Chenyu Gu

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Education

Georgia Institute of Technology — Atlanta, United States
M. S. in Bioengineering (ECE); ***GPA: 4.00/4.00*** — *Aug 2024 – Present*
Relevant coursework: *Finite Element Method, Robotics, Digital Control, ML.*

Southern University of Science and Technology — Shenzhen, China
B. S. in Intelligent Medical Engineering; ***GPA: 3.82/4.00*** — *Aug 2020 – Jun 2024*
Achievements: *Excellent Graduation Thesis Award, Outstanding Student Scholarship, First Prize of Scholarship for Freshmen.*
Relevant coursework: *Medical Robotics & Imaging, Circuits, Digital Signal Processing, Neural Engineering and BCI.*

KTH Royal Institute of Technology — Stockholm, Sweden
Exchange student in Electrical Engineering and Computer Science — *Sep 2023 – Jan 2024*
Relevant coursework: *Principles of Wireless Sensor Networks, Social Robotics.*

Imperial College London — London, United Kingdom
Data Science Bachelor Summer School; ***Grade: B-merit*** — *Jun 2022 – Aug 2022*
Relevant coursework: *Deep Learning.*

Skills

- **Laboratory:** FEM analysis, 3D printing, PCB design, Soldering, Oscilloscope, Signal generator, Motion capture system.
- **Programming:** Python (Proficient in data analysis and ML), C (Embedded systems), MATLAB (Data analysis), Rust (Systems design), Java.
- **Software:** Ansys (FEM), SolidWorks (3D modeling), EasyEDA/KiCad (PCB design), Unity (Game interface), Blender.
- **Tools:** Git, Neovim, Docker, Jupyter, VS Code, Adobe PS, Final Cut Pro, Microsoft Office.

Experience

RoboMed Lab — Atlanta, United States
Graduate Research Assistant; ***Skills: CAD Modeling & PCB Design, Robotics Modeling & Control*** — *Oct 2024 – Present*
- Designed a hydraulic tendon-driven guidewire that is non-conductive, MRI safe, and steerable in 3D.
- Modeled static and kinematic properties of the guidewire and conducted experiments to validate the model.

Intelligent Heart Technology Lab (I-HeaL) — Stockholm, Sweden
Visiting Research Assistant; ***Skills: Algorithm Development, Signal Processing*** — *Oct 2023 – Jan 2024*
- Extracted gait parameters and human COM to explore the relationship between movement and cardiovascular functions.
- Deployed a Kalman filter for IMU sensor and developed algorithms for gait and COM extraction.

Department of Orthopedics, First People's Hospital — Shenzhen, China
Research Assistant; ***Skills: Embedded Systems (HW & SW), Clinical Validation*** — *Jun 2023*
- Developed a surgery navigation system using on-handle and on-body modules with a 9-axis IMU and gyroscope.
- Demonstrated effectiveness in total hip arthroplasty surgeries via the direct anterior approach.

Rehabilitation Center, Second People's Hospital — Shenzhen, China
Intern; ***Skills: Clinical Trails, Patient Interaction*** — *Aug 2022*
- Assisted doctors in rehabilitation evaluations and facility setup for patient rehabilitation.
- Acquired familiarity with basic rehabilitation facilities and procedures.

Brain-robot Rehabilitation Lab — Shenzhen, China
Project Leader, Undergraduate Research Assistant — *Feb 2022 – May 2024*
- **Motion Capture for Rehabilitation;** ***Skills: System Development, Deep Learning***
  - Developed a motion capture system using UWB technology and IMU for human motion recovery.
  - Created Unity visualization and Python code for signal transmission. Applied deep learning for sparse motion capture.
  - Tested on healthy subjects for rehabilitation exercises and evaluated effectiveness.
- **Center of Mass Estimation and Rehabilitation Applications;** ***Skills: Data Analysis, Acquisition***
  - Utilized IMU motion capture to estimate 3D human center of mass for rehabilitation purposes.
  - Analyzed the center of mass to extract motion features and perform rehabilitation assessments.
- **Review on Motion Capture for Rehabilitation;** ***Skills: Literature Review***
  - Investigated IMU-based motion capture applications in rehabilitation and authored a comprehensive review.

Publications

- **C. Gu*** et al., "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. (2023 Best Paper Award)
- **C. Gu** et al., "A Portable Inertial Navigation System for Total Hip Arthroplasty Targeting Direct Anterior Approach," in IEEE Transactions on Instrumentation and Measurement, vol. 74, pp. 1-13, 2025, Art no. 4004013, doi: 10.1109/TIM.2025.3548784.

Extracurricular & Misc

- **Language:** English (Proficient), Chinese (Proficient), French (Elementary).
- **Involvement:** Member of the propaganda department of student union, Member of school archery team.