

Zitong Lan

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EDUCATION

- **School of Engineering and Applied Science, University of Pennsylvania** Philadelphia, USA
Ph.D. in Electrical and System Engineering
Aug. 2023 - May. 2028
- **Honors college(Chien-Shiung Wu College), Southeast University** Nanjing, China
B.Eng. in Electrical Engineering **GPA:** 3.96/4 **rank:** 3%
Sep. 2019 - Jun. 2023

RESEARCH INTEREST

I am interested in **machine learning and multi-modal learning**, with a focus on **acoustic and sound related topics**. My research spans 1) Modeling and shaping the listening effect. I study how sound propagates through environments by modeling acoustic fields, room impulse responses and so on. 2) Creating sound content with generative models. I am also interested in using generative AI to create new audio experiences, including music, speech, and environmental sounds.

PUBLICATIONS

- Zitong Lan, Yiwei Tang, Yuhan Wang, Haowen Lai, Yiduo Hao, Mingmin Zhao, "Building Audio-Visual Digital Twins with Smartphones". In submission to Mobicisys'26.
- Zitong Lan, Yiduo Hao, Mingmin Zhao, "Guiding audio editing with audio language model", NeurIPS'25 GenProCC workshop **Oral presentation**. (In submission to ICLR)
- Zitong Lan, Yiduo Hao, Mingmin Zhao, "Resounding the acoustic field through reciprocity learning", NeurIPS'25.
- Hoawen Lai, Zitong Lan, Mingmin Zhao, "None-Line-of-Sight 3D reconstruction with Radar", NeurIPS'25.
- Zitong Lan, Chenhao Zheng, Zhiwei Zheng, Mingmin Zhao. "Acoustic Volume Rendering for Neural Impulse Response Fields", NeurIPS'24 **Spotlight**
- Yuechun Jiao, Jinlian Hu, Zitong Lan, Fusang Zhang, Jie Xiong et. al., "Exploring quantum sensing for fine-grained liquid recognition", Arxiv preprint
- Fusang Zhang, Beihong Jin, Zitong Lan, Zhaoxin Chang, Daqing Zhang, Yuechun Jiao, Meng Shi, Jie Xiong. "Quantum Wireless Sensing: Principle, Design and Implementation", Mobicom'23
- Tengxiang Zhang, Zitong Lan, Chenren Xu, Yanrong Li, Yiqiang Chen. "BLEselect: Gestural IoT Device Selection via Bluetooth Angle of Arrival Estimation from Smart Glasses", Ubicomp'23.
- Zhenhao Ji, Yu Tian, Jifu Wang, Mingyuan Ding, Haoxin Wang, Yifan Chen, Jiahao Wen, Zitong Lan, Huiting Xu et. al., "PCCR Based Wheelchair Control System, IEEE Circuits and Systems Magazine", 2021.

RESEARCH EXPERIENCE

- **Modeling Acoustic Field** Sept. 2023 - Now
University of Pennsylvania PA, USA
Research Assistant, advised by Prof. Mingmin Zhao
 - Proposed acoustic volume rendering for neural impulse response field. We leverage acoustic multi-view consistency to ensure accurate impulse response synthesis. Resulted in NeurIPS'24 Spotlight
 - Proposed a learning strategy inspired by the acoustic reciprocity principle to build a better acoustic channel modeling to tackle the practical acoustic resounding task. Resulted in a NeurIPS'25 paper.
 - Proposed the concept of acoustic capturing with a single pair of smartphones. We enable a holistic framework for common users to capture the room acoustic effect for immersive auditory experience and even understand the room acoustic properties. In submission
- **Audio Editing with Audio language model** Feb. 2025 - Now
University of Pennsylvania PA, USA
Research Assistant, advised by Prof. Mingmin Zhao
 - We introduce first reasoning-based stereo audio editor. It leverages ALM to interpret high-level instructions and generate event-aware edit planes executed by a latent diffusion model.
 - We introduce the first scalable pipeline for generating editable stereo audio scenes, combining complex instructions with controllable events to enable reasoning-based audio editors.
- **Quantum wireless sensing** Aug. 2022 - May. 2023
UMass Amherst Amherst, USA
Remote Research Intern, advised by Prof. Jie Xiong and Fusang Zhang
 - Proposed the prototype of a new sensing modality employing Rydberg atoms as signal receiver. Presented its principles and design with sensitivity enhancement methods to achieve wireless sensing with super high SNR.

- The system outperforms conventional RF sensing more than 10X in terms of sensing granularity and provide fine-grained application like sensing sub-millimeter vibration of a speaker. The system is also compatible with commodity RF devices like WiFi and can enhance their sensing ability. Resulted in a Mobicom'23 and an Arxiv preprint

• **Realizing Intermittent Computing on IoT**

Oct. 2022 - Jan. 2023

University of California, Los Angeles

Remote Research Intern, advised by Prof. Yang Zhang

- Enabled intermittent computing programming on Arduino using non-volatile memory. Inserted checkpoints to program to make it restore the state from the latest checkpoint.

• **Bluetooth signal based spatial IoT device interaction**

May. 2021 - Aug. 2022

Institute of Computing Technology, Chinese Academy of Sciences

Beijing, China

Research Intern, advised by Prof. Tengxiang Zhang

- Proposed a natural, accurate, privacy-preserving IoT device selection system, which leverages the direction finding feature in BLE 5.0. The system supports three natural gestures of device selection
- Designed a 5-element antenna array that fits on the frame of smart glasses, developed a device selection pipeline that uses light-weight SVM models in real-time to enable precise selection. Resulted in Ubicomp'23

HONORS AND AWARDS

- CVPR'25 and NeurIPS'25 distinguished reviewer *Mar. 2025*
- Howard Broadwell Fellow from Upenn *Mar. 2023*
- The Final Winner (1st) in the 2019-2020 IEEE CASS Student Design Competition *Sep. 2020*
- The Southeast University President Scholarship (university wide 2%) *Fall 2020*
- The Second Award in the Chinese Mathematics Competition *Nov. 2020*

SERVICES

Reviewer for: NeurIPS, CVPR, ICLR, TVCG, TASLP

SKILLS SUMMARY

- **Programming languages:** Python, Matlab, C, C++, Verilog
- **Software:** Matlab, Blender, Gnu-Radio, Vivado