

ZHIYU SUN

zs2710@columbia.edu | 646-552-5444 | zhiyusun.com

EDUCATION

Columbia University	New York, NY
Master of Science in Biomedical Engineering	Sep 2024 – Dec 2025
Course: Brain Computer Interface, Deep Learning in Biomedical Imaging, 3D UI And Augmented Reality	
Shandong First Medical University	Taian, CN
Bachelor of Engineering in Biomedical Engineering	Sep 2020 – Jun 2024,
Course: Advanced Mathematics, Linear Algebra, Probability Theory, Electrical Engineering, Signal and System	

PROJECTS

Cognitive Task Migration from Python to C# in Unity	New York, NY
Developer	Dec 2024 – Jan 2025
<ul style="list-style-type: none">Enabled cognitive experiments integrating both EEG and eye-tracking data collection with a VR headset.Designed a page manager to control activation and transition between 3 main tasks, ensuring seamless navigation and user experience.Implemented prefabs and containers to optimize object reusability and regulate object lifespans effectively.	
Feature Derivation and Cancer Type Classification Using Leiden Clustering	New York, NY
Developer	Nov 2024 – Dec 2024
<ul style="list-style-type: none">Curated RNA-seq expression profiles from over 10,000 patient samples in The Cancer Genome Atlas.Applied the Leiden clustering algorithm to classify cancer types based on gene expression patterns, achieving over 90% alignment with annotated reference labels.Generated foundational clustering insights that supported the development of feature-rich predictive models for personalized cancer diagnostics.	
Auditory Oddball Paradigm in MATLAB	New York, NY
Developer	Oct 2024 – Nov 2024
<ul style="list-style-type: none">Visualized 16-channel EEG time-series data, capturing participant responses under 2 behavioral conditions.Extracted and analyzed two event-related potentials, identifying a 100 ms latency shift in their occurrence.	
Cognitive Task Design in Python	New York, NY
Developer	Aug 2024 – Oct 2024
<ul style="list-style-type: none">Designed a memory task presenting image stimuli and recording behavioral responses using PsychoPy.Integrated the task and real-time EEG recording into LSL for synchronized data acquisition.	
Computer Vision Animal Classifier Based on TensorFlow	Taian, CN
Developer	Mar 2024 – Apr 2024
<ul style="list-style-type: none">Optimized a TensorFlow CNN model for 22,500 training samples, reducing overfitting and increasing accuracy by 40% per epoch.Developed an interface leveraging Tkinter, enhancing interactivity and ease of use.	
MATLAB Toolbox for Medical Image Transformation	Taian, CN
Developer	Apr 2023 – May 2023
<ul style="list-style-type: none">Developed an interactive window with sliders, providing visual feedback with under 10ms response lag.Integrated multiple transformation techniques, augmenting versatility of medical image processing.	
Wearable Motion Monitoring System Based on EMG	Taian, CN
Research Assistant: tasked with motion detection algorithms using MATLAB	Jun 2022 – Dec 2022
<ul style="list-style-type: none">Implemented an optimized filter for EMG signal processing to minimize distortion.Applied signal-specific thresholds to accurately extract desired motions.	
C-based Command-Line Arcade Game	Taian, CN
Developer	Apr 2022 – May 2022
<ul style="list-style-type: none">Utilized arrays to manage multiple elements and dynamically allocate memory.Employed structured code with dedicated functions for specific tasks.	
Intelligent Diagnosis and Virtual Surgery of Vascular Diseases	Taian, CN
Research Assistant: segmentation of aorta in medical images using Mimics	Apr 2021 – Sep 2021

- Determined greyscale threshold for segmentation despite angiography artifacts, ensuring high-quality imaging.
- Generated high-precision 3D models, reducing teammates' post-processing work by 85%.

EXPERIENCE

Shanghai Microport Medbot (Group) Co., Ltd.

Shanghai, CN

Operations Intern

Jun 2023 – Sep 2023

- Managed 4 exhibitions, analyzing clinical requirements and peer feedback, resulting in 2 enhancement plans.
- Improved inventory management efficiency by 50% by developing and implementing a hierarchical sorting structure based on 5 core parameters.
- Collaborated with team to elevate professional appearance of 10 critical documents through proofreading, improving spelling, grammar, and layout.

World Robot Conference

Shanghai, CN

Volunteer

Aug 2023 – Sep 2023

- Educated 50+ visitors daily on robotic technologies, boosting public awareness.
- Promoted company products to hospital directors, securing 13 key contacts for future collaboration.

School English Morning Reading

Taian, CN

Leader

Oct 2021 – Nov 2021

- Coordinated venues, selected reading materials, and guided freshmen to practice spoken English.

SKILLS

- Programming: Python, MATLAB, C#, C++, C, R, PsychoPy, Simulink, TensorFlow, Pandas
- Software: Unity, Visual Studio Code, GitHub, SolidWorks
- Language: English, Mandarin