

STEPHEN XIA

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PROFESSIONAL EXPERIENCE

Northwestern University Department of Electrical and Computer Engineering Assistant Professor	Evanston, IL, USA 09/2023 - Present
University of California, Berkeley Department of Electrical Engineering and Computer Sciences Postdoctoral Scholar Advisor: Dr. Prabal Dutta	Berkeley, CA, USA 10/2022 - 08/2023
IBM Research Research Intern	Yorktown Heights, NY, USA Summer 2020, Summer 2021
Apple Inc. CoreMotion Data Engineering Intern	Cupertino, CA, USA Summer 2019
National Instruments Software Engineering Intern	Austin, TX, USA Summer 2015
Hewlett-Packard Technical Software Intern	Houston, TX, USA Summer 2014

EDUCATION

Columbia University Ph.D. Electrical Engineering Advisor: Dr. Xiaofan (Fred) Jiang	New York, NY, USA 09/2016 - 10/2022
Rice University B.S. Electrical Engineering University Honors, Eta Kappa Nu	Houston, TX, USA 09/2013 - 05/2016

AWARDS

- Best Paper Award - Sensors 2024
- Best Paper Award - ACM BuildSys 2023
- EE Collaborative Research Award - Columbia University 2022
- Best Demo Runner Up - ACM SenSys 2022
- Best Demo Award - ACM SenSys 2021
- Best Demo Award - ACM/IEEE IPSN 2020
- Best Demo Award - ACM/IEEE IoTDI 2018
- Best Presentation Award - IEEE VNC 2018
- Second Place, App Contest - IEEE VNC 2018
- Best Demo Runner Up - ACM SenSys 2016
- Best ECE Senior Design Project 2016 - Rice University
- Best ECE Senior Design Demo 2016 - Rice University

INVITED TALKS

- **University of California, San Diego**, San Diego, CA 2024
Actuating Humans and Drones for Smarter Spaces
- **Northwestern University**, Evanston, IL 2023
Lecture: Embedded Health at all Scales

- **Duke University**, Durham, NC 2023
Embedded Health at all Scales
- **University of Southern California**, Los Angeles, CA 2023
Embedded Intelligence Towards Smarter, Healthier, and Safer Environments
- **Arizona State University**, Tempe, AZ 2023
Embedded Intelligence Towards Smarter, Healthier, and Safer Environments
- **Northwestern University**, Evanston, IL 2023
Embedded Intelligence Towards Smarter, Healthier, and Safer Environments
- **Purdue University**, West Lafayette, IN 2023
Embedded Intelligence Towards Smarter, Healthier, and Safer Environments
- **University of Notre Dame**, South Bend, IN 2023
Embedded Intelligence Towards Smarter, Healthier, and Safer Environments
- **State University of New York at Buffalo (SUNY-Buffalo)**, Buffalo, NY 2023
Embedded Intelligence Towards Smarter, Healthier, and Safer Environments
- **Columbia University School of Engineering and Applied Sciences**, New York, NY 2022, 2023
Lecture: Embedded Acoustic Intelligence
- **University of Michigan**, Ann Arbor, MI 2022
Embedded Intelligence Towards Smarter and Healthier Environments
- **IBM T.J. Watson Research Center**, Yorktown, NY 2019
Intelligent Acoustic Wearables for Urban Safety
- **Columbia University Business School**, New York, NY 2018
Lecture: Conductive Thread-based Textile Sensing

PROFESSIONAL SERVICE

Leadership Roles

- General Co-Chair, CML-IOT Workshop 2022
- TPC Co-Chair, ACM IASA Workshop 2022

Organizing Committees

- Publicity Co-Chair, HotMobile 2025
- Local Arrangements Chair, IEEE BSN 2024
- Sponsorship Chair, ACM BuildSys 2024
- Student Travel Grant Chair, ACM MobiSys 2024
- Publicity Chair, ACM EWSN 2022, 2024
- PhD Forum Chair, ACM SenSys 2023
- Publicity Chair, ACM/IEEE IPSN 2023
- Publicity Chair, ACM BuildSys 2021
- Web Chair, IEEE/ACM CHASE 2020
- Web Chair, ACM SenSys 2019

Technical Program Committees

- ACM SenSys 2024, 2025
- EWSN 2024
- ACM/IEEE ICCPS 2024
- ACM BuildSys 2023, 2024
- IEEE ICDCS 2023
- ACM WWW 2023
- Shadow TPC Member, ACM SenSys 2022
- IEEE/ACM CHASE 2020, 2021

Reviewer

- ACM Transactions on Cyber-Physical Systems (TCPS) 2024
- ACM Transactions on Intelligent Systems and Networks (TIST) 2024

