

Shibo Zhang

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I am now on the job market. My research area is human activity recognition and health monitoring. I am interested in applying machine learning and deep learning techniques to help advance our ability to perceive and understand human behaviors and facilitate human life.

Research Interests

Human Activity Recognition, Health Monitoring, Machine Learning, Deep Learning

Education

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| Ph.D. , Computer Science, Northwestern University
◦ Advisor: Nabil Alshurafa | 2017 - 2021 |
| M.S. , Computer Science, Northwestern University
◦ Advisor: Nabil Alshurafa | 2015 - 2017 |
| M.S., B.S. , Electrical Engineering, Harbin Institute of Technology
◦ Undergraduate GPA: 3.8/4 | 2008 - 2014 |

Awards and Honors

Paper Awards

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| Best Poster Award, UbiComp (2%) | 2020 |
| Best Presentation Runner-up Award, UbiComp (1.3%) | 2020 |
| Distinguished Paper Award, UbiComp/IMWUT (3.7%) | 2019 |
| Best Paper Award, ACM BodyNets | 2016 |
| Outstanding Undergraduate Thesis Award (3%) | 2012 |

Scholarships and Other Awards

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| NSF Student Attendance Scholarship | 2018 |
| Graduate Student Travel Grant | 2017 |
| Best Intern Award, Eaton Corporate Research & Technology | 2012, 2013 |
| First-Class Scholarship at Undergraduate School | 2008, 2009 |

Publications

Journal Papers

- [1] SyncWISE: Window Induced Shift Estimation for Synchronization of Video and Accelerometry from Wearable Sensors
Yun C. Zhang*, **Shibo Zhang***, Miao Liu, Elyse Daly, Samuel Battalio, Santosh Kumar, Bonnie Spring, James M. Rehg, Nabil Alshurafa (* equal contribution)
Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. (IMWUT/UbiComp) 4.3 (Sept. 2020). 2020
- [2] 🏆 NeckSense: A Multi-Sensor Necklace for Detecting Eating Activities in Free-Living Conditions (**Best Presentation Award Runner-up at UbiComp**)
Shibo Zhang, Yuqi Zhao, Dzung Tri Nguyen, Runsheng Xu, Sougata Sen, Josiah Hester, Nabil Alshurafa
Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. (IMWUT/UbiComp) 4.2 (June 2020). 2020
- [3] Deep Learning Algorithms for Bearing Fault Diagnostics—A Comprehensive Review
Shen Zhang, **Shibo Zhang**, Bingnan Wang, Thomas. G. Habetler
IEEE Access 8 (2020) pp. 29857–29881. 2020

- [4] 🏆 micro-Stress EMA: A Passive Sensing Framework for Detecting In-the-wild Stress in Pregnant Mothers (*Distinguished Paper Award*)
Zachary D. King, Judith Moskowitz, Begum Egilmez, **Shibo Zhang**, Lida Zhang, Michael Bass, John Rogers, Roozbeh Ghaffari, Laurie Wakschlag, Nabil Alshurafa
Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. (IMWUT/UbiComp) 3.3 (Sept. 2019). ACM, 2019
- [5] I Sense Overeating: Motif-based Machine Learning Framework to Detect Overeating Using Wrist-worn Sensing
Shibo Zhang, William Stogin, Nabil Alshurafa
Information Fusion 41 (2018) pp. 37–47. 2018

