

Chenyu Gu

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EDUCATION

Georgia Institute of Technology

M. S. in Bioengineering(ECE);

Atlanta, United States

Aug 2024 - now

Southern University of Science and Technology

B. S. in Intelligent Medical Engineering; GPA: 3.82/4.00

Shenzhen, China

Aug 2020 – Jun 2024

KTH Royal Institute of Technology

B. S. in Electrical Engineering and Computer Science; Exchange student

Stockholm, Sweden

Sep 2023 – Jan 2024

Imperial College London

Data Science Bachelor Summer School; Grade: B-merit

London, United Kingdom

Jun 2022 – Aug 2022

RESEARCH INTERESTS

Wearable Technology, Human Movement, Bioelectronics, and Medical Robots.

PUBLICATIONS

- **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.
- **C. Gu*** et al., “A Portable Inertial Navigation System for Total Hip Arthroplasty Targeting Direct Anterior Approach” (Currently under review).

EXPERIENCE

Movement analysis using IMU sensors

Visiting Student in Intelligent Heart Technology Lab (I-HeaL)

Stockholm, Sweden

Oct 2023 – Jan 2024

- Extracting gait parameters and human center of mass to explore the relationship between human movement and cardiovascular function.
- Deploy a Kalman filter for orientation estimation and calibrate the angle and direction of the IMU. Also, develop algorithms to extract gait parameters and COM.

Motion Capture for rehabilitation

Project leader in Brain-robot Rehabilitation Lab

Shenzhen, China

April 2022 – May 2024

- Integrate ultra-wide band (UWB) technology and inertial measurement unit (IMU) to develop a motion capture system to recovery human motion.
- Help develop Unity visualization and design the python code for signal transmission Apply deep learning enabling sparse motion capture.
- Apply the system on healthy subjects for rehabilitation exercise and evaluate the effectiveness of the system.

Navigation system for surgeries

Project leader in Brain-robot Rehabilitation Lab

Shenzhen, China

Feb 2022 – Oct 2023

- Design a surgery navigation system consisting of an on-handle module and an on-body module, equipped with a 9-axis IMU and a gyroscope, respectively.
- Evaluate the effectiveness of the system at both the sensor and system levels.
- Our proposed system has shown effectiveness in meeting the requirements of total hip arthroplasty surgeries via direct anterior approach.

Center of mass estimation and rehabilitation applications

Project Assistant in Brain-robot Rehabilitation Lab

Shenzhen, China

Oct 2022 – Aug 2023

- Use IMU motion capture to estimate human three-dimensional center of mass for rehabilitation application.
- Analysis human center of mass to extract the feature of human motion and perform rehabilitation assessment.

Review on motion Capture for rehabilitation

Researcher in Brain-robot Rehabilitation Lab

Shenzhen, China

Jun 2022 – Oct 2022

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

PROJECTS

Design a prototype of a cardiopulmonary resuscitation robot

Project Leader

Course Project **Grade: A**

Apr 2023 – May 2023

- Designed a prototype of medical robot for cardiopulmonary resuscitation.
- Finish 3D modeling the drone robot in Solidworks and design robot kinematic and control flow.

Road network visualization of taxi data

Project Leader

Course Project **Grade: A**

May 2023 – Apr 2023

- Visualize the data of taxi driver of Shenzhen and analysis the taxi data.
- Finish data washing to clean the original data and extract the origin-destination data and analyze the density of taxi order and give possible urban construction plan.

Word representation in biomedical domain

Project Assistant in Imperial College London

Summer School **Grade: B**

Jul 2022 – Aug 2022

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

AWARDS & ACHIEVEMENTS

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| (School-level) Outstanding Student Scholarship of Zhicheng College | 2021, 2022, 2023 |
| (Provincial-level) "Internet Plus" College Student Innovation and Entrepreneurship Competition | Aug 2023 |
| (School-level) "Internet Plus" College Student Innovation and Entrepreneurship Competition | Jul 2022 |
| (School-level) Excellent Team of "Sycamore Tree" Campus Entrepreneurship Star Competition | May 2022 |
| (National-level) RoboMaster 2021 Mecha Master Super Competition First Prize | Sep 2021 |
| (Top 3 in the major) "Fu Turui" Fellowship, Department of Biomedical Engineering | Oct 2021 |
| (Top 4 of the province) First Prize of Scholarship for Freshmen | Sep 2020 |

EXTRACURRICULAR ACTIVITIES

South university of science and technology archery team

Members of School Archery Team

Oct 2020 – Oct 2021

Shenzhen, China

Join the school-level archery team and organize archery training and competition activities.

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

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

Sep 2020 – Jun 2021

Shenzhen, China

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

LANGUAGES

- **Chinese:** Native speaker
- **English:** Fluent (TOEFL: 100)
- **Japanese and Germany:** Elementary