Shibo Zhang

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I am actively looking for a research position. My research area is ***ubiquitous computing*** and ***mobile health***, with a focus on 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

Ubiquitous Computing, Human Activity Recognition, Mobile Health, Machine Learning, Deep Learning

Education

Ph.D., Computer Science, Northwestern University 2017 - 2021
- Advisor: Nabil Alshurafa
- Research Area: ubiquitous computing, mobile health (mHealth)

M.S., Computer Science, Northwestern University 2015 - 2017
- Advisor: Nabil Alshurafa

B.S., Electrical Engineering, Harbin Institute of Technology 2008 - 2012
- Cumulative GPA: 3.8/4

Awards and Honors

Best Poster Award, UbiComp (2%)	2020
Best Presentation Runner-up Award, UbiComp (1.3%)	2020
Distinguished Paper Award, UbiComp/IMWUT (3.7%)	2019
NSF Student Attendance Scholarship	2018
Graduate Student Travel Grant	2017
Best Paper Award, ACM BodyNets (2%)	2016
Outstanding Undergraduate Thesis Award (3%)	2012
National Freescale Cup Autonomous Race Car Challenge, Second Prize	2011
First-Class Scholarship at Undergraduate School (5%)	2009/2010

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
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-sensor time synchronization issue and the scarcity of dataset issue.

Machine Learning Intern, OPPO Research Institute, Palo Alto, CA (Advisor: Yang Zhou) Jul - Sep, 2019

○ Developed a depth and RGB image based hand pose recognition optimization method.

Intern, DJI Technology Co., Shenzhen Jun - Jul, 2015

○ Developed the control system for a ball-collecting quadrotor.

Engineer/Research Assistant/Intern, Eaton Corp., Global Research & Technology, Shanghai 2012 - 2015

Academic Services

Journal Reviewer: IMWUT | JBHI | JMIR | JVC | IEEE Access

Conference Reviewer: 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

○ Ziwei Dong (now Emory PhD)

○ Fanfei Meng (now NU PhD)

○ Qiuyang Xu (now undergraduate)

Skills

Programming Language: Python (PyTorch, TensorFlow, Scikit-learn, OpenCV), Matlab, C/C++, R, bash