

# 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

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

## Awards and Honors

### Paper Awards

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 Others

Student Attendance Scholarship, NSF/Northwestern	2017, 2018
Best Intern Award, Eaton Corporate Research & Technology	2012, 2013
First-Class Scholarship, 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

<b>Research Assistant</b> , 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.	
<b>Machine Learning Intern</b> , OPPO Research Institute, Palo Alto, CA	Jul - Sep, 2019
◦ Developed a physical model based optimization method for image-based hand pose estimation.	
<b>Engineering Intern</b> , DJI Technology Co., Shenzhen	Jun - Jul, 2015
◦ Developed the control system for an automated vision-based ball-collecting quadrotor.	
<b>Research Engineer/Intern</b> , 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

## References

Available upon request.