Dong Chen

Personal Information	School of Computing and Information Sciences Florida International University 11200 SW 8th Street, CASE(ECS) 385 Miami, FL 33199

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Interests   My research focuses on *Big data analytics*, *System security*, and *Privacy implications* of Cyber-Physical Systems (e.g., smart homes, smart grid, smart cities, Internet of Things, etc.). I design and implement a wide range of accurate data analytics with a particular emphasis on *security and privacy* issues using *Machine Learning* and *Data Science* techniques.

Education   **University of Massachusetts Amherst**

    Ph.D., Electrical and Computer Engineering, 2018

    ▷ Thesis Title: *Hybrid Black-box Solar Analytics and their Privacy Implications*
    ▷ Advisors: David Irwin and Prashant Shenoy

    Northeastern University China

    Ph.D., Computer Science, 2014

    ▷ Thesis Title: *Secure and Privacy-Preserving Cyber-Physical Systems*
    ▷ Advisor: Guiran Chang
    ▷ *Best PhD Dissertation* of Northeastern University in 2014.

Academic Appointments

Assistant Professor   August 2018 to —
School of Computing and Information Sciences (SCIS)
Florida International University (FIU)   Miami, Florida, US

Research Assistant   September 2014 to June 2018
Department of Electrical and Computer Engineering
University of Massachusetts Amherst   Amherst, MA, US

Visiting Researcher   September 2012 to June 2014
College of Information and Computer Sciences
University of Massachusetts Amherst   Amherst, MA, US

Research Assistant   September 2008 to August 2012
School of Information and Computer Engineering
Northeastern University, China   Shenyang, China

Industry Appointment

Solaris/Unix Software Engineer   July 2006 to May 2008
Neusoft Corporation   Shenyang, China

Refereed Conference Papers

1. Noman Bashir, **Dong Chen**, David Irwin, Prashant Shenoy, "Solar-TK: A Data-driven Toolkit for Solar PV Performance Modeling and Forecasting", In Proceedings of *the 16th International Conference on Mobile Ad-hoc and Smart Systems (MASS'19)*,Nov 4-7, 2019, Monterey, CA.

2. Liangdong Deng, Yuzhou Feng, **Dong Chen**, Naphtali Rishe. "Identifying the IoT Devices Using their Anonymous Network Traffic Data", In Proceedings of *the 38th IEEE Military Communications Conference (MILCOM'19)*, November 12-14, 2019, Norfolk, VA.

3. **Dong Chen**, David Irwin. "Staring at the Sun: A Physical Black-box Solar Performance Model.", In Proceedings of *the 2018 ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys'18)*, 2018, Acceptance rate = 24.19%.

4. **Dong Chen**, Phuthipong Bovornkeeratiroj, David Irwin and Prashant Shenoy. "Private Memoirs of IoT Devices: Safeguarding User Privacy in the IoT Era", In Proceedings of *the 38th IEEE International Conference on Distributed Computing Systems (ICDCS'18)*,July 2-5, 2018, Vienna, Austria, 2018.

5. **Dong Chen**, David Irwin. "Weatherman: Weather-based Localization of Anonymous Energy Meter Data", In Proceedings of *2017 IEEE International Conference on Big Data (BigData'17)*, Boston, MA, USA, Dec 11-14, 2017. Accept ratio = 87/437 = 20%.

6. **Dong Chen**, David Irwin. "SunDance: Black-box Behind-the-Meter Solar Disaggregation". In Proceedings of *the eighth ACM International Conference on Future Energy Systems (e-Energy'17)*, Hongkong, 2017. Acceptance ratio = 26.7%.

7. **Dong Chen**, David Irwin. "Black-box Solar Performance Modeling: Comparing Physical, Machine Learning, and Hybrid Approaches". In Proceedings of *the 2017 ACM Greenmetrics (Greenmetrics'17)*, Urbana-Champaign, IL, USA, 2017.

8. **Dong Chen**, Srinivasan Iyengar, David Irwin, Prashant Shenoy. "SunSpot: Exposing the Location of Anonymous Solar-powered Homes". In Proceedings of *the 2016 ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys'16)*, Stanford, CA, USA, 2016. Acceptance ratio = 24%.

9. **Dong Chen**, David Irwin, Prashant Shenoy. "SmartSim: A Device-Accurate Smart Home Simulator for Energy Analytics." In Proceedings of *the 2016 IEEE International Conference on Smart Grid Communications (SmartGridComm'16)*, Sydney, Australia, 2016.

10. **Dong Chen**, David Irwin, Prashant Shenoy, Jeannie Albrecht. "Combined Heat and Privacy: Preventing Occupancy Detection from Smart Meters". In *Proceedings of the 12th IEEE International Conference on Pervasive Computing and Communications (PerCom'14)*, Budapest, Hungary, 2014. Acceptance ratio = 14%.

