Ziqing Wang

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https://alexandrewang915.github.io/myresume/home/

EDUCATION

Sun Yat-sen University Sep 2018 - Jun 2023

Bachelor of Engineering in Microelectronics Zhuhai

- GPA: 3.7/4.0, Major GPA: 3.9/4.0, Ranking: 9/79
- Main courses: digital circuit, analog circuit, python machine learning, advanced programming, microcomputer principle, Matlab

RESEARCH EXPERIENCE

Bug Injection in Cloud System May 2022 - Present

Research Intern

- Joined Purdue University's summer research team to study bug injection algorithm.
- Converted the buggy source code into Abstract syntax tree (AST), and use GNN algorithm to implement data representation on AST.
- Finetuned the CodeBERT(MLM) to generate buggy source code that can be used to evaluate the performance of the famous automated programme repair tools in cloud system.

Efficient Spiking Transformer Enabled by Partial Information Jul 2022 - Oct 2022

Team Leader

- Implemented self-attention mechanism in Spiking Neural Network (SNNs) to leverage both self-attention capability and biological properties of SNNs.
- Inspired by the missing information mechanisms in the nervous system, I proposed an efficient spiking Transformer (EST) framework enabled by partial information.
- Our EST can outperform the state-of-the-art SNN model in terms of accuracy and the number of time steps on both Cifar-10/100 and ImageNet datasets. In particular, the proposed EST model achieves 78.48% top-1 accuracy on the ImageNet dataset with only 16 time steps.
- As the first author, *Efficient Spiking Transformer Enabled by Partial Information* is submitted to Science Adavance.

High-Performance Spiking Transformer for Event Datasets Jul 2022 - Present

Main Member

- In-depth study of event data tasks, including classification on DVS datasets and tracking on event datasets.
- Proposed a novel direct training method for Spiking Neural Networks, enabling a significant increase in accuracy.
- Used Spiking Transformer as backbone, SwinTrack as baseline to deal with event video, achieving high performance while maintaining high frame rates.
- As the co-first author, *High-Performance Spiking Transformer for Event Datasets* is under preparation.

Multi-density DBSCAN Clustering Jan 2022 - Mar 2022

Team Leader

- Improved the existing DBSCAN parameter adaptive algorithm so that it can adapt two parameters at the same time and speed up this adaptive process.
- Proposed a new multi-density DBSCAN (AMD-DBSCAN) algorithm, which adapts multiple pairs of parameters for multi-density datasets, so that the algorithm can achieve excellent performance. The experimental results show that our AMD-DBSCAN improves accuracy by 24.7% on average over the state-of-the-art algorithm on Multi-density datasets of extremely variable density, while having no performance loss in Single-density scenarios.
- As the first author, *AMD-DBSCAN: An Adaptive Multi-density DBSCAN for datasets of extremely variable density* is published in DSAA2022 (CCF-C).

Brain Inspired LSTM Nov 2021 - Mar 2022

Research Intern

- Joined the HKUST brain-inspired research team to study SNN-related algorithms.
- In-depth study of the LSTM and SNN algorithms, focusing on individual LIF neurons to simulate LSTM neurons.
- Proposed the BioLSTM model, which leverages the high performance of LSTM and the biological plausibility of SNN.

Self-supervised Object Detection Sep 2020 - Sep 2021

Main Member

- Dived into the self-supervised object detection project.
- Independently designed a new data agumentation method which is suitable for extracting features for object detection tasks.
- Proposed an novel DBSCAN clustering algorithm based on k-dimensional tree, which makes it possible to cluster billions of feature data by dividing small partitions.

PUBLICATIONS

Ziqing Wang, et al., *AMD-DBSCAN: An Adaptive Multi-density DBSCAN for datasets of extremely variable density*, IEEE International Conference on Data Science and Advanced Analytics (DSAA)

Ziqing Wang*, Yuetong Fang*, et al., *Efficient Spiking Transformer Enabled by Partial Information* (submitted to Science Adavance)

Yuetong Fang*, **Ziqing Wang***, et al., *High-Performance Spiking Transformer for Event Datasets* (under preparation)

INTERNSHIP EXPERIENCE

Allwinner Technology Jul 2021 - Sep 2021

Software Develop Engineer Intern

- Realized a network streaming media system that can adjust video encoder parameters in real time by effectively combining multimedia software modules.
- Developed an automated software testing system to realize automated adjustable parameter testing of video encoding.
- Built a network transmission video decoding system using the udp,rtp, and rtcp protocols to meet the company's decoding time requirements.

Guangzhou Shengkai Haojin Investment Management Co., Ltd Jul 2020 - Sep 2021

Data Analysis Intern

- Skillfully used python to carry out data cleaning and abnormal value processing on millions of project data and completed visual analysis.
- Used python script to perform rapid data analysis and processing of nearly one million pieces of data from over 2000 projects.
- Optimized the company's ERP system UI interface and interactive logic using javascript.

HONORS & AWARDS

Sun Yat-sen University Scholarship for Academic Excellence Student (2020 & 2021 & 2022)

Second prize in the 2021 Mathematical Contest In Modeling (MCM)

Second prize in the 2021 MarthorCup Mathematical Modeling Competition

SKILLS & LANGUAGES

- **Skills:** Python, Java, Verilog, Javasript
- **Languages:** TOEFL (104), GRE (327), French (B2)