

EDUCATION

Xi'an Jiaotong University, School of Electrical Engineering 2014.08-2020.07

Major: Electrical Engineering (*The Honors Youth Program*)

Bachelor of Engineering expected July 2020

GPA: 3.8/4.3; Class Rank: 6/84 (Juvenile Pilot Class)

TOEFL: 102 (R 29, L 26, S 23, W24)

GRE: 309 (Next take on Dec.6, 2019)

PROFESSIONAL EXPERIENCE

Student Intern | NSG Lab in Massachusetts General Hospital and Harvard Medical School 2019.09-2020.05

*Objective: Develop a highly portable and multiuse system for tomographic imaging in muscle and brain plus systemic physiological monitoring to enable research and clinical applications involving muscle, as well as applications in brain and more systemic physiological monitoring and imaging.

*Main Work: Focused on the embedded system development of blood pressure monitoring based on the hardware upgrades and corresponding software modifications.

-Completed the improvements to obtain more accurate blood pressure measurement by means of multi-modality fusion.

-Improved the function of the new equipment to successfully support eight gain-controllable 16-bit analog inputs compatible with EMG, ECG, EEG signal sources and plus four digital sensor inputs.

-Utilized the dual-wavelength and dual-detector blood oxygen monitoring method, chose suitable optical detector and designed an applicable detector PCB, to develop a NIRs optical acquisition system and realize Ambulatory diffuse optical tomography(aDOT).

Intern Engineer | Technology and Engineering Center for Space Utilization in CAS 2018.06-2018.08

*Designed a guiding system simulation model to help design an electromagnetic ejection microgravity device in CSU

*Learned electromagnetic guiding device and understood the power electronic control technology, Code debugging and modification in MATLAB to realize suspension control in guiding system simulation

*Constructed an electromagnetic guiding structure capable of realizing 25s microgravity in cargo warehouse, based on the theory of electromagnetic guide for maglev train and elevator.

RESEARCH EXPERIENCE

Research Leader | Steep Pulsed Electric Field (SPEF) Focusing System for Physical Treatment of Body Surface Tumor Cells 04/2018-04/2019

*Designed a small-sized TEM cell structure, improve the transition section to make TEM cell interval<6mm, S11<1.6GHz, to satisfy nanosecond pulse experiment and improve the efficiency of electric pulse capability up to 95%

*Utilized <1ns pulse width and 3.3kV subnanosecond pulse source to conduct biological effect experiments on A375 melanoma cells; Irradiated A375 cell 30sec by using electric pulse of 500Hz-3000Hz repetition frequency; Tested the cell viability by utilizing MTT colorimetry to observe the cell activity changes within different pulse repetition frequency

*Figured out that the sub-nanosecond electrical pulse of 500kV/m with higher repetition frequency (above 3000Hz) can have a greater impact on cancer cell activity.

Designer & Investigator | Development of 3D Print Degradable Vascular Stapler for Liver Transplantation and Animal Experiment 04/2019-Now

*Mainly designed degradable material vascular stapler instrument using 3D printing technology; innovative research on a biocompatible in-vivo degradable material

*Analyzed the upsides and downsides of current stapler instrument; simulate and build up data modeling for matching strength by using Finite element analysis to design the best fixed structure; utilize this stapler to achieve complete anastomosis between vessels

*Bio-mechanical research about stapler based on the prototype of the designed vascular stapler instrument to explore the critical strength of the stapler for ensuring the stability and safety of the device; provide data basis for in vivo experiments and clinical applications.

Project Leader | Design of Rubik Restoration Robot Based on STM32 Embedded Software 2019.03-2019.06

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- *Collected color information of third-order Rubik's cube by WildFire's OV7725 camera
- *Transfer the six-sided color block information to computer, adopt restoration algorithm to calculate and restore D cube, collect and send the data to STM32F107VCT6 SCM
- *Programmed STM32 using Keil to implement the function of color recognition, data communication and motor control
- *Constructed transmission machine models by Inventor software and make physical objects using 3D printing technology
- *Controlled the 24BYJ48 stepping motor to restore the Rubik's cube on the mechanical structure.

Programmer | Application of Head-mounted Brain Wave Sensor to Control External Device 02/2019-04/2019

- *Be responsible for the exploration, main design and application of a gyroscope in a head-mounted brain wave sensor, and successfully apply in the head-mounted instrument that uses brain waves to control external devices
- *Utilized the sensor in the integrated chip MPU6050 to get acceleration and angular velocity of axis; Apply attitude algorithm and the data acquired from the sensor to explore the gyroscope
- *Applied STM32 programming to set up axis converting mathematical model, decipher the attitude angle solution and analyze the wearer's movement condition according to the attitude angle.

Assistant Researcher | Rehabilitation Exoskeleton Based on Mobile Terminal and Biofeedback 02/2019-12/2019

- *Adopted a method for collaborative control of EEG and EMG signals to design an intelligent rehabilitation hand for rehabilitation training, based on motion intention detection of the disabled and EMG signal processing
- *Distinguished body movements by machine classification and LSTM brain-muscle synergistic prediction analysis algorithm, and finally realize the user's control of the rehabilitation gloves and pneumatic equipment
- *Programmed stm32 SCM to control bionic pneumatic mechanism, driving finger to realize joint activity to cure paralysis.

Distant Assistant Researcher | Design of Wearable Device Chip based on "Wit Cloud" Platform for Information Acquisition and Wifi Transimission 03/2019-Now

- *Connected the sensing unit to the WiFi chip through the serial port to realize information acquisition and wireless transmission of the hardware platform
- *Learned the pin function and interface type of WiFi chip Lexin esp8266 module series and implement the access from wearable device hardware to the "Wit Cloud" platform
- *Utilized Altium Designer software to draw and fabricate the circuit and realize the system integration and hardware function of information acquisition and wireless transmission.

HONORS & AWARDS

- *Meritorious Winner in 2019 American College Students Interdisciplinary Contest In Modeling, COMAP 2018.04
- *1st Prize in the 8th Undergraduate Physics Tournament 2017.05
- *Siyuan Scholarship, 3000RMB, top 10% 2015-2017
- The member of Aerospace Elite Class, XJTU 2017
- Passed Sino-French "4+4" Dual Degree Program Selection 2017
- Passed the Physics Experimental Class Selection, XJTU 2016
- Passed the JINHE Experimental Class Selection, XJTU 2016
- *2nd Prize in the 29th Chinese Chemical Olympiad 2015.08
- *Physical Bowl, AAPT Global Team, Top 100 Award) 2015.04
- *3rd Prize in the 20th National Youth Informatics Olympiad Competition League 2015
- *1st Prize in the Jiangsu Provincial Middle School Biology Olympics Competition - Jiangsu Division 2015

SKILLS

C++, Visual Basic, Python, Latex, MATLAB, Pspice, Keil, Inventor, Office, Altium Designer, CAD