

# 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 - Present
<b>M.S.</b> , Computer Science, Northwestern University	2015 - 2016
<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 - Oct, 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 WeighingScale (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 Presentation Award - Audience Choice Tied, Runner-up, UbiComp	2020
Best Poster Award, UbiComp	2020
Distinguished Paper Award, IMWUT	2019
NSF Student Attendance Scholarship	2018
Best Paper Award, EAI International Conference on Body Area Networks	2016
Outstanding Undergraduate Thesis Award (3%)	2012