

ZIYANG LONG

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EDUCATION

University of Glasgow - University of Electronic Science and Technology of China (UESTC) **09.2018 – (07.2022)**

B. Eng. in Electronics and Electrical Engineering | GPA: 3.61/4.00 (Major GPA: 3.79)

RESEARCH EXPERIENCE

Information Materials and Devices team, UESTC **07.2019-present**

Research assistant - Noninvasive blood glucose detection with flexible two-dimensional materials

- Established the correlation between the peculiarities of reflection of an electromagnetic wave (0.5GHz-3GHz) and the concentration of blood glucose using the Gaussian Process, Partial Least Square, and Least Absolute Shrinkage and Selection Operator.
- Drafted the circuit to convert the current signal into a voltage signal and amplified the voltage signal through the ADS1115 amplifier, and then digitally filtered it with the Statistical Outlier Removal method after the ADC conversion.
- Developed a website and an Android application using Alibaba Cloud Server to record the glucose concentration data uploaded to the server and synchronize it while presenting the change trend of glucose.

Photoelectric Detection and Sensing laboratory **04.2021-06.2021**

Research assistant - An image logical operation unit inspired by the human retina

- Investigated the mechanism of the retina to store and preprocess visual information while perceiving light in the human visual system.
- Designed the digital logic circuit, AND, OR, and XOR, to realize the Independent Medico-Legal Unit functional verification.
- Proposed a bionic image memory logic unit formed by a simple two terminal photodetector and comparator module.

PROJECT EXPERIENCE

Intelligent Tracing Car **03.2021-06.2021**

Team Design Project and Skills, hardware group Leader

- Accessed MicroPython to develop embedded firmware for cars based on an STM32 microcontroller.
- Implemented drivers for gyroscope modules MPU6050 and JY901S.
- Leveraged photocoupler to realize the isolation of the driving circuit and the control circuit.

A CNN for MNIST Handwritten Digit Classification **03.2021-05.2021**

Introduction to Deep Learning Course Program

- Built a neural network in the main structure of two convolution layers and two pooling layers by MATLAB.
- Adopted back propagation algorithm and stochastic gradient descent algorithm to update the parameters for each layer.
- Selected Rectified Linear Unit as activation function in the hidden layers and SoftMax in the output layer.

Portable Finger Pulse Monitor **08.2018-01.2019**

Microelectronic System Course Program

- Transformed analog signals from Pulse Sensor into digital signals on an STM32 microcontroller.
- Accepted moving average filter algorithm to diminish the thorns and slight oscillation in signal.
- Established interoperability between LCD screen and STM32 using Universal Asynchronous Transmitter Receiver protocol.

TEACHING EXPERIENCE

University of Glasgow-UESTC **09.2021-present**

Teaching Assistant- Electronic System Design

- Conducting group tutorial sessions with more than 45 students per week.
- Providing academic guidance on how to use oscilloscope and signal generator.
- Validating and reviewing students project reports.

University of Glasgow-UESTC **09.2021-present**

Teaching Assistant- Power Engineering

- Instructing students during lab sessions while aiding when necessary.
- Examining and grading students' experiment results.
- Providing quality feedback to each student following the grading process.

PUBLICATIONS

- Wen Du, Caihong Li, **Ziyang Long**, Yixuan Huang, Lingzhi Luo, Jihua Zou, Jiang Wu, Senior Member, IEEE, “An Image Memory Logic Unit Inspired by Human Retina”, IEEE Electron Device Letters.
- Yixuan Huang, **Ziyang Long**, Jihua Zhou, Linzhi Luo, Student Member, IEEE, Xiangyu Zhou, Hezhuang Liu, Weijie He, Kai Shen, Jiang Wu, Senior Member, IEEE, “A glucose sensor based on surface functionalized MXene”, IEEE Transactions on Nanotechnology. (Under Review).

PATENTS

- Box glucometer. CN. Patent ZL202130024461.3, filed January 14, 2021, and issued August 31, 2021.
- Photoelectric operation processor with memory function and preparation method. CN. Patent Application 202110740607, filed June 30, 2021, Patent Pending.
- A WIFI-based blood glucose meter. CN. Patent Application 202120166412.8, filed January 21, 2021, Patent Pending.

HONORS & AWARDS

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| ▪ <i>Cum Laude</i> | 09.2018-(07.2022) |
| ▪ Scholarship for Outstanding Students, Second Prize | 10.2021 |
| ▪ Provincial silver award in the 7th China International College Students "Internet" Innovation and Competition | 09.2021 |
| ▪ The First Prize in School Venture Contest | 11.2020 |
| ▪ Pacemaker to Merit Student, UESTC | 10.2020 |
| ▪ Outstanding Recruitment Volunteer, UESTC | 03.2019 |

LANGUAGES & SKILLS

Languages: Chinese - Native; English - IELTS: 7.0, GRE: 318.

Program Languages: Python, C++, HTML, CSS, JavaScript, Verilog.

Software: Vivado, Auto CAD, Origin, Cadence, Altium Designer, Sublime3, MATLAB, Multisim, MicroPython, Microsoft Office, Adobe Acrobat, Adobe Photoshop.