Xian (Shawn) Li

Ph.D. Candidate, Department of Mechanical Engineering-Engineering Mechanics
Michigan Technological University
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EDUCATION

Ph.D. Mechanical Engineering, Michigan Technological University, Houghton, MI, 2015-present
NSF Project: *Understanding and Mitigating Triboelectric Artifacts in Wearable Electronics by Synergic Approaches*
Dissertation: *A Hybrid-Powered Wireless System for Multiple Biopotential Monitoring*

M.S. Biomedical Engineering, Chongqing University, Chongqing, China, 2015

B.S. Biomedical Engineering, Tianjin University, Tianjin, China, 2012

ACADEMIC APPOINTMENTS

2017– Michigan Tech University, Houghton, MI
Graduate Teaching Assistant, Department of Mechanical Engineering-Engineering Mechanics

2015–17 Michigan Tech University, Houghton, MI
Research Assistant, Department of Mechanical Engineering-Engineering Mechanics

2012–15 Chongqing University, Chongqing, China
Research Staff, School of Bioengineering

RESEARCH/TEACHING INTERESTS

Smart Health, Embedded Sensor Systems, Intelligent Systems

Machine Learning, Deep Learning, Health Monitoring with AI

Human Machine Interface

RESEARCH EXPERIENCE

Michigan Technological University

2015– ***NSF Project***: *Understanding and Mitigating Triboelectric Artifacts in Wearable Electronics by Synergic Approaches (PI: Ye Sun, Co-PI: Shiyan Hu. Award #1710862)*
Design and develop a wireless wearable system for biopotential monitoring.
Develop a triboelectric energy harvester for harvesting energy from human motion.
Investigate the fundamental mechanism of triboelectric artifacts in biopotential monitoring.

2017– ***NSF Project***: *System-on-Cloth: A Cloud Manufacturing Framework for Embroidered Wearable Electronics (PI: Ye Sun. Award # 1751454)*
Establish a cloud manufacturing framework that integrates electronics and design-to-manufacturing translation in a system that can be used by customers, manufacturers, design experts, and developers to design and produce embroidered wearable electronics.

Chongqing University, China

2012–15 ***Human Health and Nano Technology Center***
Design and develop instruments for lung cancer VOCs.
Analyze images data and process images information with MATLAB.
Design and fabricate data acquisition system for ECG signals.

TEACHING EXPERIENCE

Michigan Technological University

Mechanical Engineering Practice III
Graduate Teaching Assistant: Fall '18, Spring '18, Fall '17.
This course is mainly about simulation-driven design optimization.
The enrollment per semester is nearly 180 undergraduate students.

Summer Youth Programs
Co-instructor: Summer '17
This program is a division of the Center for Pre-College Outreach at Michigan.
Diversity: Over 1,000 students from diverse background.

PUBLICATIONS

Peer-Reviewed Journal Articles

2018 **Li, X.**, Sun, Y. "A Wearable Button-Like System for Long-Term Multiple Biopotential Monitoring using Non-Contact Electrodes." *Smart Health*.

2018 Huang, H., **Li, X.**, Liu, S., Hu, S., Sun, Y. "TriboMotion: A self-powered triboelectric motion sensor in wearable internet of things for human activity recognition and energy harvesting." *IEEE Internet of Things Journal*.

2017 **Li, X.**, Sun, Y. "WearETE: A scalable wearable e-textile triboelectric energy harvesting system for human motion scavenging." *Sensors*, 17 (11), 2649.

2015 Lei, J.C., Hou, C.J., Huo, D.Q., Luo, X.G., Bao, M.Z., **Li, X.**, Yang, M., Fa, H.B. "A novel device based on a fluorescent cross-responsive sensor array for detecting lung cancer related volatile organic compounds." *Review of Scientific Instruments*, 86 (2), 025106.

Peer-Reviewed Conference Proceedings

2017 **Li, X.**, Sun, Y. "Design and evaluation of a non-contact wireless biopotential monitoring system with motion artifacts." In *Biomedical & Health Informatics (BHI), 2017 IEEE EMBS International Conference on*, pp. 69-72. Orlando, FL.