- ACM Transactions on Sensor Networks (TOSN) 2022, 2023, 2024
- IEEE Transactions on Mobile Computing (TMC) 2022, 2023, 2024
- ACM IMWUT 2022, 2023, 2024
- ACM SIGEnergy EIR Newsletter 2021, 2022
- ACM MobiSys 2020, 2021
- AIChallengeIoT Workshop 2020, 2022
- IEEE SMARTCOMP 2019
- ACM e-Energy 2019
- ACM/IEEE IoTDI 2018, 2019
- ACM/IEEE IPSN 2018
- IEEE Internet of Things Journal 2018
- ACM SenSys 2017, 2018, 2022
- ACM BuildSys 2017, 2020

TEACHING AND OUTREACH

Northwestern University

- CE 395/495: Embedded Artificial Intelligence Spring 2024
- CE 346: Microprocessor System Design Winter 2024
- EE/CE 495: Ph.D. Life Skills Fall 2024

Columbia University

Teaching Assistant

- EECS E6765: Internet of Things - Systems and Physical Data Analytics Spring 2017, Spring 2018
- EECS E4764: IoT - Intelligent and Connected Systems Fall 2016, Fall 2017

Rice University

Course Assistant

- ELEC 327 - Digital Systems Laboratory Spring 2016
- Discrete Time Signals and Systems on edX Spring 2015
- Fundamentals of Electrical Engineering on edX Spring 2014

Outreach and Other Activities

- **Girls Science Day - Women in Science at Columbia** 2019 - 2023
Hosted a series (4+) of workshops for female middle school students teaching them the physics of acoustic + wireless signals and how to build sensing and artificial intelligence systems to improve our physical and daily lives.
- **Graduate Students of Electrical Engineering at Columbia (GEEC)** 07/2018 - 01/2020
Secretary and Founding Member
GEEC is the graduate student government for Electrical Engineering at Columbia University dedicated to helping EE/CE graduate students academically, socially, and professionally.
- **Society of Women Engineers Workshops** 2017, 2018
Hosted two workshops teaching female high school students about the properties of acoustic signals.

PUBLICATIONS

Xia, S., Wei, P., Liu, Y., Sonta, A., & Jiang, X., (2023). Anemol: RECA: A Multi-Task Deep Reinforcement Learning-Based Recommender System for Co-Optimizing Energy, Comfort and Air Quality in Commercial Buildings. In *Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys 2023)*. ACM.

[Best Paper Award]

Xia, S., Zhao, M., Adhivarahan, C., Hou, K., Chen, Y., Nie, J., Wu, E., Dantu, K., & Jiang, X., (2023). Anemol: A Low-cost Sensorless Indoor Drone System for Automatic Mapping of 3D Airflow Fields. In *Proceedings of the 29th Annual International Conference on Mobile Computing and Networking (MobiCom 2023)*. ACM.

