Yiming Zhong

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EDUCATION

Southern University of Science and Technology (SUSTech) Shenzhen, China
*Bachelor of Engineering in **Intelligent Medical Engineering*** *Expected graduation: 06/2026*

- **Cumulative GPA:** 3.79/4.0 | **Weighted Average:** 90.68/100
- **Second Class Scholarship** for Merit Student, 11/2023 & 11/2024
- **Outstanding Volunteer Award** (235.7 hours of volunteer service, Top 0.5%), 11/2023 & 11/2024
- **Selected Coursework:** Machine Learning and its Medical Engineering Applications; Medical Image Processing; Computer Vision; Principles of Medical Imaging System; Biomedical Optics; Big Medical Data.

Nanyang Technological University (NTU) Singapore
Non-degree Exchange Program *08/2025 - 12/2025*

- **Coursework:** Control in Biosystem; Machine Learning and Optimization for Bioengineers.

PUBLICATION

[1] **Yiming Zhong**, Ziyan Wu, Yongshen Zeng, Xiaoyan Song, Qiqiong Wang, Wenjin Wang. **Camera-based Analysis of Motion Coordination Between Infant Left and Right Limbs: A Clinical Study in NICU.** 47th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2025. (Accepted)

[2] Ziyan Wu, **Yiming Zhong**, Chuchu Liao, Xiaoyan Song, Qiqiong Wang, Wenjin Wang. **A Pilot Clinical Study to Understand the Relationship between General Movements and Ultra-Short-Term HRV of Neonates.** IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), 2025. (Accepted)

[3] **Yiming Zhong**, Chuchu Liao, Yilin Guan, Wenjin Wang. **Can Video-Actigraphy Alone be used for Neonatal Sleep Staging? A Clinical Study in NICU.** (In Prep.)

RESEARCH EXPERIENCE

Contactless Healthcare Lab, SUSTech| Camera-based Contactless Health Monitoring Shenzhen, China
Research Assistant, Advisor: Dr. Wenjin Wang

Project: Contactless Smart Infant Sleep Monitoring System *02/2025 - Present*

- Developed a multispectral physiological imaging system for precise, contactless monitoring of infant vital signs, in collaboration with a leading hospital in Wenzhou, aiming to enhance monitoring accuracy from consumer-grade to clinical-grade standards.
- Leveraged ECG and PPG signals to extract and validate infant motion metrics for preliminary sleep analysis.
- Deployed open-source human pose estimation and optical flow algorithms to compute key-point motion features, confirming feasibility of camera-based polysomnography (PSG) for infant sleep staging.
- Conducted camera-based PSG monitoring on infants (target: 100) to establish normative sleep-stage benchmarks.
- Extracted limb movement coordination and intensity features from video data, applying SVM, Random Forest, Gru and Transformer for binary and multi-class sleep-stage classification.

Provincial Project: Multidimensional Video-based Contactless Infant Seizure Monitoring *04/2024 - Present*

- Developed a real-time monitoring and prediction algorithm for infant seizures in collaboration with a leading hospital in Guangzhou, aiming to establish a low-cost, contactless detection system to mitigate resource limitations and inconsistencies in seizure diagnosis quality.
- Preprocessed raw ECG signals to extract heart rate and calculate heart rate variability (HRV).

- Utilized remote photoplethysmography (rPPG) to extract heart rate and HRV from video data for non-invasive physiological monitoring.
- Applied optical flow technique to analyze global and skin-region motion in vEEG videos and deployed human pose estimation tool to detect infant keypoints and compute motion intensity.
- Analyzed limb movement intensity using cross-correlation and Pearson correlation coefficients to integrate motion and physiological signals.
- ***Innovation:*** Introduced a camera-based solution for NICU settings, enabling contactless monitoring of infant motion and physiological metrics with improved precision and efficiency.

Digital Heart Lab (DHlab), NUS | AI Powered Personalized Virtual Heart Model — Singapore

Research Assistant, Advisor: Dr. Lei Li

Project: AI Powered Personalized Torso Reconstruction — *08/2025 - Present*

- Applied a deep learning method to automatically segment torso regions from cardiac magnetic resonance (CMR) images, and integrated multi-view 2D contours to construct subject-specific sparse 3D torso models.
- Generated diverse body shape representations using a Statistical Shape Model (SSM) and trained a Signed Distance Function (SDF) neural network that integrates a PointNet module for feature extraction and a MLP for implicit neural representation (INR).
- Computed subject-specific feature vectors within the learned representation space and used the trained MLP to achieve high-accuracy personalized 3D torso reconstructions from sparse CMR data.
- ***Innovation:*** Introduced INR into human torso modeling, enabling end-to-end, personalized 3D reconstructions from sparse data with improved accuracy and adaptability over traditional methods.

SELECTED PROJECT

SSVEP-based BCI Robotic Car Control System with MATLAB — Shenzhen, China

Team Member, Advisor: Dr. Peng Cheng — *11/2024 - 01/2025*

- Collected EEG signals from occipital regions using gold cup electrodes and a Cyton board (250 Hz).
- Applied Butterworth filters for noise reduction and extracted key EEG components (4–35 Hz).
- Implemented and compared CCA and FFT methods to decode SSVEP frequencies with high accuracy.
- Transmitted motion commands via Bluetooth to demonstrate reliable and precise human-machine interaction.

VOLUNTEER & LEADERSHIP

Community Service Department, Shuren College — Shenzhen, China

Leader — *09/2023 – 09/2024*

- Coordinated 580 volunteers across 11 community programs, collectively contributing 2,850 service hours.
- Organized the 2023 Summer Teaching Program in Lianping county, crafting lesson plans and leading hands-on activities that blended science, sports, and life skills to inspire and empower students.

"Heart-to-Heart" Volunteer Teaching Program in Longchuan County — Longchuan, China

Organizer — *07/2024*

- Designed a program benefiting 102 primary school students, overseeing planning, implementation, and evaluation.
- Drafted activity proposals, developed contingency plans, recruited and trained volunteers, and scheduled logistics.
- Managed daily operations, including logistics coordination, class assignments, volunteer briefings, and student feedback collection.
- Prepared financial documents, drafted research reports, and delivered program outcome presentations.

SKILLS

- **Programming Language:** Matlab, Python, C/C++
- **Language:** Mandarin (native), English (IELTS 7.5)