Conference Papers

- [1] Deep Generative Cross-modal On-body Accelerometer Data Synthesis from Videos (Doctoral Colloquium)
Shibo Zhang, Nabil Alshurafa
Adjunct Proceedings of the 2020 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2020 ACM International Symposium on Wearable Computers (UbiComp/ISWC '20 Adjunct), September 12–16, 2020, Virtual Event, Mexico, 2020
- [2] 🏆 VibroScale: Turning Your Smartphone into a Weighing Scale (*Best Poster Award*)
Shibo Zhang, Qiuyang Xu, Sougata Sen, Nabil Alshurafa
Adjunct Proceedings of the 2020 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2020 ACM International Symposium on Wearable Computers (UbiComp/ISWC '20 Adjunct), September 12–16, 2020, Virtual Event, Mexico, 2020
- [3] Multiscale Directional Fusion for Depth Map Super Resolution with Denoising
Dan Xu, Xiaopeng Fan, **Shibo Zhang**, Yang Wang, Debin Zhao, Wen Gao
2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2019
- [4] Estimating Caloric Intake in Bedridden Hospital Patients with Audio and Neck-worn Sensors
Shibo Zhang, Dzung Nguyen, Gan Zhang, Runsheng Xu, Nikolaos Maglaveras, Nabil Alshurafa
2018 IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2018
- [5] HABits Necklace: A Neck-worn Sensor That Captures Eating Related Behavior and More
Shibo Zhang, Dzung Nguyen, Zachary King, Jishnu Pradeep, Nabil Alshurafa
Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers (UbiComp), 2018
- [6] When Generalized Eating Detection Machine Learning Models Fail in the Field?
Shibo Zhang, Rawan Alharbi, Matthew Nicholson, Nabil Alshurafa
Proceedings of the 2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2017 ACM International Symposium on Wearable Computers (UbiComp Workshops), 2017
- [7] 🏆 Food Watch: Detecting and Characterizing Eating Episodes Through Feeding Gestures (*Best Paper Award*)
Shibo Zhang, Rawan Alharbi, William Stogin, Mohamad Pourhomayun, Bonnie Spring, Nabil Alshurafa
Proceedings of the 11th EAI International Conference on Body Area Networks (BodyNets), 2016

Employment Experience

Research Assistant , HABitsLab, Northwestern University, Evanston, IL	2016 - Present
◦ Design and implement wearable sensor based human activity and gesture recognition systems, with a focus on automatic dietary monitoring; Also dedicated to multi-device time synchronization issue and the scarcity of dataset issue.	
Machine Learning Intern , OPPO Research Institute, Palo Alto, CA	Jul - Sep, 2019
◦ Developed a physical model based optimization method for image-based hand pose estimation.	
Engineering Intern , DJI Technology Co., Shenzhen	Jun - Jul, 2015
◦ Developed the control system for an automated vision-based ball-collecting quadrotor.	
Research Engineer/Intern , Eaton Corp., Global Research & Technology, Shanghai	2012 - 2015

Teaching Experience

Teaching Assistant

EECS 397/497 Wireless and Mobile Health (mHealth) 2017, 2018
◦ Held office hours, designed programming homeworks, graded, assisted in course projects

Students Mentored

Qiuyang Xu (now NU undergraduate) Jun - Sep, 2020
Fanfei Meng (now NU PhD student) Jan - Jun, 2019
Ziwei Dong (now Emory PhD student) Jun - Sep, 2018

Academic Services

Journal Reviewer

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) 2020
Journal of Biomedical and Health Informatics (JBHI) 2019, 2020
Journal of Medical Internet Research (JMIR) 2020
Journal of Vibration and Control (JVC) 2019, 2020
IEEE Access 2019, 2020

Conference Reviewer

24th ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) 2020
ACM CHI Conference on Human Factors in Computing Systems (CHI) 2020
The annual symposium on Computer-Human Interaction in Play (CHI PLAY) 2020
22nd ACM International Conference on Multimodal Interaction (ICMI) 2020
24th Annual International Symposium on Wearable Computers (ISWC) 2020
18th Annual IEEE Conference on Pervasive Computing and Communications (PerCom) 2020
IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI) 2019

Skills

Programming Language

Python (PyTorch, TensorFlow, Keras, Scikit-learn), Matlab, C/C++, R, bash, html, CSS, JavaScript, C#, Julia

Tools

AWS, Git, Docker