11. **Dong Chen**, Sean Barker, Adarsh Subbaswamy, David Irwin, and Prashant Shenoy. "Non-Intrusive Occupancy Monitoring using Smart Meters". In *Proceedings of the Fifth ACM Workshop On Embedded Sensing Systems For Energy-Efficiency In Buildings (BuildSys'13)*, Roma, Italy, Nov 2013. Acceptance ratio = 39%.

12. Changsheng Miao, Fengling Cao, **Dong Chen**, Guiran Chang. "A Novel Secure Architecture for the Internet of Things". In *Proceedings of the Sixth IEEE International Conference on Genetic and Evolutionary Computing*, pp. 288-291, 2012.

13. **Dong Chen**, Guiran Chang, Jie Jia. "Study on the Interconnection Architecture and Access Technology for Internet of Things". In *Proceedings of International Conference on Computer Science and Service System (CSSS'11)*, Sept 2011.

14. **Dong Chen**, Guiran Chang, Lizhong Jin, Xiaodong Ren. "A Novel Secure Architecture for the Internet of Things". In *Proceedings of the Fifth International Conference on Genetic and Evolutionary Computing (ICGEC'10)*, 2010.

15. Lizhong Jin, Jie Jia, **Dong Chen**, Fengyun Li, Zhicao Dong, Xue Fen. "Research on Architecture, Cross-Layer MAC Protocol for Wireless Sensor Networks.". In *Proceedings of the Fifth International Conference on Genetic and Evolutionary Computing (ICGEC'10)*, 2010.

16. **Dong Chen**, Guiran Chang, Xingwei Wang. "Design and Implementation of a Portable ACE-Based IPC Platform". In *Proceedings of International Conference on Intelligent System Design and Engineering Application (ISDEA'10)*, Oct 2010.

17. **Dong Chen**, Guiran Chang, Xingwei Wang. "An improvement to the Chord-based P2P routing algorithm". In *Proceedings of the Fifth International Conference on Semantics, Knowledge and Grid (SKG'09)* , 2009.

JOURNAL
ARTICLES

1. Bing Jia, Lifei Hao, Chuxuan Zhang, and **Dong Chen** (Corresponding Author). "A Dynamic Estimation of Service Level Based on Fuzzy Logic for Robustness in the Internet of Things". *Sensors* 18(7): 2190, July 2018.

2. **Dong Chen**, Sandeep Kalra, David Irwin, Prashant Shenoy, Jeannie Albrecht. "Preventing Occupancy Detection from Smart Meters". *IEEE Transactions on Smart Grid,* 6(5): 2426-2434, Feb 2015, Impact Factor: 7.364.

3. Dawei Sun, Guiran Chang, **Dong Chen**, Xingwei Wang. "Profiling, Quantifying, Modeling and Evaluating Green Service Level Objectives in Cloud Computing Environments". *Chinese Journal of Computers*, (36)7: 1509-1525, November 2013.

4. **Dong Chen**, Guiran Chang, Dawei Sun, Jie Jia, Xingwei Wang. "Modeling Access Control for Cyber-Physical Systems Using Reputation". *Journal of Computers Science and Electrical Engineering*, 38(5):1088-1101, September 2012.

5. **Dong Chen**, Guiran Chang, Jie Jia. "AC4E: An Access Control Model for Emergencies of Mission-Critical Cyber-Physical Systems". *KSII Transactions on Internet and Information Systems*, 6(9):2052-2072, September 2012.

6. **Dong Chen**, Guiran Chang. "A Survey on Security Issues of M2M Communications in Cyber-Physical Systems". *KSII Transactions on Internet and Information Systems*, 6(1):24-45, 2012.

7. **Dong Chen**, Guiran Chang, Dawei Sun, Jie Jia and Xingwei Wang. "Lightweight Key Management Scheme to Enhance the Security of Internet of Things". *International Journal of Wireless and Mobile Computing*, 5(2):191-198, 2012.

8. Dawei Sun, Guiran Chang, **Dong Chen** and Xingwei Wang. "Modelling, evaluating, designing and maximizing resource allocation revenue by an auction mechanism in cloud computing environments". *International Journal of Computer Applications in Technology*, (2012): 385-392.

9. **Dong Chen**, Guiran Chang, Dawei Sun, Jie Jia and Xingwei Wang. "TRM-IoT: A Trust Management Model Based on Fuzzy Reputation for Internet of Things". *Journal of Computer Science and Information Systems*, 8(4):1207-1228, 2011.

