

Dezhi Hong

Contact Information

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Computer Science Department
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Research Interests

Cyber-Physical Systems, Machine Learning

Education

University of Virginia, Charlottesville, VA 09/12 - Present
Ph.D., Computer Science
Dissertation: The Data Holmes: Towards Automatic Metadata Inference for Sensors in Buildings
Advisor: Prof. Kamin Whitehouse

Beijing University of Posts and Telecommunications, Beijing, China 06/12
B.S., Electrical Engineering
GPA: 91.1/100
Thesis: Design and Implementation of an RFID-based Indoor Localization System

Experience

University of Virginia, Charlottesville, VA 09/12 – Present
Research Assistant, Department of Computer Science

Samsung Research America, Mountain View, CA 09/16 – 12/16
Research Intern, Artificial Intelligence Research Center
Mentor: Dr. Vijay Srinivasan, Manager: Dr. Hongxia Jin

IBM T.J. Watson Research Center, Yorktown Heights, NY 05/14 – 08/14
Research Intern, Cognitive Internet-of-Things Research Department
Mentor: Dr. Jorge J. Ortiz, Manager: Dr. Bong-Jun Ko

University of California, Berkeley, CA 05/13 – 01/14
Visiting Student, with Prof. David Culler

Microsoft Research Asia, Beijing, China 10/11 – 6/12
Research Intern, Mobile and Sensing Systems Group
Mentor: Dr. Guobin (Jacky) Shen

Tsinghua University, Beijing, China 07/11 – 08/11
Research Assistant, Institute of HCI and Media Integration, jointly with Nokia Research Center
Advisor: Prof. Yuanchun Shi

Grant Proposal Writing

Techniques for Automatic Mapping of Commercial Buildings for Scalable Building Analytics 08/16
- Funded by Trane Inc., \$100,000
- Drafted with Prof. Kamin Whitehouse

NSF III: Small: Cyber Physical Mappings - Empower Building Analytics at Scale 08/17

- Funded under Award No.1718216, \$499,853
- Drafted with Prof. Kamin Whitehouse and Prof. Hongning Wang (Section - Technical Description, Innovation, and Impact, and Section - Research Goals and Approaches).

The Building Adapter: Automatic Mapping of Commercial Buildings for Scalable Building Analytics 12/17

- Funded under DOE DE-EE0008227, \$500,000
- Drafted with Prof. Kamin Whitehouse and Prof. Hongning Wang (Section - Related Approaches, and Section - Work Breakdown Structure).

Publications

Journal

Bharathan Balaji, Arka Bhattacharya, Gabe Fierro, Jingkun Gao, Joshua Gluck, Dezhi Hong, Aslak Johansen, Jason Koh, Yuvraj Agarwal, Mario Bergés, David Culler, Rajesh Gupta, Mikkel Baun Kjærgaard, Joern Ploennigs, Mani Srivastava, Kamin Whitehouse. “*Brick: Metadata Schema for Portable Smart Building Applications*”. Applied Energy, Elsevier, 2018

Yongqiang Lu, Dezhi Hong, Ying Wang, Yinghong Hou, Zhengwen Yang, Yu Chen, Yuanchun Shi, Alvin Chin. “*A Scalable and Privacy-Aware Location-Sensing Model for Ephemeral Social Network Service*”. The International Journal of Distributed Sensor Networks (IJDSN), Vol 9, Issue 3, 2013.

Conference

Jason Koh, Dezhi Hong, Yuvraj Agarwal, Rajesh Gupta, Hongning Wang, Kamin Whitehouse. “*Plaster: An Integration, Benchmark, and Development Framework for Metadata Normalization Methods*”. In Submission.

Zheng Luo, Dezhi Hong, Hongning Wang. “*Active Learning-based Sequential Labeling for Metadata in Buildings*”. In Submission.

Dezhi Hong, Hongning Wang, Kamin Whitehouse. “*Identifying Relations between Equipment in Commercial Buildings via Correlated Events*”. In Submission.

Avinash Kalyanaraman, Dezhi Hong, Elahe Soltanaghaei, Kamin Whitehouse. “*FormaTrack: Tracking People based on Body Shape*”. The Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT’17), Volume 1, Issue 3, Article 61. Presented at UbiComp’17, September, 2017, Maui, USA.

Dezhi Hong, Quanquan Gu, Kamin Whitehouse. “*High-dimensional Time Series Clustering via Cross-Predictability*”. The 20th International Conference on Artificial Intelligence and Statistics (AISTATS’17). April 2017, Fort Lauderdale, USA.

