SEN ZHANG

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EDUCATION

Johns Hopkins University – Baltimore, MD Jan 2024 – May 2025

- *Master of Science in Engineering in Computer Science*

University of South Carolina – Columbia, SC Jan 2020 – Dec 2023

- *Bachelor of Science in Computer Science*

SKILLS

- **Programming Languages:** Java, Python, C, C++
- **Web Development:** HTML, CSS, React, Django
- **Databases:** MySQL
- **AI & Machine Learning:** Machine Learning, Deep Learning, PyTorch
- **Tools & Platforms:** Git, Linux/Unix
- **Key Courses:** Computer Architecture, Data Structure, Algorithms, Operating System, Big Data Analytics.

PROFESSIONAL EXPERIENCE

Dwight Bergles Lab, *Researcher Assistant* – Baltimore, MD Jun 2024 – Present

- **Developed a machine-learning analysis tool** for processing mouse brain imaging data, focusing on measuring nodal widths and distances across various brain regions.
- **Developed** an automated detection algorithm of nodes and nodal gaps with a **target of over 99% accuracy** to enable precise assessment of changes associated with motor learning.
- **Utilized Vision Transformer models and YOLOv8 (**state-of-the-art technologies) to advance medical image classification and detection, enhancing the robustness of data analysis and interpretation.

University of South Carolina's iMSEL Lab, *Researcher Assistant* – Columbia, SC Jul 2022 – Dec 2023

- **Achieved over 90% accuracy** in real-time detection of railway spikes and clips by implementing dual-model training, exceeding Federal Railroad Administration standards.
- **Enhanced real-time detection frequency** from 50 to 80 frames per second and improved image sharpness by 25% through advanced techniques like histogram equalization, compared with state-of-the-art models (YOLO, Faster R-CNN).
- **Developed the lab's website**, increasing user engagement by 150% through the integration of dynamic graphs and data visualization tools, while ensuring full compatibility across all devices.

Henan Expressway design Co., LTD, *Digital Information intern* – Henan, China May 2023 – Aug 2023

- **Developed comprehensive databases** and processed data for over 500 kilometers of highway, enhancing decision-making for operational and maintenance strategies.
- **Created a scoring system** that improved the accuracy of highway condition assessments by 20%, aiding in better prioritization and decision-making of maintenance tasks.
- **Optimized rescue team placement**, resulting in a 15% improvement in response time and efficiency through data-driven analysis of traffic patterns and highway conditions.

PUBLICATIONS

- "*Brain-wide mapping of oligodendrocyte organization and oligodendrogenesis across the murine lifespan*" is under review as fifth author in Cell
- J. Guo, **S. Zhang**, N. Amiri, L. Yu, and Y. Wang"*An Adversarial Transformer for Anomalous Wave Patten Detection*", Neural Networks, https://doi.org/10.1016/j.neunet.2025.107153.
- J. Guo, **S. Zhang**, Y. Qian, and Y. Wang"*A NanoDet Model with Adaptively Weighted Loss for Real-time Railroad Inspection*", https://doi.org/10.36001/phmconf.2023.v15i1.3498.
- J. Guo, **S. Zhang**, Y. Qian, and Y. Wang, "*An Adaptively Weighted Loss-enabled Lightweight Teacher-Student Model for Real-time Railroad Inspection on Edge Devices*", *Neural Computing and Applications*