

# 李鑫

地址：上海市浦东新区中科路 1 号

电话：86-189-1610-6107

电邮：china.lixin1@gmail.com

主页：[www.lixin.wiki](http://www.lixin.wiki)



## 教育经历

工学博士（联合培养 指导老师：Yaowen Yang 教授） <ul style="list-style-type: none"><li>• 南洋理工大学 通信与信息系统</li></ul>	2021.09 - 现在
工学博士（指导老师：梁俊睿教授） <ul style="list-style-type: none"><li>• 中国科学院大学/中科院上海微系统所/上海科技大学 通信与信息系统</li></ul>	2018.09 - 现在
工学硕士（指导老师：魏建明教授） <ul style="list-style-type: none"><li>• 中国科学院大学/中科院上海高等研究院 通信与信息系统</li></ul>	2017.09 - 2018.07
工学学士（指导老师：李强教授） <ul style="list-style-type: none"><li>• 中北大学 武器系统与发射工程</li></ul>	2012.09 - 2016.07

## 获奖经历

- VEH 2021 振动能量收集与应用国际会议 「最佳论文奖」
- ASME 2020 智能材料、自适应结构与智能系统国际会议 「最佳学生硬件奖」
- IEEE IES 2019 工业电子学会年度论文竞赛 「亚军」
- ACM/IEEE EWSN 2019 嵌入式无线网络与系统国际会议物联网可靠通信竞赛 「冠军」
- ACM/IEEE EWSN 2018 嵌入式无线网络与系统国际会议物联网可靠通信竞赛 「季军」

## 研究兴趣

- 动能收集技术
- 瞬态计算
- 泛在感知
- 无源物联网

## 项目经历

面向可持续 ICT 的信息能量深度融合机理和关键技术研究 <ul style="list-style-type: none"><li>• 清华大学、上海科技大学和中国移动联合基金项目（国家重点研发计划）</li><li>• 作为骨干成员负责基于能量流与信息流融合的 5G 网络资源协同优化的研究工作</li></ul>	2021.11 - 现在
KPID 基于动能收集技术的高鲁棒无源物联网系统设计 <ul style="list-style-type: none"><li>• 项目负责人</li><li>• 负责基于动能收集技术的大规模无线通信网络协议设计</li></ul>	2021.01 - 现在
ViPSN/ViPSN++ 基于动能收集技术的无源物联网开源系统设计 <ul style="list-style-type: none"><li>• 项目负责人，负责开源系统的构建、学术推广和商业落地</li><li>• 负责机-电-网三域协同设计、优化和理论分析</li><li>• 负责基于功率/能量中和的无源物联网系统的实现和应用</li><li>• 负责无源人机交互系统的开发</li></ul>	2019.03 - 现在
IEEE 802.15.4 面向极端环境的可靠通信协议设计 <ul style="list-style-type: none"><li>• 负责 MAC 层网络编码的实现</li><li>• 负责无线传感网络测试平台的研发</li><li>• 负责探索后向反散射通信技术（Backscatter Communication）在极强电磁干扰条件下的应用</li></ul>	2017.01 - 2019.01

## 工作经历

科研助理

2017.01 - 2018.09

- 中科院上海高等研究院 智能信息通信技术研究与发展中心

## 教学经验

助导（本科生毕设）

2019.07 - 现在

- ViPSN-Eink: a motion-powered E-ink HCI system (Yue Zhu, 2021)
- Design and implementation of modular intelligent IoT floor network (Ruifang Liu, 2020)
- Energy harvesting insole design based on hydraulic generator (Shijie Shen, 2019)
- Mechanical backscatter tag using 2.4GHz RF signal (Yang Zhang, 2019)

助教（本研一体化课程）

2018.09 - 2020.07

- 嵌入式系统（EE114）
- 计算机网络（CS120）

## 学术交流与服务

- 国际电气电子工程师学会（IEEE）及国际计算机协会（ACM）会员
- 以下国际学术期刊/会议审稿人：

学术期刊：Ad Hoc Networks / IET Circuits, Devices and Systems / International Journal of Power Electronics and Drive Systems / International Journal of Sustainable Energy

