

# 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

### Honors

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

<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

## Academic Services

## Journal Reviewer

IMWUT | JBHI | JMIR | JVC | IEEE Access

## Conference Reviewer

CSCW 2021 | CHI 2021 | ISWC 2020 | PerCom 2020 | ICMI 2020 | CHI PLAY 2020 | BHI 2019

## 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

Fanfei Meng (now NU PhD)

Ziwei Dong (now Emory PhD)

Qiuyang Xu (now undergraduate)

## Skills

### Programming Language

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

### Tools

AWS, Git, Docker