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 (speaking: 23)

Research Experience

- **Quantum Sensing: principle, design and application** *Aug. 2022 - Present*
  Institute of Software, Chinese Academy of Sciences Beijing, China
  Research Intern, advised by Prof. Jie Xiong(UMass Amherst) and Fusang Zhang
  - Utilizing the capabilities of Rydberg Atoms as a full-band receivers to sense common RF signals, including 2.4 G and 5 G WiFi signal, 28 G mmWave frequency.
  - Outperform traditional RF signal method by 10 times in terms of sensing granularity and provide fine-grained sensing application like sound recovery, liquid recognition, motion sensing and so on.
- **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 2.4GHz 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.
  - Won the first place in the 2019-2020 IEEE CASS Student Design Competition

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. To appear in IMWUT 2023.
- 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, Vol. 21 No. 3, the third-quarter 2021.

Selected Projects

- The Vision-Based Small Vehicle Development 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, Embeded 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. Tech: Circuit Implementation, Verilog, FPGA, Filter Design (Mar. - Jun. 2021)

Honors and Awards

- The Special Award(1^{st}) in the 2019-2020 IEEE CASS Student Design Competition *Sep. 2020*
- The Southeast University President Scholarship *Fall 2020*
- The Second Award in the Chinese Mathematics Competition *Nov. 2020*
- Third Award in the Electronics Design Contest of Southeast University *Jul. 2021*
- Second Award in the Physics Tournament of Southeast University *May. 2021*

Skills Summary

- Languages C++, C, Matlab, Python, Verilog
- Software Matlab, Gnu-Radio, Vivado