*Bharathan Balaji, Arka Bhattacharya, Gabe Fierro, Jingkun Gao, Joshua Gluck, Dezhi Hong, Aslak Johansen, Jason Koh, Yuvraj Agarwal, Mario Bergés, David Culler, Rajesh Gupta, Mikkel Baun Kjærgaard, Joern Ploennigs, Mani Srivastava, Kamin Whitehouse. “*Brick v1.0 - Towards a Unified Metadata Schema for Buildings*”. The 3rd ACM International Conference on Embedded Systems for Energy-Efficient Built Environments (BuildSys’16). November, 2016, Stanford, USA.

*Alphabetical Order

Best Paper Runner-up, Audience Choice Award

Brick has been integrated into the ASHRAE Standard 223P for semantic tagging of building data.

Dezhi Hong, Hongning Wang, Jorge Ortiz, Kamin Whitehouse. “*The Building Adapter: Towards Quickly Applying Building Analytics at Scale*”. The 2nd ACM International Conference on Embedded Systems for Energy-Efficient Built Environments (BuildSys’15). November, 2015, Seoul, South Korea.

Best Paper Runner-up

Arka Bhattacharya, Dezhi Hong, David Culler, Jorge Ortiz, Kamin Whitehouse, Eugene Wu. “Automated Metadata Construction to Support Portable Building Applications”. The 2nd ACM International Conference on Embedded Systems for Energy-Efficient Built Environments (BuildSys’15). November, 2015, Seoul, South Korea.

Best Paper Runner-up

Dezhi Hong, Hongning Wang, Kamin Whitehouse. “Clustering-based Active Learning on Sensor Type Classification in Buildings”. The 24th ACM International Conference on Information and Knowledge Management (CIKM’15). October, 2015, Melbourne, Australia.

Shahriar Nirjon, Robert Dickerson, Philip Asare, Qiang Li, Dezhi Hong, John A. Stankovic, Pan Hu, Guobin Shen, Xiaofan Jiang. “Auditeur: A Mobile-Cloud Service Platform for Acoustic Event Detection on Smartphones”. The 11th International Conference on Mobile Systems, Applications and Services (MobiSys’13). June, 2013, Taipei, Taiwan.

Alvin Chin, Xiang Zuo, Bin Xu, Xiaoguang Fan, Dezhi Hong, Ying Wang, Xia Wang. “Connecting People From Offline to Online in a Mobile Social Application”. The IEEE International Conference on Cyber, Physical and Social Computing (CPSCom’12). November, 2012, Besancon, France.

Shahriar Nirjon, Robert Dickerson, Qiang Li, Philip Asare, John A. Stankovic, Dezhi Hong, Ben Zhang, Guobin Shen, Xiaofan Jiang, Feng Zhao. “MusicalHeart: A Hearty Way of Listening to Music”. The 10th ACM Conference on Embedded Networked Sensing Systems (SenSys’12). November, 2012, Toronto, Canada.

Media Coverage: *The Economist, New Scientist, CNET, Gizmodo, The Times of India.*

Workshop

Dezhi Hong, Jorge Ortiz, Kamin Whitehouse, David E. Culler. “Towards Automatic Spatial Verification of Sensor Placement in Buildings”. The 5th ACM Workshop on Embedded Systems for Energy-Efficient Buildings (BuildSys’13). November, 2013, Rome, Italy.

Dezhi Hong, Kamin Whitehouse. “A Feasibility Study: Mining Daily Traces for Home Heating Control”. The 3rd International Workshop on Mobile Sensing (MS’13), co-located with IPSN. April, 2013, Philadelphia, USA.

Alvin Chin, Bin Xu, Dezhi Hong, Ying Wang, Fangxi Yin, Xia Wang, Wei Wang, Xiaoguang Fan. “Using Proximity and Homophily to Connect Conference Attendees in a Mobile Social Network”. The IEEE ICDCS International Workshop on Sensing, Networking, and Computing with Smartphones (PhoneCom’12). June, 2012, Macau, China.

Poster and Demo

Bharathan Balaji, Arka Bhattacharya, Gabe Fierro, Jingkun Gao, Joshua Gluck, Dezhi Hong, Aslak Johansen, Jason Koh, Yuvraj Agarwal, Mario Bergés, David Culler, Rajesh Gupta, Mikkel Baun Kjærgaard, Joern Ploenings, Mani Srivastava, Kamin Whitehouse. “Demo Abstract – Portable Queries Using Brick Schema for Building Applications”. The 3rd ACM International Conference on Embedded Systems for Energy-Efficient Built Environments (BuildSys’16). November, 2016, Stanford, USA.