10. **Dong Chen**, Guiran Chang, Xiuying Zheng, Dawei Sun and Xingwei Wang. "A Novel P2P Based Grid Resource Discovery Model". *Journal of Computers*, 6(10):1390-1397, 2011.

POSTERS AND DEMOS

1. Noman Bashir, **Dong Chen**, David Irwin, and Prashant Shenoy. "Solar-TK: A Data-driven Toolkit for Solar PV Performance Modeling and Forecasting". In Proceedings of *the 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys'19)* , November 13-14, 2019, New York, NY, USA.

2. Qi Li, **Dong Chen**. "Exposing the Location of Anonymous Solar-powered Homes", *Proceedings of the 12th Conference on Security and Privacy in Wireless and Mobile Networks (WiSec'19)*, Miami, Florida, 2019.

3. Yuzhou Feng, Liangdong Deng, **Dong Chen**. "IoT devices discovery and identification using network traffic data", *Proceedings of the 12th Conference on Security and Privacy in Wireless and Mobile Networks (WiSec'19)*, Miami, Florida, 2019.

STUDENT MENTORING

Ph.D. students at Florida International University

▷ Yuzhou Feng (Since Fall 2019, from: Beihang University)
▷ Qi Li (Since Spring 2019, from: Northeastern University)

M.S. students at Florida International University

▷ Keyang Yu (from: Southeast University)
▷ Wupeng Yin (from: FIU and UM)
▷ Xu Li (from: Beihang University, first employment: Facebook)

Undergraduate students at Florida International University

▷ Jacob Garcia (2019, FIU Honors College)
▷ Anwar Numa (2018, FIU)
▷ Leonardo Gutierrez (2018, FIU)
▷ Ramses Machado (2018, Master at Georgia Institute of Technology)

Research Experience for Undergraduates at UMass Amherst   2013, 2017

▷ Adarsh Subbaswamy, Vanderbilt University, research topic: smart meter data analytics, 2013.
▷ Joseph Breda, UMass Amherst, research topic: big energy data analytics, 2017.

FELLOWSHIPS,
HONORS AND
AWARDS

Fellowships, Honors and Awards in U.S.:

▷ NSF CISE Career Workshop travel grant   2019
▷ ACM travel grant to e-Energy   2017
▷ ACM SIGMETRICS/PERFORMANCE travel grant to Greenmetrics   2017
▷ New Entering Doctoral Student Fellowship, from UMass Amherst   2014

Fellowships, Honors and Awards in China:

▷ National Graduate Scholarship, from Ministry of Education, China   2013
▷ Huawei Scholarship   2011
▷ Academic Researcher Award for Doctoral Candidates, from Ministry of Education, China   2011
▷ Best Academic Paper Award, from China Institute of Communications in Liaoning Section   2011
▷ Innovative Design Award from the National Competition on Internet of Things, China   2011
▷ Outstanding Graduate Student Award from Northeastern University, China   2010

PRESENTATIONS

Talks and Keynotes

▷ "Preventing EV Attacks and Faults using Data- driven Approach", Keynote Speaker at Cybersecurity in Florida Public Transportation Workshop, USF, 2019.
▷ "Exposing the Location of Anonymous Solar-powered Homes", Lawrence Berkeley National Laboratory, Berkeley, California, 2018.

Presentations

▷ "Staring at the Sun: A Physical Black-box Solar Performance Model.", ACM BuildSys'18.
▷ "SunDance: Black-box Behind-the-Meter Solar Disaggregation", ACM e-Energy 2017.
▷ "SunSpot: Exposing the Location of Anonymous Solar-powered Homes". ACM BuildSys'16, Stanford, CA, 2016.
▷ "Black-box Solar Performance Modeling", ACM Greenmetrics 2017.
▷ "Design and Implementation of a Portable ACE-Based IPC Platform", IEEE ISDEA 2010.
▷ "An improvement to the Chord-based P2P routing algorithm", IEEE SKG 2009.
▷ "Lightweight Key Management Scheme to Enhance the Security of Internet of Things", ICCDA 2012

TEACHING

Courses Taught at Florida International University

▷ **COP-5614: Operating Systems**.   Spring 2019, 2020
▷ **COP-4610: Operating Systems**.   Fall 2018, 2019

Courses Taught at Northeastern University China

▷ **E-Commerce Security and Privacy**.   Spring 2010
▷ **Introduction to Linux**.   Fall 2011

