Nov 2015, *SenSys 2015 - Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*. ACM New York, p. 379-380 2 p. (SenSys - Proceedings of the ... ACM Conference on Embedded Networked Sensor Systems).Scopus citations: 2

A new information system using multimedia thin client and cloud architecture

Xu, W. & Xue, L., May 2014, *Advances in Communication Technology and Systems*. Yang, G. (ed.). Southampton, UK: WIT Press, p. 31-38 8 p. (WIT Transactions on Information and Communication Technologies; vol. 56).

Implementation of a Network Streaming Media Player Based on ARM Processor

Xu, W., Yuan, D. & Xu, J., Dec 2012, *2012 International Conference on Control Engineering and Communication Technology, ICCECT 2012: Proceedings*. IEEE, p. 719-722 6414007. (International Conference on Control Engineering and Communication Technology, ICCECT).Scopus citations: 2

Activities

The 7th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys2020)

Weitao XU (Member of programme committee)
Feb 2020 → ...

The 4th Asian Conference on Artificial Intelligence Technology (ACAIT)

Weitao XU (Member of programme committee)
Jan 2020 → May 2020

The IEEE International Conference on Advanced Robotics and Mechatronics (ICARM)

Weitao XU (Member of programme committee)
Jan 2020 → Jun 2020

Ubicomp Workshop on Combining Physical and Data-Driven Knowledge in Ubiquitous Computing

Weitao XU (Member of programme committee)
Jan 2020 → Jul 2020

Ad Hoc Networks (Journal)

Weitao XU (Associate Editor)
Oct 2019 → Oct 2021

The ACM/IEEE International Conference on Internet of Things Design and Implementation (IoTDI)

Weitao XU (Member of programme committee)
Oct 2019 → Apr 2020

Smart Sensing and Security System for IoT

Weitao XU (Speaker)
May 2019

Sensor-Assisted Smart Recognition System on Wearable Devices

Weitao XU (Speaker)
Apr 2019

CPS IoT week

Weitao XU (Organiser)
Feb 2019 → Apr 2020

EWSN

Weitao XU (Member of programme committee)
25 Jan 2019 → 27 Jan 2019

IEEE EWSN CoWireless Workshop

Weitao XU (Member of programme committee)
25 Jan 2019 → 27 Jan 2019

Exploring the Feasibility of Physical Layer Key Generation for LoRaWAN

Weitao XU (Speaker)
Jul 2018

Sensor-Assisted Face Recognition System on Smart Glass

Weitao XU (Speaker)
Oct 2017

Gait-Watch: A Context-aware Authentication System for Smart Watch Based on Gait Recognition

Weitao XU (Speaker)
Apr 2017

KEH-Gait: Towards a Mobile Healthcare User Authentication System by Kinetic Energy Harvesting

Weitao XU (Speaker)

Feb 2017

Biometric-based Recognition System on Wearable Devices

Weitao XU (Speaker)

Nov 2016

Sensor-assisted Face Recognition System on Smart Glass via Multi-view Sparse Representation Classification

Weitao XU (Speaker)

Apr 2016

Walkie-Talkie: Motion-Assisted Automatic Key Generation for Secure On-Body Device Communication

Weitao XU (Speaker)

Apr 2016

Managing the Web of Things: Linking the Real World to the Web (Journal)

Weitao XU (Book Series Editor)

Jan 2016 → May 2016

Mobile applications based on smart wearable devices

Weitao XU (Speaker)

Nov 2015

Prizes

Google PhD Fellowship

XU, Weitao (Recipient), 2016

IoTDI Best Demo Runner-up Award

XU, Weitao (Recipient), 2018

IPSN Best Paper Runner-up Award

XU, Weitao (Recipient), 2016

Percom Best Work-in-Progress Paper Award

XU, Weitao (Recipient), 2016

Press/Media

Aussie researchers want to use your walk to authenticate you

Weitao XU

24/05/17

1 item of Media coverage

The era of talking buildings has arrived

Weitao XU

10/12/18

1 item of Media coverage

The way we walk can be used to power and secure our devices

Weitao XU

7/05/17

1 item of Media coverage

啥？走路的姿势都能用来做密码？！

Weitao XU

25/05/17

1 item of Media coverage

走路的姿态也能解锁手机？科学家开发步态验证技术

Weitao XU

25/05/17

1 item of Media coverage

Grants

Projects

ECS: Robust and Lightweight Security Framework for Low-power Wide-area Network

XU, W.

1/01/21 → ...