Best Demo Award

Kaifei Chen, John Kolb, Jonathan Furst, Dezhi Hong, Randy H. Katz. “Poster Abstract: Intuitive Appliance Identification using Image Matching in Smart Buildings”. The 2nd ACM International Conference on Embedded Systems for Energy-Efficient Built Environments (BuildSys’15). November, 2015, Seoul, South Korea.

Arka Bhattacharya, David Culler, Dezhi Hong, Kamin Whitehouse, Jorge Ortiz. “Demo Abstract: Writing Scalable Building Efficiency Applications using Normalized Metadata”. The 1st ACM International Conference on Embedded Systems For Energy-Efficient Buildings (BuildSys’14). November, 2014, Memphis, USA.

Arka Bhattacharya, David Culler, Dezhi Hong, Kamin Whitehouse, Jorge Ortiz. “Poster Abstract: Automated Metadata Transformation for A-Priori Deployed Sensor Networks”. The 12th ACM Conference on Embedded

Networked Sensing Systems (SenSys'14). November, 2014, Memphis, USA.

Dezhi Hong, Shahriar Nirjon, John A. Stankovic, David J. Stone, Guobin Shen. "Poster Abstract: A Mobile-Cloud Service for Physiological Anomaly Detection on Smartphones". The 12th ACM Conference on Information Processing in Sensor Networks (IPSN'13). April, 2013, Philadelphia, USA.

Pan Hu, Guobin Shen, Xiaofan Jiang, Shao-fu Shih, Donghuan Lu, Feng Zhao, Dezhi Hong, Qiang Li, Shahriar Nirjon, Robert Dickerson, John A. Stankovic. "Demo Abstract: Septimu² - Earphones for Continuous and Non-Intrusive Physiological and Environmental Monitoring". The 10th ACM Conference on Embedded Networked Sensing Systems (SenSys'12). November, 2012, Toronto, Canada.

Dezhi Hong, Ben Zhang, Qiang Li, Shahriar Nirjon, Robert Dickerson, Guobin Shen, Xiaofan Jiang, John A. Stankovic. "Demo Abstract: SEPTIMU - Continuous In-situ Human Wellness Monitoring and Feedback using Sensors Embedded in Earphones". The 11th ACM Conference on Information Processing in Sensor Networks (IPSN'12). April, 2012, Beijing, China.

Media Coverage: *Business Insider, Huffington Post, WearableTechWorld, Spin, BoomBotix.*

Preprint

Dezhi Hong, Jorge Ortiz, Arka Bhattacharya, Kamin Whitehouse. "Sensor-Type Classifications in Buildings". arXiv preprint, arXiv:1509.00498, Sept 2015.

Arka Bhattacharya, David Culler, Dezhi Hong, Kamin Whitehouse, Jorge Ortiz. "Enabling Portable Building Applications through Automated Metadata Augmentation". Technical Report UCB/EECS-2014-159, EECS Department, University of California, Berkeley, Aug 2014.

Student Mentoring

- Renqin Cai, CS PhD, exploring proactive learning for sensor metadata inference
- Zheng Luo, CS PhD, exploring active learning-based sequential labeling of metadata in buildings
- Karthik Chinnathambi, CS MS, on a framework for integrating and evaluating metadata inference methods
- Atallah Hezbor, CS BS, on approximations to Integer Linear Programming for sensor co-location inference
- Han Jin, CS BS, exploring approximations to Integer Linear Programming for sensor co-location inference
- Hongjie Daniel Wang, CS BS, on approximations to Integer Linear Programming for sensor co-location inference

Miscellaneous

- Student Volunteer, UbiComp'17 09/2017
- Student Travel Grant, AISTATS'17 04/2017
- Student Travel Grant, SigIR'15 07/2015
- Student Travel Grant, SenSys'12, '13, '14 2012-2014
- Student Volunteer, IPSN'12 04/2012
- Student Volunteer, UbiComp'11 09/2011
- Participant, Civilian Pageant of the 60th Anniversary of the People's Republic of China 10/2009
- Avid photographer 2009 - Present
- Avid badminton player 2006 - Present
- Bouldering, working on V4 as of 05/18 2017 - Present

References

Kamin Whitehouse (PhD Advisor)
Commonwealth Associate Professor
Computer Science Department
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