- Nie, J., Xia, S., Liu, Y., Ding, S., Hu, L., Zhao, M., Fan, Y., Abdel-Aty, M., Preindl, M., & Jiang, X., (2023). A Data-Driven and Human-Centric EV Charging Recommendation System at City-Scale. In *Proceedings of the 14th ACM International Conference on Future Energy Systems (e-Energy 2023)*. ACM.
- Xuan, Z., Liu, M., Nie, J., Zhao, M., Xia, S., & Jiang, X., (2023). CaNRUN: Non-Contact, Acoustic-based Cadence Estimation on Treadmills using Smartphones. In *Proceedings of Cyber-Physical Systems and Internet of Things Week 2023 (CPS-IoT Week 2023)*. ACM/IEEE.
- Hou, K., Xia, S., Bejerano, E., Wu, J., & Jiang, X., (2023). ARSteth: Enabling Home Self-Screening with AR-Assisted Intelligent Stethoscopes. In *Proceedings of the 22nd International Conference on Information Processing in Sensor Networks (IPSN 2023)*. ACM/IEEE.
- Zhao, M., Xia, S., Nie, J., Hou, K., Dhupar, A., & Jiang, X., (2023). LegoSENSE: An Open and Modular Sensing Platform for Rapidly-Deployable IoT Applications. In *2023 IEEE/ACM Eighth International Conference on Internet-of-Things Design and Implementation (IoTDI 2023)*. ACM/IEEE.
- Xia, S. & Jiang, X., (2022). AvA: An Adaptive Audio Filtering Architecture for Enhancing Mobile, Embedded, and Cyber-Physical Systems. In *Proceedings of the 21st International Conference on Information Processing in Sensor Networks (IPSN 2022)*. ACM/IEEE.
- Hou, K., Liu, Y., Wei, P., Yang, C., Kang, H., Xia, S., Spada, T., Rundle, A., & Jiang, X., (2022). A Low-Cost In-situ System for Continuous Multi-Person Fever Screening. In *Proceedings of the 21st International Conference on Information Processing in Sensor Networks (IPSN 2022)*. ACM/IEEE.
- Nie, J., Zhao, M., Xia, S., Sun, X., Shao, H., Fan, Y., Preindl, M., & Jiang, X., (2022). AI Therapist for Daily Functioning Assessment and Intervention using Smart Home Devices. In *Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022)*. ACM.
[Best Demo - Runner Up Award]
- Hou, K., Xia, S., Bejerano, E., & Jiang, X., (2022). AI Stethoscope for Home Self-Diagnosis with AR Guidance. In *Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022)*. ACM.
- Liu, Y., Nie, J., Xia, S., Sun, J., Wei, P., & Jiang, X., (2022). SoFIT: Self-Orienting Camera Network for Floor Mapping and Indoor Tracking. In *18th International Conference on Distributed Computing in Sensor Systems (DCOSS 2022)*. IEEE.
- Hou, K., Xia, S., & Jiang, X., (2022). BuMA: Non-Intrusive Breathing Detection using Microphone Array. In *Proceedings of the 1st ACM International Workshop on Intelligent Acoustic Systems and Applications (IASA 2022)*. ACM.
- Nie, J., Shao, H., Zhao, M., Xia, S., Preindl, M., & Jiang, X., (2022). Conversational AI Therapist for Daily Function Screening in Home Environments. In *Proceedings of the 1st ACM International Workshop on Intelligent Acoustic Systems and Applications (IASA 2022)*. ACM.
- Liu, Y., Xia, S., Nie, J., Wei, P., Shu, Z., Chang, J. A., & Jiang, X., (2022). aiMSE: Toward an AI-Based Online Mental Status Examination. In *IEEE Pervasive Computing*. IEEE.
- Zhang S., Li Y., Zhang S., Shahabi F., Xia, S., Deng, Y., & Alshurafa, N., (2022). Deep Learning in Human Activity Recognition with Wearable Sensors: A Review on Advances. In *Sensors*. MDPI.
- Liu, Y., Zhao, M., Xia, S., Wu, E., & Jiang, X., (2022). A Sensorless Drone-based System for Mapping Indoor 3D Airflow Gradients: Demo Abstract. In *Proceedings of the 20th Annual International Conference on Mobile Systems, Applications and Services (MobiSys 2022)*. ACM.
- Zhao, M., Liu, Y., Dhupar, A., Hou, K., Xia, S., & Jiang, X., (2022). A Modular and Reconfigurable Sensing and Actuation Platform for Smarter Environments and Drones: Demo Abstract. In *Proceedings of the 20th Annual International Conference on Mobile Systems, Applications and Services (MobiSys 2022)*. ACM.
- Xia, S., Chandrasekaran, R., Liu Y., Yang C., Rosing T. S., & Jiang, X., (2021). Demo Abstract: A Drone-based System for Intelligent and Autonomous Homes. In *Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems (SenSys 2021)*. ACM.
[Best Demo Award]
- Nie, J., Liu, Y., Hu, Y., Wang, Y., Xia, S., Preindl, M., & Jiang, X., (2021). SPIDERS+: A light-weight, wireless, and low-cost glasses-based wearable platform for emotion sensing and bio-signal acquisition. In *Pervasive and Mobile Computing*. Elsevier.

Xia, S., Nie, J., & Jiang, X., (2021). CSafe: An Intelligent Audio Wearable Platform for Improving Construction Worker Safety in Urban Environments. In *Proceedings of the 20th International Conference on Information Processing in Sensor Networks (IPSN 2021)*. ACM/IEEE.

Xia, S. & Jiang, X., (2021). Improving Acoustic Detection and Classification in Mobile and Embedded Platforms: Poster Abstract. In *Proceedings of the 20th International Conference on Information Processing in Sensor Networks (IPSN 2021)*. ACM/IEEE.

Xia, S. & Jiang, X., (2020). PAMS: Improving Privacy in Audio-Based Mobile Systems. In *Proceedings of the 2nd International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things (AIChallengeIoT 2020)*. ACM.

Hu, Y., Nie, J., Wang, Y., Xia, S., & Jiang, X., (2020). Demo Abstract: Wireless Glasses for Non-contact Facial Expression Monitoring. In *2020 19th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2020)*. ACM/IEEE.

