

# Shibo Zhang

## Machine Learning

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## Research Interests

Human Activity Recognition, Machine Learning, Deep Learning

## Education

<b>Ph.D.</b> , Computer Science, Northwestern University	2017 - 2021
<b>M.S.</b> , Computer Science, Northwestern University	2015 - 2017
<b>M.Eng., S.B.</b> , Electrical Engineering, Harbin Institute of Technology	2008 - 2014

## Work Experience

<b>Research Assistant</b> , HABitsLab, Northwestern University, Evanston, IL	2016 - Present
<b>Machine Learning Intern</b> , OPPO Research Institute, Palo Alto, CA	Jul - Sep, 2019
<b>Intern</b> , DJI Technology Co., Shenzhen	Jun - Jul, 2015
<b>Trainee</b> , Eaton Corp., Global Research & Technology, Shanghai	2014 - 2015
<b>Research Intern</b> , Eaton Corp., Global Research & Technology, Shanghai	2012 - 2014

## Selected 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. doi: [10.1145/3411824](https://doi.org/10.1145/3411824)
- [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, Dzong Tri Nguyen, Runsheng Xu, Sougata Sen, Josiah Hester, Nabil Alshurafa  
*Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. (IMWUT/UbiComp)* 4.2 (June 2020). 2020. doi: [10.1145/3397313](https://doi.org/10.1145/3397313)
- [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. doi: [10.1109/ACCESS.2020.2972859](https://doi.org/10.1109/ACCESS.2020.2972859)
- [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. doi: [10.1145/3351249](https://doi.org/10.1145/3351249)
- [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. doi: [10.1016/j.inffus.2017.08.003](https://doi.org/10.1016/j.inffus.2017.08.003)

### Conference Papers

- [1] Deep Generative Cross-modal On-body Accelerometer DataSynthesis from Videos  
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. DOI: [10.1145/3410530.3414329](https://doi.org/10.1145/3410530.3414329)*

- [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. DOI: [10.1145/3410530.3414397](https://doi.org/10.1145/3410530.3414397)*
- [3] **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. DOI: [10.1145/3278576.3278577](https://doi.org/10.1145/3278576.3278577)*
- [4] **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. DOI: [10.1145/3267305.3267665](https://doi.org/10.1145/3267305.3267665)*
- [5] **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. DOI: [10.1145/3123024.3124409](https://doi.org/10.1145/3123024.3124409)*
- [6] 🏆 **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. DOI: [10.4108/eai.15-12-2016.2267793](https://doi.org/10.4108/eai.15-12-2016.2267793)*
- [7] **An Iterative Dimensionality-Scaling System for Real-Time Health Monitoring Applications**  
Haik Kalantarian, Majid Sarrafzadeh, **Shibo Zhang**, Nabil Alshurafa  
*2016 IEEE International Conference on Healthcare Informatics (ICHI), 2016. DOI: [10.1109/ICHI.2016.89](https://doi.org/10.1109/ICHI.2016.89)*

## Services

### Conference Reviewer

The 22nd ACM International Conference on Multimodal Interaction (ICMI) (Demo)	2020
The annual symposium on Computer-Human Interaction in Play (CHI PLAY)	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

### Journal Reviewer

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies  
Journal of Biomedical and Health Informatics  
Journal of Vibration and Control  
IEEE Access

### Teaching Assistant

EECS 397, 497: Wireless and Mobile Health (mHealth)	2019
EECS 397, 497: Wireless and Mobile Health (mHealth)	2018
EECS 397, 497: Wireless and Mobile Health (mHealth)	2017

## Selected Awards

Best Poster Award, UbiComp (2%)	2020
Best Presentation Award - Audience Choice Tied, Runner-up, UbiComp (1.3%)	2020
Distinguished Paper Award, IMWUT Vol.3 (3.7%)	2019
NSF Student Attendance Scholarship	2018
Best Paper Award, EAI International Conference on Body Area Networks	2016
Outstanding Undergraduate Thesis Award (3%)	2012