Zi-Han WANG

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Educations

University of California, Berkeley, USA   2023/02 – Today
Post graduate Researcher & Visiting Scholar
Advisor: Prof. Liwei Lin
Research Topics: Surface Tension Driven Liquid Metal Actuator

Tsinghua University, P. R. China   2019/09 – 2024/06
Ph.D. candidate in Data Science and Information technology
Advisor: Assoc. Prof. Wenbo Ding
Research Topics: Triboelectric Nanogenerators, Soft Electronics, Soft Robots, HMI & HRI

Herriot-Watt University, UK   2015/08 - 2019/06
B.Eng., Telecommunications Engineering   with **First Class Honors**
Advisor: Prof. Mustafa Suphi Erden
Research Topics: Robotic minimally invasive surgery training platform

Xidian University, P. R. China   2015/08 - 2019/06
B.Eng., Telecommunications Engineering   with **Outstanding Graduates**

Boston University, USA   2018/07 - 2018/08
Visiting Student

Selected Awards & Honors

2nd Prize of National Outstanding Graduate Students Workshop (CUHK, Shenzhen)	2024/04
ICRA 2023 RAS Travel Grant	2023/04
University Scholarship of the First Class (Tsinghua University)	2022/11
National Scholarship for Graduates (The Ministry of Education)	2021/12
Deputy Principal's Award (Herriot-Watt University)	2019/06

Academic Service

Teaching Assistant of TBSI Course Nanogenerator & Self-powered System	2020/09 - Today
Web Chair of ACM Ubicomp 2021 CPD Workshop	2021/05 - 2021/09

Journal Reviewer of *DSP, EUSIPCO, Open Res. Eur., IEEE ROBIO, IEEE JSTSP, and ACM Ubicomp*

Invited Talks and Conference Presentations

Flexible Triboelectric Sensors for Robotic Applications at the University of Macau	2024/04/04
STEV: Stretchable Triboelectric E-skin enabled Proprioceptive Vibration Sensing for Soft Robot at The Soft Robotics Forum, Online	2023/09/18
Smart wearable systems for smart life at X-institute, Shenzhen	2023/01/13
Triboelectric-nanogenerator-enabled mechanical modulation for infrared wireless communications at BINN CAS, Virtual	2022/07/08

Full List of Publication

As first and co-first author

[1] **Zihan Wang#**, Kai-Chong Lei#, Huaze Tang, Yang Luo, Hongfa Zhao, Peisheng He, Wenbo Ding*, Liwei Lin. "Stretchable Liquid Metal E-skin for Soft Robot Proprioceptive Vibration Sensing," *IEEE Sensors Journal*, 2024.

[2] **Zihan Wang#**, Kai-Chong Lei#, Huaze Tang, Shoujie Li, Yuan Dai, Wenbo Ding*, Xiao-Ping Zhang. "STEV: Stretchable Triboelectric E-skin enabled Proprioceptive Vibration Sensing for Soft Robot," IEEE International Conference on Robotics and Automation (ICRA), 2023.

[3] **Zihan Wang#**, Yuchao Jin#, Chengyue Lu#, Jiyu Wang*, Ziwu Song, Xu Yang, Yidan Cao, Yunlong Zi, Zhong Lin Wang*, Wenbo Ding*, "Triboelectric Nanogenerator enabled Mechanical Modulation for Infrared Wireless Communications," *Energy & Environmental Science*, 2022.

[4] **Zihan Wang**, Jiarong Li, Yuchao Jin, Jiyu Wang, Fang Yang, Gang Li, Xiaoyue Ni, Wenbo Ding*, "Sensing beyond itself: Multi-functional use of ubiquitous signals towards wearable applications," *Digital Signal Processing*, 2021.

[5] Yang Luo#, **Zihan Wang#**, Jiyu Wang, Xiao Xiao, Qian Li, Wenbo Ding*, Hongyan Fu*, "Triboelectric bending sensor based smart glove towards intuitive multi-dimensional human-machine interfaces," *Nano Energy*, 2021. **(FRONT COVER)**

[6] Han Wu#, **Zihan Wang#**, Boyu Zhu, Hanqing Wang, Chengyue Lu, Meicun Kang, Shenglin Kang, Wenbo Ding*, Lijun Yang, Ruijin Liao, Jiyu Wang*, Zhong Lin Wang* "All-in-One Sensing System for Online Vibration Monitoring via IR Wireless Communication as Driven by High-Power TENG," *Advanced Energy Materials*, 2023.

[7] Jiarong Li#, Zixuan Xie#, **Zihan Wang#**, Zenan Lin, Chengyue Lu, Zihao Zhao, Yuchao Jin, Jihong Yin, Shilong Mu, Chaobo Zhang, Weihua Gui, Xiaojun Liang*, Jiyu Wang*, Wenbo Ding* "A triboelectric gait sensor system for human activity recognition and user identification," *Nano Energy*, 2023.

[8] Jiangfeng Lu#, Zicong Miao#, **Zihan Wang#**, Ying Liu, Dekuan Zhu, Jihong Yin, Fei Tang, Xiaohao Wang, Wenbo Ding*, Min Zhang*, "Piezoelectric soft robot driven by mechanical energy," *Nano Research*, 2022.

