

# Zitong Lan

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## EDUCATION

- **Honors college(Chien-Shiung Wu College), Southeast University** Nanjing, China  
*B.Eng. in Information Engineering* GPA: 92.4 (3.96/4) rank: 4/158 Sep. 2019 - Jun. 2023  
**Courses:** Communication Systems, Digital Signal Processing, Digital and Analog Circuit, Very Large-Scale Integrated Circuit, Electromagnetic Fields and Waves  
**English Ability:** Toefl: 104 (s-23) GRE: V-156 Q-170 AW-3.5

## PUBLICATIONS

- Tengxiang Zhang, **Zitong Lan**, Chenren Xu, Yanrong Li, Yiqiang Chen, "BLEselect: Gestural IoT Device Selection via Bluetooth Angle of Arrival Estimation from Smart Glasses" in *ACM IMWUT* Vol. 6/*UbiComp* 2023. (To appear)
- 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" in *IEEE Circuits and Systems Magazine*, the third-quarter 2021.

## RESEARCH EXPERIENCE

- **A project about new sensing modality** Aug. 2022 - Present  
**UMass Amherst** Amherst, USA  
*Remote Research Intern*, advised by Prof. Jie Xiong and Fusang Zhang(Chinese Academy of Sciences)
  - Proposed the prototype of a new sensing modality with its principles and system design with sensitivity enhancement methods, explored the Rydberg atoms to sense the wireless signal with super high SNR.
  - The system outperforms the conventional RF sensing by an order of magnitude in terms of sensing granularity and provide fine-grained sensing application like sound recovery, liquid recognition, motion sensing and so on.
  - Utilized the ability of Rydberg Atoms as a full-band receivers to sense common RF signals, also compatible with commodity RF devices.
- **Enabling intermittent computing on Arduino** Oct. 2022 - Present  
**University of California, Los Angeles** Los Angeles, USA  
*Remote Research Intern*, advised by Prof. Yang Zhang
  - Enabled intermittent computing programming on Arduino board using non-volatile memory EEPROM.
  - Demoed intermittent computing applications like games, sensors and physical computing projects.
  - Building tools to help physical computing makers to develop embedded applications in energy harvesting.
- **BLEselect: IoT Device Selection via BLE AoA Estimation from Smart Glasses** 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 method, which leverages the direction finding feature in BLE Protocol 5.0 and improves the user experience for device selection.
  - Designed a 5-element antenna array that fits on the frame of smart glasses, developed a device selection pipeline that trains light-weight SVM models in real-time to enable precise selection(3m > 90% accuracy).
  - Implemented a prototype system (< 10mW) that supports three natural gestures of device selection, conducted extensive experiments and user studies (96.7% correctness).
- **PCCR Based Wheelchair Control System** May. - Oct. 2020  
**School of Information Science and Engineering, Southeast University** Nanjing, China  
*Research Intern*, advised by Prof. Chuan Zhang
  - Designed the PCCR technology based functional wheelchair control system to help patients with severe disabilities to use eye movements to control wheelchair safely, effectively and naturally.
  - Analyzed the real driving response and proposed a unique interaction method for users to control the locomotion of wheelchair and make phone call through opening, closing eyes, and gazing at one direction.

## SELECTED PROJECTS

- **Development of Vision-aided Small Vehicle** Implemented a small autonomous vehicle with STM32 chip to control motion and Raspberry Pi to recognize color, number and path. Led the control logical and code in C. Tech: C, Embedded System, Python, Raspberry Pi, OpenCV, TensorFlow. (Jun. - Aug. 2021)
- **Analog Circuit Coursework Projects** Designed several circuit project including light intensity indicator, triode amplifier circuit, audio amplifier, filtering circuit, and more. (Scored at 1/130 in analog circuit course) Tech: Circuit Implementation, Verilog, FPGA, Filter Design (Mar. - Jun. 2021)

## HONORS AND AWARDS

- The Final Winner (1<sup>st</sup>) 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

## SKILLS SUMMARY

- Programming languages: C++, C, Matlab, Python, Verilog
- Software: Matlab, Gnu-Radio, L<sup>A</sup>T<sub>E</sub>X, Vivado