学术会议：ECCE Asia 2020

- 以下国际会议 TPC 成员：

ECCE Asia 2022

## 发表论文

+ 共同一作 \* 通信作者

1. **Xin Li**, Guobiao Hu, Chaoyang Zhao, Yaowen Yang\*, and Junrui Liang\*, “A Paradigm Shift Battery-free Flexible Motion Sensing Solution Enabled by Triboelectric Nanogenerator and Backscatter Communication,” Advanced Science, to be submitted. (中科院 1 区, 影响因子: 15.44)
2. **Xin Li**, Guobiao Hu, Yaowen Yang\*, and Junrui Liang\* “Dynamics Analysis of a Plucking Energy Harvester for Transient-motion-powered IoT Applications,” IEEE/ASME Transactions on Mechatronics, under review. (中科院 1 区, 影响因子: 5.67) (相关工作获得 VEH 2021 最佳论文)
3. Hong Tang, **Xin Li**+, and Junrui Liang\*, “Power-Neutral Operation with Maximum Power Point Tracking for Vibration-Powered IoT Node,” IEEE Internet of Things Journal, under review. (中科院 1 区, 影响因子: 9.93)
4. Jianjun Wang, Yalei Cao, Hongjun Xiang, Zhiwei Zhang, Junrui Liang, **Xin Li**, Deyun Ding, Teng Li, Lihua Tang, “A piezoelectric smart backing ring for high-performance power generation subject to train induced steel-spring fulcrum forces,” Energy Conversion and Management, 2022. (中科院 1 区, 影响因子: 9.70)
5. **Xin Li**, Guobiao Hu, Zhenkun Guo, Junlei Wang, Yaowen Yang\*, and Junrui Liang\*, “Frequency Up-Conversion based Vibration Energy Harvesting Technology: A Review,” Symmetry, 2022. (邀稿)
6. Guobiao Hu, Chaoyang Zhao, Yaowen Yang\*, **Xin Li**, and Junrui Liang\*, “Triboelectric energy harvesting using an origami-inspired structure,” Applied Energy, 2021. (中科院 1 区, 影响因子: 9.74)
7. **Xin Li**, Hong Tang, Guobiao Hu, and Junrui Liang\*, “ViPSN-pluck: A Transient-Motion-Powered Human Motion Detector,” IEEE Internet of Things Journal, 2021. (中科院 1 区, 影响因子: 9.93)
8. Junrui Liang\*, **Xin Li**, and Hailiang Yang, “Kinetic Energy Harvesting toward Battery-free IoT: Opportunities and Challenges,” ZTE Communications, 2021. (邀稿)
9. Zhenkun Guo, Guobiao Hu, Jingchao Jiang, Liuding Yu, **Xin Li**, and Junrui Liang\*, “Theoretical and experimental study of the vibration dynamics of a 3D-printed sandwich beam with hourglass lattice truss core,” Frontiers in Mechanical Engineering, 2021. (邀稿)
10. **Xin Li**, Li Teng, Hong Tang, Haoyu Wang, Yu Liu, Minfan Fu, and Junrui Liang\*, “ViPSN: a vibration-powered IoT platform,” IEEE Internet of Things Journal, 2021. (中科院 1 区, 影响因子: 9.93) (相关工作)

作获得 IEEE IES 2019 年度论文竞赛 亚军)

11. Jinxi Zhang, Shaobo Gong, **Xin Li**, Junrui Liang, **Zhonglin Wang\***, and Kailiang Ren\*, “A Wind Driven Poly (tetrafluoroethylene) Electret and Polylactide Polymer Based Hybrid Nanogenerator for Self Powered Temperature Detection System,” Advanced Sustainable Systems, Dec. 2020.
12. Xiaoyuan Ma\*, Peilin Zhang, **Xin Li**, Weisheng Tang, Jianming Wei\*, and Oliver Theel, “DeCoT: A Dependable Concurrent Transmission-Based Protocol for Wireless Sensor Network,” IEEE Access, Oct. 2018.
13. **Xin Li**, Hong Tang, Guobiao Hu, and Junrui Liang\*, “Live Demo of A Transient-Motion-Powered Human Motion Detector,” Proceedings of the 2021 IEEE International Symposium on Circuits and Systems, Daegu, Korea, May 23-26, 2021. (ISCAS 2021)
14. **Xin Li**, “Opportunities of Motion-Powered IoT Systems,” Proceedings of the 2021 International Conference on Embedded Wireless Systems and Networks, Delft, Netherlands, Feb 17-19, 2021. (EWSN 2021)
15. **Xin Li**, Hong Tang, Bao Zhao, and Junrui Liang\*, “System Design and Implementation of A Transient-Motion-Powered IoT Sensor Node,” Proceedings of the ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Irvine, CA, USA, September 14–16, 2020. (SMASIS 2020) (最佳学生硬件奖 第三名)
16. **Xin Li**, Hong Tang, Yiyao Zhu, and Junrui Liang\*, “Power Solution of A Vibration-Powered Sensing Node,” Proceedings of the 9th International Power Electronics and Motion Control Conference, Nanjing, China, May 31-June 3, 2020. (ECCE Asia 2020)
17. **Xin Li**, Hong Tang, Junrui Liang\*, and Lihua Tang, “Exploring The Magnetic Plucking Motion Towards A Transient-Motion-Powered IoT Sensor Node,” Proceedings of SPIE Conference 11376, Active and Passive Smart Structures and Integrated Systems IX, 113761U, April 22, 2020. (SPIE SS/NDE 2020)
18. Xiaoyuan Ma, Peilin Zhang, Ye Liu, **Xin Li**, Weisheng Tang, Pei Tian, Jianming Wei, Lei Shu, and Oliver Theel, “Using DeCoT+ to Collect Data under Interference,” Proceedings of the 2019 International Conference on Embedded Wireless Systems and Networks, Beijing, China, 2019. (EWSN 2019) (EWSN 2019 物联网可靠通信竞赛 冠军)
19. **Xin Li**, Xiaoyuan Ma\*, Peilin Zhang, Pei Tian, and Jianming Wei\*, “Escape or Exploit? A Noise-Modulation-Based Communication Under Harsh Interference,” Proceedings of the 7th International Workshop on Real-World Embedded Wireless Systems and Networks (RealWSN 2018), in conjunction with the 16th ACM Conference on Embedded Networked Sensor Systems (SenSys 2018), Shenzhen, China, 2018.
20. Xiaoyuan Ma\*, Peilin Zhang, Weisheng Tang, **Xin Li**, Wangji He, Fuping Zhang, Jianming Wei\*, and Oliver Theel, “Using Enhanced OFDCOIN to Monitor Multiple Concurrent Events under Adverse Conditions,” Proceedings of the 2018 International Conference on Embedded Wireless Systems and Networks, Madrid, Spain, 2018. (EWSN 2018) (EWSN 2018 物联网可靠通信竞赛 季军)