ZHIYU SUN

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EDUCATION

Columbia University   New York, NY
Master of Science in Biomedical Engineering   Sep 2024 – Dec 2025
Course: Brain Computer Interface, Digital Signal Processing, Genomic, Cryptography

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

Psychological Task Migration from Python to C# Based on Unity   New York, NY
Developer   Dec 2024 – Jan 2025
- 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.

Classification of Cancer Types Using Leiden Algorithm   New York, NY
Developer   Nov 2024 – Dec 2024
- Curated gene expression datasets from the TCGA project, encompassing over 10,000 patient samples.
- Applied the Leiden algorithm for cancer type classification and visualized results, inferring an accuracy exceeding 90% compared to annotated reference data.

Auditory Oddball Paradigm Based on MATLAB   New York, NY
Developer   Oct 2024 – Nov 2024
- 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.

Limited Memory Task Based on PsychoPy   New York, NY
Developer   Aug 2024 – Oct 2024
- Built degree coordinate system to dynamically arrange user interface for presenting 12 task stimuli.
- Employed structured code with dedicated functions for 3 minor tasks and 4 layout element generators.
- Designed detection algorithm for screen and key, revising input experience with both mouse and keyboard.

Computer Vision Animal Classifier Based on TensorFlow   Taian, CN
Developer   Mar 2024 – Apr 2024
- 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
- 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 Electromyography   Taian, CN
Research Assistant: tasked with motion detection algorithms using MATLAB   Jun 2022 – Dec 2022
- Implemented an optimized filter for electromyography 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
- 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, Unity
- Instrument: Piano, Trumpet