Zitong Lan

Website: zitonglan.github.io

Email: ztlan@seas.upenn.edu
Mobile: +1-445-256-3361

Education

- **School of Engineering and Applied Science, University of Pennsylvania** — Philadelphia, USA
  Ph.D. in Electrical and System Engineering (Advisor: Mingmin Zhao) — *Aug. 2023 - Present*
- **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, Mingmin Zhao, "Acoustic Capture with Your Smartphone". In submission.
- **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", Accepted at NeurIPS'25.
- Hoawen Lai, **Zitong Lan**, Mingmin Zhao, "None-Line-of-Sight 3D reconstruction with Radar", Accepted at 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 Los Angeles, USA
  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 (1^{st}) in the 2019-2020 IEEE CASS Student Design Competition *Sep. 2020*
- The Southeast University President Scholarship (2%) *Fall 2020*
- The Second Award in the Chinese Mathematics Competition *Nov. 2020*

Services

Reviewer for: NeurIPS, CVPR, ICLR'25, TVCG, Transactions on Audio, Speech, and Language Processing

Skills Summary

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