

Chenyu Gu

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EDUCATION

Southern University of Science and Technology	Aug 2020 - Jun 2024
Intelligent Medical Engineering Bachelor Department of Biomedical Engineering	Shenzhen
GPA: 3.82 /4.00	
KTH Royal Institute of Technology	Sep 2023 - Jan 2024
Bachelor Electrical Engineering and Computer Science	Stockholm
Exchange student	
Imperial College London	Jun 2022 - Aug 2022
Data Science Bachelor School of Data Science	London
Participate in summer online communication and get B- Merit results	

RESEARCH INTERESTS

Wearable Sensors, Motion Capture, Medical Robots

PUBLICATIONS

[1] C. Gu, W. Lin, X. He, L. Zhang, and M. Zhang, "IMU-based motion capture system for rehabilitation applications: A systematic review," *Biomimetic Intelligence and Robotics*, vol. 3, no. 2, p. 100097, 2023, doi: 10.1016/j.birob.2023.100097.

RESEARCH EXPERIENCE

Design and validation of an inertial-based navigation system via direct anterior approach in total hip arthroplasty surgeries Feb 2022 - Present
Shenzhen

Project Leader

- Determine two angles of the implanted prosthesis using IMU inertial sensor in surgery.
- Design the integrated PCB board, signal processing algorithm and visualize in Unity.
- Conduct comprehensive experiments to assess the validity of the system.

*Currently writing a paper: **Design and Validation of an Inertial-based Navigation System via Direct Anterior Approach in Total Hip Arthroplasty Surgeries.***

*Funded by **Shenzhen People's Hospital.** (Grant 100,000 CNY.)*

IMU-UWB fusion based motion capture system Apr 2022 - Present

Project Leader

Shenzhen

- Integrate ultra-wide band (UWB) technology and inertial measurement unit (IMU) to reduce sensor power consumption and improve accuracy.
- Help develop Unity visualization and design the python code for signal transmission.
- Apply deep learning to realize sparse motion capture. (On-going)

*Funded by **national college student innovation and entrepreneurship project** as the project leader. (National level grant 20,000 CNY.)*

Three-dimensional center of mass estimation and rehabilitation application based on IMU and UWB fusion Oct 2022 - Aug 2023
Shenzhen

Project Assistant

Use IMU/UWB Mocap to estimate human center of mass for rehabilitation application.

- Complete the three-dimensional center of gravity real-time tracking hardware platform.
- Utilize computer vision to realize self-calibration of human body segments.

*Funded by **Guangdong Provincial Climbing Plan.** (School level grant 20,000 CNY)*

Review on IMU motion capture system for rehabilitation application Jun 2022 - Oct 2022

Researcher

Shenzhen

- Investigate the current application of IMU inertial motion capture technology in rehabilitation and write a review.

*Published a paper **IMU-based motion capture system for rehabilitation applications: A systematic review.***

PROJECT EXPERIENCE

Design a prototype of a cardiopulmonary resuscitation robot

Apr 2023 - May 2023

Project Leader

Designed a prototype of medical robot for cardiopulmonary resuscitation.

- 3D modeling the drone robot in Solidworks.
- Design robot kinematic and control flow.
- Simulate the kinematic and PID control in Matlab.

Road network visualization of taxi data

Mar 2023 - Apr 2023

Project Assistant

Visualize the data of taxi driver of Shenzhen and analysis the taxi data.

- Clean the original data and extract the origin-destination data.
- Perform visualization of taxi data on the map.
- Analysis the desity of taxi order and give possible urban construction plan.

Word representation in biomedical domain

Jul 2022 - Aug 2022

Project Assistant Imperial College London

- Build deeplearning model for word representation in medical field, using n-gram and skip-gram for modeling and t-SNE for visualization.

Achieve **Merit** in overall assessment.

HONORS & AWARDS

(School level) Outstanding Student Scholarship of Zhicheng College	2021, 2022, 2023
(Provincial level) "Internet Plus" College Students Innovation and Entrepreneurship Competition Bronze prize	2023.08
(School level) "Internet Plus" College Students Innovation and Entrepreneurship Competition First Prize	2022.07
(School level) Excellent Team of "Sycamore Tree" Campus Entrepreneurship Star Competition	2022.05
(National level) RoboMaster 2021 Mecha Master Super Competition First Price	2021.09
(Top 3 student in the major) "Fu Touareg" Fellowship, Department of Biomedical Engineering	2021.10
(Top 4 of the province) First Prize of Scholarship for Freshmen	2020.09

EXTRACURRICULAR ACTIVITIES

South university of science and technology archery team

Oct 2020 - Oct 2021

Members The archery team

Shenzhen

Join the school-level archery team and organize archery training

Student Union of Zhicheng College, Southern University of Science and Technology

Sep 2020 - Jun 2021

Member of the propaganda department The propaganda department of the student union

Shenzhen

Organize various activities, such as the New Year's Eve party, Nanke Voice, etc.

LANGUAGE & SKILLS

- Language: Mandarin (Native), English (TOEFL: 100, CET-6: 577), Japanese (Limited proficiency).
- Programming: Python, Matlab (For data analysis), C/C++ (For embed system developing), Tensorflow (For deeplearning), JAVA.
- Softwares: Solidworks (For 3D modeling), Unity (For game developing), Blender.
- Design and development PCB capabilities.