2017 **Li, X.**, Sun, Y. "NCMB-Button: A wearable non-contact system for long-term multiple biopotential monitoring." In *Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2017 IEEE/ACM Conference on*, pp. 348-355. Philadelphia, PA.

2016 **Li, X.**, Huang, H., Sun, Y. "DriTri: An in-vehicle wireless sensor network platform for daily health monitoring." In *SENSORS, 2016 IEEE*, pp. 1-3. Orlando, FL.

2016 **Li, X.**, Huang, H., Sun, Y. "TriboWalk: Triboelectric dual functional wireless system for gait monitoring and energy harvesting." In *Engineering in Medicine and Biology Society (EMBC), 2016 IEEE 38th Annual International Conference of the*, pp. 4796-4799. Orlando, FL.

2016 Huang, H., **Li, X.**, Sun, Y. "A triboelectric motion sensor in wearable body sensor network for human activity recognition." In *Engineering in Medicine and Biology Society (EMBC), 2016 IEEE 38th Annual International Conference of the*, pp. 4889-4892. Orlando, FL.

2016 **Li, X.**, Huang, H., Sun, Y. "Investigation of motion artifacts for biopotential measurement in wearable devices." In *Wearable and Implantable Body Sensor Networks (BSN), 2016 IEEE 13th International Conference on*, pp. 218-223. San Francisco, CA.

Other Articles

2018 **Li, X.**, Sun, Y., Liu, Z., Portfleet, M. "A wearable system for situational awareness estimation in underground mines." In *Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2018 IEEE/ACM International Conference on*. Washington, D.C.

Manuscripts in Preparation

2018 **Li, X.**, Sun, Y. "An SSHI Interface for Triboelectric Energy Harvesting." Target: *IEEE Transactions on Power Electronics*, Fall 2018.

TECHNICAL PRESENTATIONS

Oral Presentations

2017 "NCMB-Button: A wearable non-contact system for long-term multiple biopotential monitoring." The 2nd IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE) 2017. Philadelphia, PA. July 17–19.

Poster Presentations

2018 "A wearable system for situational awareness estimation in underground mines." The 3rd IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE) 2018. Washington, D.C. Sept. 26–28.

2017 "Design and evaluation of a non-contact wireless biopotential monitoring system with motion artifacts." IEEE EMBS International Conference on Biomedical and Health Informatics (BHI) 2017. Orlando, FL. Feb. 16–19.

2016 "DriTri: An in-vehicle wireless sensor network platform for daily health monitoring." IEEE SENSORS 2016. Orlando, FL. Oct. 30–Nov. 2.

2016 "Investigation of motion artifacts for biopotential measurement in wearable devices." IEEE EMBS 13th Annual International Conference on Wearable and Implantable Body Sensor Networks (BSN) 2016. San Francisco, CA. June 14–17.

2016 "TriboWalk: Triboelectric dual functional wireless system for gait monitoring and energy harvesting." The IEEE 38th Annual International Conference of Engineering in Medicine and Biology Society (EMBC) 2016. Orlando, FL. Aug. 16–20.

2016 "A triboelectric motion sensor in wearable body sensor network for human activity recognition." The IEEE 38th Annual International Conference of Engineering in Medicine and Biology Society (EMBC) 2016. Orlando, FL. Aug. 16–20.

AWARDS, HONORS

2018 NSF Student Travel Grant for the IEEE/ACM CHASE 2018 Conference (Sept. 2018)

2017– Full Financial Support from Michigan Technological University as a Graduate Teaching Assistant (GTA)

2017 NSF Student Travel Grant for the IEEE/ACM CHASE 2017 Conference (July 2017)

2015–17 Full Financial Support from Michigan Technological University as a Graduate Assistant (GA)

2013 The 3rd Prize of the Chongqing 5th Smart Intelligence Cup of Innovative Practice Competition for Graduates, China

2012–15 Major Award for Graduates, Chongqing University, China

SERVICE

Peer Reviewer

IEEE Sensors Journal

IEEE Biomedical and Health Informatics (BHI) and the Body Sensor Networks (BSN) Conference, 2018

GeoShanghai International Conference 2018

Service to Department

Facilitator of Graduate School in Michigan Technological University (2017)

PROFESSIONAL MEMBERSHIP

IEEE Student Member (2016–present)

Updated October 2018