Wu Renxiang (吴仁翔)

Date of Birth: 01/10/1998 ***Address:*** Hainan Province, China
Mobile: (+86)-18810603920 ***Email:*** wurenxiang2021@email.szu.edu.cn

Education

Shenzhen University, China 09/2021 - 06/2024 (Expected)
MS in Biomedical Engineering
- GPA: 3.38/4.00 (Rank: 28/115), Average Score: 86.90

Supervisors: Prof. Guo Dan and Prof. Fei Gao
Dissertation: Design of a Biofeedback-based Feeding System for Critically Ill Infants
Academic focus/background: Medical Electronics and Rehabilitation Engineering, Robotics.

China University of Geosciences Beijing* (211 Project), *China 09/2017 - 06/2021
BS in Electrical Engineering and Automation
- GPA: 3.05/4.00 (**WES Evaluation**: 3.38 est., Rank: 28/68), Average Score: 82.91

Dissertation: Design of Bionic Robot Fish Propelled by Two Joint Caudal Fin

Publications

Papers

- **Renxiang Wu**, et al. "A Compact Motorized End-effector for Ankle Rehabilitation Training". *IEEE Transactions on Medical Robotics and Bionics*. (**In preparation**)
- **Renxiang Wu**, et al. "Design of an End-Effector Ankle-Foot Rehabilitation Robot With 3 DOF." *2023 the 7th International Conference on Robotics and Automation Sciences*. (**IEEE, Published**)
- **Renxiang Wu**, et al. "Design of Bionic Robot Fish Propelled by Two Joint Caudal Fin." *Journal of Physics: Conference Series*. Vol. 1982. No. 1. IOP Publishing, 2021. (**EI, Published**)

Patents

- Guo Dan**, Renxiang Wu**, Weifei Kong, Jing Wei, Mingyang Luo. An Ankle Joint Rehabilitation Robot and Rehabilitation System. (**CN116687709A**)
- Guo Dan, Weifei Kong, **Renxiang Wu**, Zhantu Lin, Jiale Chen. A Method and Apparatus for Constructing a Breathing Training Model Based on Personalized Feature Fitting. (**CN116392105A**)
- Guo Dan**, Renxiang Wu**, Hongpin Li, Jing Wei, Mingyang Luo. Infant Feeding System Based on Sucking Action Detection and Control Method Thereof. (**CN115670933A**)
- Chuan Nie, Weifei Kong, **Renxiang Wu**, Xiaorui Huang, Chunyi Zhang. Radiation Heat Source Height Adjusting and Temperature Control Method for Baby Radiation Warm-keeping Table. (**CN115813686A**)

Research Experiences

Shenzhen University NSFC General Program, Shenzhen, China
*Ankle rehabilitation robot system (**Team Leader**)* 05/2022 - Now

- Designed an innovative ankle rehabilitation robot prototype as the program assistant, featuring a compact structural design, bilaterally coordinated, and 3 DOF rehabilitation.
- Assisted in implementing a control system using surface electromyography and torque sensors, resulting in prototype passive tests with a 96.4% bilateral motor movement Synchronization rate.
- Steered team efficiency to minimize project turnaround, culminating in a national competition award and a conference paper for our work in ankle rehabilitation robotics.

China University of Geosciences Beijing College Students Innovation Project, Beijing, China
*Development of Single Joint Bionic Robotic Fish (**Team Member**)* 05/2018 - 05/2019

- Added two bottles of robot fish at both sides to stabilize the fish body and reduce water ripples during fish oscillation to increase task point recognition accuracy up to 85% using OpenMV.
- Tested various sealing solutions for critical components and found that reinforcing the outer ring of the seal with organic silicone ensured the robot's waterproofing at a depth of 20cm underwater.

Internship Experience

Guangdong Medical Electronic Instrument Transformation Engineering Technology Research Center

Research Assistant 09/2021 - 05/2023

- Assisted in applying for and completing multiple national and provincial level projects, can complete project applications independently with an established theme.
- Assisted with managing and operating laboratory instruments, including self-developed ones, and independently repaired small devices (computers, multimeters, etc.).
- Managed expenses and reduced non-essential expenditures for laboratories. ¥ 10k+ savings already.

Shenzhen Bowen Biotechnology and Shenzhen Kaiyang Industrial Co., ltd.

Assistant Engineer 12/2021 – Now

- Improved the 3 essential functional requirements of an infant feeding device with a partner hospital and assisted with designing a prototype based on a feasibility report.
- Developed an infant feeding analysis module using electrodes to detect infant diaphragmatic sEMG and pre-processed ECG artifacts with 5-500 Hz band-pass filtering.
- Assisted with testing core product components, including air pressure sensors and screens, and solved the STM32H7B0 using the STM32F429 with emWin touch screen code porting problems.

Honors and Awards

Competition

- **International level** (Best oral presentation Prize)
  7th International Conference on Robotics and Automation Sciences (Rank: **1/12**)
- **Nation Level** (First & Second Prize)
  5th China Postgraduate Robot Innovation and Design Competition (Second Prize, Rank: **Top 9.8%**)
  7th China Postgraduate BME Innovation and Design Competition (First Prize, Rank: **Top 5.3%**)
- **Province Level** (Second Prize × 2, both embedded related)

Scholarship

- Huoshui Special Scholarship in 2021-2022 (**Top 10 in college's overall performance.**)
- First-class Academic Scholarship in 2021-2022 (Rank: **2 / 115**), Second-class in 2022-2023.
- Postgraduate High-Level Academic Competition Funding Award in 2021-2022 and 2022-2023.
- Third-class professional scholarship in 2019-2020 (Rank: 13 / 68)

Extracurricular Activities

Hainan Fellow Countrymen Association at China University of Geosciences Beijing

President 08/2018 - 06/2020

- Improved new student integration with sports and parties, acknowledged by presidents and alumni.
- Coordinated two intercollegiate events across Beijing, recognized by the Youth League Committee.

Skills

- Language: Chinese (Mandarin and Hainanese, native), English (CET-6, TOEFL in preparation).
- Hardware: STM32, Arduino, ESP-32, Raspberry Pi, PSoC 5LP.
- Software: Keil, Altium Designer, Solidworks, Matlab, VS Code, Adobe (PS, PR, Illustrator).
- Programming: C, C#, C++, Python.

Poster

- **Renxiang Wu**, Guo Dan. Design of an End-Effector Ankle-Foot Rehabilitation Robot with 3 DOF. National Graduate Academic Forum in Life Science & Health 2023.