ZIXUAN SONG

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EDUCATION

Washington University in St. Louis; St. Louis, MO — Bachelor, Current   GPA: 3.72/4.00

Majoring in Neuroscience and Math&CS. Expected graduation in spring 2026.

RESEARCH & INTERNSHIP

Data Analysis and Classification of Animals in Complex Settings; St. Louis, MO — 2024-Current

Research Assistant; The Hengen Lab (Part of Washington University in St. Louis)

- Labeled and organized behavioral video data of animals in complex environments; applied pre-trained computer vision models (e.g., DeepLabCut, YOLO) for location tracking
- Developed ML models that classify animal behavior and video transformations for classification improvement
- Presented poster at the NEXTEN conference and developed a webpage for the presentation

Surgery and Neuron Activity Recordings; St. Louis, Missouri — 2024

Researchers; Supervised by *Dr. Mitchell Kundel*

- Used surgical operations on animals and made electrodes for neuron activities
- Analyzed neuron activities and the impact of external variables on neuron activities

T-Spark Program; Beijing, China — 2023

Teaching Assistant; Tencent Youth Technology Learning Center

- Delivered lectures on machine learning algorithms, linear algebra, and quantum computing fundamentals; designed instructional material and assignments
- Facilitated the deployment of quantum algorithms on physical quantum machines.

Research Intern at Tencent Quantum Lab; Shenzhen, China — 2022-2023

Intern; Works: https://github.com/tencent-quantum-lab/tensorcircuit; Collaborated with other lab members

- Researched current machine learning models and translated them into quantum ML models (such as ensemble)
- Debugged code and ported the code for MacOS computers and Metal (Apple Silicon API) support
- Researched error mitigation algorithm of raw physical quantum machines (such as HAMMER)

Synthesis and Evaluation of Melanin-Combine Photosensitizers; Dongguan, China — 2022-2023

Researcher; Tsinglan High School Lab

- Researched melanin-combined photosensitizers and synthesized melanin-combined photosensitizers
- Applied on Chinese herbal medicines and evaluated anti-bacterial effects with analysis of SOSG test
- Used techniques such as DNA sequencing, cell culture growing, PCR, and synthesis of melanin-combined photosensitizers

PUBLICATIONS

Supported in building models, analysis of data, translation, and co-authoring a paper: "Information Preference and Information Supply Efficiency Evaluation before, during, and after an Earthquake: Evidence from Songyuan, China." *International Journal of Environmental Research and Public Health.* **2021**, 18(24):13070. https://doi.org/10.3390/ijerph182413070

SKILLS

Programming: Python, Java, R, Machine Learning (algorithms including CNN, ensemble, kernel methods; frameworks including TensorFlow and TensorCircuit)

Laboratory Techniques: PCR, Gel electrophoresis, DNA sequencing, NMR, Cell/bacterial culture, Neuron activity recordings

Relevant Coursework: Biology 404 Laboratory of Neurophysiology; Chem 261 & 262 Organic Chemistry; Math 3211/SDS 493/SDS 495 Probabilities