SERVICE

1. NSF Panelist, 2019.

2. Program Committee Member   2010 to Now

   ▷ The 16th ACS/IEEE International Conference on Computer Systems and Application (AICCSA'19), Abu Dhabi, UAE.
   ▷ 2019 IEEE International Conference on Big Data (IEEE Big Data 2019), Los Angeles, CA, USA.
   ▷ 2019 the Twelfth International Conference on Contemporary Computing (IC3), Noida, India.
   ▷ The First International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things (AIChallengeIoT 2019), November 10-13, New York, NY, USA, 2019.
   ▷ 2018 IEEE International Conference on Big Data (IEEE Big Data 2018), Seattle, WA, USA
   ▷ International Symposium on Next Generation Computing and Internet, Dubai (NextGenCIT 2015)
   ▷ IC Engineering and Computational Innovative Sciences, Morocco (ENCINS 2015)

3. Journal Reviewer   2011 to Now

   ▷ ACM Computing Surveys
   ▷ ACM Transactions on Internet Technology

- ▷ Ad Hoc Network
- ▷ IEEE Transactions on Smart Grid
- ▷ IEEE Transactions on Systems, Man and Cybernetics: Systems
- ▷ IEEE Transactions on Information Forensics and Security
- ▷ IEEE Transactions on Industrial Electronics
- ▷ Transactions on Information Forensics and Security
- ▷ Journal of Intelligent Systems
- ▷ Journal of Computers and Electrical Engineering
- ▷ KSII Transactions on Internet and Information Systems
- ▷ Journal of Computer Science and Information Systems
- ▷ International Journal of Ad Hoc and Ubiquitous Computing
- ▷ Jorabian Journal for Science and Engineering
- ▷ IET Control Theory and Applications
- ▷ Journal of Educational Research and Reviews
- ▷ Journal of Experimental & Theoretical Artificial Intelligence
- ▷ Applied Energy
- ▷ IEEE Access

4. Conference and Workshop Reviewer

- ▷ 19th Privacy Enhancing Technologies Symposium (PETS 2019), Stockholm, Sweden. (external reviewer)
- ▷ 15th IEEE International Symposium on Signal Processing and Information Technology (ISSPIT'15)
- ▷ Workshop on Hot Topics in Cyber-Physical Systems, China (HotCPS 2011)
- ▷ Second International Symposium on Intelligent Systems Technologies and Applications (ISTA'16)
- ▷ International Symposium on Intelligent Systems Technologies and Applications (ISTA'15)
- ▷ 2012 IEEE Symposium on Industrial Electronics and Applications

5. University, College Service, and SCIS Service:

- ▷ 2019 University Graduate Schools Graduate Student Spring Appreciation Week Judge
- ▷ 2019 Judge for Senior Design/Project Showcase of the College of Engineering at FIU
- ▷ 2018-2019 FIU SCIS Seminar Series Committee
- ▷ Ph.D. Dissertation Committee member for: Boyuan Guan, Yekun Xu, Liangdong Deng
- ▷ Ph.D. Candidacy Qualifying Exam Committee member for: Boyuan Guan, Maria Presa Reyes.
- ▷ Developed a new graduate course — CAP 5768C Practical Data Science

FUNDING
EXPERIENCE

Funding in U.S.:

- ▷ Principal Investigator. *"Image Processing-based Indoor Navigation for Visually Impaired People"*, Google Cloud Platform Education Grant, $9,976 + $1,950, 2019.

Funding in China:

- ▷ Principal Investigator. *"The Architecture, Security and Privacy Preserving Techniques of Cyber-Physical Systems"*. Funded: July 10, 2011–June 30, 2013. CNY$50,000, Fundamental research funding programs from Ministry of Education and Finance, China.
- ▷ Co-Principal Investigator. *"A Novel ACE-Based Medium Plate Mill Level 2 Communication System"*. Funded: October 1, 2009–November 1, 2010. CNY$100,000, Open Subject Funding programs from RAL State Key Laboratory China.

SOFTWARE AND
DATA RELEASE

My research datasets are publicly available, and have been requested and cited by many schools and researchers ∼110 times (until August 2018).

- ▷ SmartSim. SmartSim is a publicly-available device-accurate smart home energy trace generator.
- ▷ NIOM dataset. This dataset contains 3 weeks minute level aggregated energy data, and the ground truth occupancy status data for the same periods. This dataset is used to evaluate NIOM algorithm.
- ▷ Solar Panel dataset. This dataset contains 1 minute level solar generation data for 50 rooftop solar panels. This dataset is used in SunSpot paper to evaluate the accuracy of the SunSpot system.
- ▷ SunDance dataset. This dataset includes hourly energy data (net meter, solar generation) and weather data (weather condition data from public weather stations and apis) for 100 solar sites in North America from 2015/1/1 to 2016/1/1 used in SunDance paper.
- ▷ More data and codes. http://traces.cs.umass.edu/index.php/Smart/Smart

PROFESSIONAL Member of ACM, ACM SigEnergy, and IEEE. (2015 to now)
MEMBERSHIPS