[Best Demo Award]

Nie, J., Hu, Y., Wang, Y., Xia, S., & Jiang, X., (2020). SPIDERS: Low-Cost Wireless Glasses for Continuous In-Situ Bio-Signal Acquisition and Emotion Recognition. In *2020 IEEE/ACM Fifth International Conference on Internet-of-Things Design and Implementation (IoTDI 2020)*. ACM/IEEE.

Wei, P., Xia, S., Chen, R., Qian, J., Li, C., & Jiang, X., (2020). A Deep-Reinforcement-Learning-Based Recommender System for Occupant-Driven Energy Optimization in Commercial Buildings. In *Internet of Things Journal*. IEEE.

Xia, S., Godoy, D. d., Islam, B., Islam, M. T., Nirjon, S., Kinget, P. R., & Jiang, X., (2019). Improving Pedestrian Safety in Cities Using Intelligent Wearable Systems. In *Internet of Things Journal*. IEEE.

Xia, S., Godoy, D. d., Islam, B., Islam, M. T., Nirjon, S., Kinget, P. R., & Jiang, X., (2018). A Smartphone-Based System for Improving Pedestrian Safety. In *2018 IEEE Vehicular Networking Conference (VNC 2018)*. IEEE.

[Best Presentation Award][Runner-Up Best App]

Jia, J., Yu, J., Hanumesh, R. S., Xia, S., Wei, P., Choi, H., & Jiang, X., (2018). Intelligent and privacy-preserving medication adherence system. In *Smart Health*. Elsevier.

Xia, S., Wei, P., Vega, J. M., & Jiang, X., (2018). SPINDLES+: An adaptive and personalized system for leg shake detection. In *SmartHealth*. Elsevier.

Wei, P., Chen, X., Vega, J. M., Xia, S., Chandrasekaran, R., & Jiang, X., (2018). A Scalable System for Apportionment and Tracking of Energy Footprints in Commercial Buildings. In *Transactions on Sensor Networks*. ACM.

Jia, J., Xu, C., Pan, S., Xia, S., Wei, P., Noh, H. Y., Zhang, P., & Jiang, X., (2018). Conductive Thread-Based Textile Sensor for Continuous Perspiration Level Monitoring. In *Sensors*. MDPI.

Jia, J., Xu, C., Pan, S., Xia, S., Wei, P., Noh, H. Y., Zhang, P., & Jiang, X., (2018). Moisture Based Perspiration Level Estimation. In *Proceedings of the 2018 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2018 ACM International Symposium on Wearable Computers (UbiComp 2018)*. ACM.

Wei, P., Xia, S., & Jiang, X., (2018). Energy Saving Recommendations and User Location Modeling in Commercial Buildings. In *Proceedings of the 26th Conference on User Modeling, Adaptation and Personalization (UMAP 2018)*. ACM.

Godoy, D. d., Islam, B., Xia, S., Islam, M. T., Chandrasekaran, R., Chen, Y., Nirjon, S., Kinget, P. R., & Jiang, X., (2018). PAWS: A Wearable Acoustic System for Pedestrian Safety. In *2018 IEEE/ACM Third International Conference on Internet-of-Things Design and Implementation (IoTDI 2018)*. ACM/IEEE.

Godoy, D. d., Xia, S., Fernandez, W. P., Jiang, X., & Kinget, P. R., (2018). Demo Abstract: An Ultra-Low-Power Custom Integrated Circuit based Sound-Source Localization System. In *2018 IEEE/ACM Third International Conference on Internet-of-Things Design and Implementation (IoTDI 2018)*. ACM/IEEE.

[Best Demo Award]

Wei, P., Chen, X., Vega, J., Xia, S., Chandrasekaran, R., & Jiang, X., (2017). ePrints: A Real-Time and Scalable System for Fair Apportionment and Tracking of Personal Energy Footprints in Commercial Buildings. In *Proceedings of the 4th ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2017)*. ACM.

[Best Paper - Runner Up Award]

Xia, S., Lu, Y., Wei, P., & Jiang, X., (2017). SPINDLES: A Smartphone Platform for Intelligent Detection and Notification of Leg Shaking. In *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 2017)*. ACM.

Chandrasekaran, R., Godoy, D. d., Xia, S., Islam, M. T., Islam, B., Nirjon, S., Kinget, P., & Jiang, X., (2016). SEUS: A Wearable Multi-Channel Acoustic Headset Platform to Improve Pedestrian Safety: Demo Abstract. In *Proceedings of the 14th ACM Conference on Embedded Network Sensor Systems CD-ROM (SenSys 2016)*. ACM.

[Best Demo - Runner Up Award]