[9] Ziwu Song#, Jihong Yin#, **Zihan Wang#**, Chengyue Lu, Ze Yang, Zihao Zhao, Zenan Lin, Jiyu Wang*, Changsheng Wu, Jia Cheng, Yuan Dai, Yunlong Zi, Shao-Lun Huang, Xinlei Chen, Jian Song, Gang Li, Wenbo Ding*, "A flexible triboelectric tactile sensor for simultaneous material and texture recognition," *Nano Energy*, 2022.

As collaborative author

[10] Xiaohang Chen, **Zihan Wang**, Wei Yue, Peisheng He, Liwei Lin. "A Non-Volatile Surface Tension-Driven Electrochemical Liquid Metal Actuator." *IEEE MEMS 2024*.

[11] Ziyi Zhao, Zhentan Quan, Huaze Tang, Qinghao Xu, Hongfa Zhao, **Zihan Wang**, Ziwu Song, Shoujie Li, Ishara Dharmasena, Changsheng Wu, and Wenbo Ding. "A Broad Range Triboelectric Stiffness Sensor for Variable Inclusions Recognition." *Nano-Micro Letters*, 2023.

[12] Mu, Shilong, Shoujie Li, Hongfa Zhao, **Zihan Wang**, Xiao Xiao, Xiao Xiao, Zenan Lin, Ziwu Song, Huaze Tang, Qinghao Xu, Dongkai Wang, Wang Wei Lee, Changsheng Wu, Wenbo Ding. "A platypus-inspired electro-mechanosensory finger for remote control and tactile sensing." *Nano Energy*, 2023.

[13] Li Su, **Zihan Wang**, Chengyue Lu, Wenbo Ding, Yong Zhao, and Yunlong Zi, "Persistent triboelectrification-induced electroluminescence for self-powered all-optical wireless user identification and multi-mode anti-counterfeiting," *Materials Horizons*, 2023.

[14] Keyu Meng, Xiao Xiao, Zixiao Liu, Sophia Shen, Trinny Tat, **Zihan Wang**, Chengyue Lu, Wenbo Ding, Ximin He, Jun Yang, and Jun Chen, "Kirigami-Inspired Pressure Sensors for Wearable Dynamic Cardiovascular Monitoring," *Advanced Materials*, 2022.

[15] Hongfa Zhao, Mingrui Shu, Zihao Ai, Zirui Lou, Kit Wa Sou, Chengyue Lu, Yuchao Jin, **Zihan Wang**, Jiyu Wang, Changsheng Wu, Yidan Cao, Xiaomin Xu, and Wenbo Ding, "A Highly Sensitive Triboelectric Vibration Sensor for Machinery Condition Monitoring," *Advanced Energy Materials*, 2022.

[16] Xiao Xiao, Xiao Xiao, Yihao Zhou, Xun Zhao, Guorui Chen, Zixiao Liu, **Zihan Wang**, Chengyue Lu, Menglei Hu, Ardo Nashalian, Sophia Shen, Kedi Xie, Weiwei Yang, Yongji Gong, Wenbo Ding, Peyman Servati, Chao Han, Shi Xue Dou, Weijie Li, and Jun Chen, "An ultrathin rechargeable solid-state zinc ion fiber battery for electronic textiles," *Science Advances*, 2021.

[17] Chengyue Lu, **Zihan Wang**, Wenbo Ding, Gang Li, Sicong Liu, and Ling Cheng, "MARVEL: Multi Agent Reinforcement Learning for VANET Delay Minimization," *China Communications*, 2021.

[18] Xu Yang, Jihong Yin, **Zihan Wang**, Ziwu Song, Jian Song, and Wenbo Ding, "HTPad: Hexagon-fractal TENG Pad for Scalable Touch Control,"*ACM Ubicomp*, 2021.

[19] Jiarong Li, **Zihan Wang**, Zihao Zhao, Yuchao Jin, Jihong Yin, Shao-Lun Huang, and Jiyu Wang, "TriboGait: A deep learning enabled triboelectric gait sensor system for human activity recognition and individual identification," *ACM Ubicomp*, 2021.

[20] Jiarong Li, Changsheng Wu, Ishara Dharmasena, Xiaoyue Ni, **Zihan Wang**, Haixu Shen, Shao-Lun Huang, and Wenbo Ding, "Triboelectric nanogenerators enabled internet of things: A survey," *Intelligent and Converged Networks*, 2020.

[21] Jianing Zhang, Tianyi Zhu, Anke Zhang, Xiaoyun Yuan, **Zihan Wang**, Sebastian Beetschen, Lan Xu, Xing Lin, Qionghai Dai, and Lu Fang, "Multiscale-VR: Multiscale gigapixel 3d panoramic videography for virtual reality," *IEEE ICCP*, 2020.

Skill Set

Soft Sensor	EGaIn conductive ink fabrication and circuit/electrode patterning
	Fabrication of ionic self-healing hydrogel
	Chemical / Physical treatment of polymer materials
	Electrical, mechanical, and material characterization
	Design of high-performance triboelectric sensors
Soft Robot	Design and fabrication of PenuNets soft actuator with pneumatic controller
	3D printing and injection molding
Signal acquisition and processing	NI LabVIEW for signal acquisition, processing, and user control interface.
	NI DAQ signal IO modules selection
	Design of signal conditioning circuit
Programming	MATLAB, Python
Software	3D Max, Autodesk Fusion 360, AutoCAD, Origin Pro
Other academia skills	LaTeX, Signal processing, Machine learning