

# 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  
**A Courses:** Algebra(99), Data Structure(97), Physics(97), Digital Signal Processing(96), Calculus(95), Analog Circuit(94,1/130), Communication Systems(94) and 20+ others.

## 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**, *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**, *IEEE Circuits and Systems Magazine*, the third-quarter 2021.

## RESEARCH EXPERIENCE

- **Project about New Sensing Modality employing Rydberg Atoms as Receiver** Aug. 2022 - Present  
**UMass Amherst** Amherst, USA  
*Remote Research Intern*, advised by Prof. **Jie Xiong** and **Fusang Zhang** (CAS)
  - 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 at 2.4 G by more than 10 times in terms of sensing granularity and provide fine-grained application like using centimeter-wave to sense sub-millimeter vibration of a speaker.
  - The system is compatible with commodity RF devices like WiFi and enhance their sensing ability. By changing the Rydberg state, the Rydberg atom can serve as a nearly full-band receiver.
- **Autobiography of Arduino Developers in Realizing Intermittent Computing** 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. Added checkpoints to embedded programs to make program resume the state from last power failure.
  - Implemented solutions of intermittent computing in typical embedded coding schemes like *Loop* and *Interrupt*. Demoed physical computing applications including games and sensors of intermittent computing.
- **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 wheelchair control system to help patients with severe disabilities 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 different eye movements.

## 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
- **English Test:** TOEFL iBT: 104(s23), GRE: V-156 Q-170 AW-3.5