WEI Lan

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EDUCATION BACKGROUND

University of Science and Technology of China **09/2021-Present**

- Major: Master of Engineering in Computer Science and Technology
- Advisor: Prof. Nikolaos M. Freris
- Core Modules: Combinatorial Mathematics, Graph Theory, Optimization, Algorithm Design and Analysis, Advanced Artificial Intelligence, Advanced Software Engineering, Advanced Quantum Computing

Xiamen University **09/2017-06/2021**

- Major: Bachelor of Engineering in Computer Science and Technology
- GPA: 3.86/4.0 (Top 5%, Ranking: 3/61)
- Thesis: "Skin Lesion Segmentation: A Boundary-aware Transformer-based Solution"
- Core Modules: C++, MATLAB, UNIX, Data Structure, Numerical Methods, Digital Logic, Operating System, Computer Architecture, Compiler Principle, Computer Networks, Software Architecture and Development Environment

RESEARCH EXPERIENCE

Patch Pruning for Vision Transformers, AIoT Lab, USTC, China **03/2023-08/2023**

- Lightweight Vision Transformers: Unifying Interpretability and Dynamism for Model Compression.
- Proposed a novel patch pruning method for Vision Transformers that combines dynamic evaluation of patch importance (at inference time) and model interpretability (offline calculation).
- Achieved superior performance in terms of both compression and accuracy over other methods.

Physics-informed GNN for Fluid Simulation, AIoT Lab, USTC, China **09/2022-03/2023**

- Published a paper - Multi-scale Graph Neural Network for Physics-informed Fluid Simulation in Computer Graphics International (CGI'23) conference as the first author.
- Addressed the issue of over-smoothing in graph neural network for learning-based fluid simulation.
- Modeled fluid flow via graphs at different scales in succinct consideration of scalability and physical constraints.
- Proposed a novel multi-scale GNN for physics-informed fluid simulation (MSG) by introducing a non-parametric sampling and aggregation method to combine features from graphs with different resolutions.
- Achieved the SOTA in both one-step and long trajectory fluid simulation with the lowest model inference time.

Transformer-based Medical Image Segmentation, Xiamen Manteia Data Technology Co., Ltd, China **09/2020-03/2021**

- Published a paper - Boundary-aware Transformers for Skin Lesion Segmentation in MICCAI'21 conference as the first author.
- Addressed the challenging of segmenting skin lesion melanoma area with ambiguous boundaries.
- Proposed a novel network architecture that integrate a new boundary-wise attention gate (BAG) into transformer architecture to enable the whole network to not only effectively model global long-range dependencies via transformers but also, simultaneously, capture more local details by making full use of boundary-wise prior knowledge.
- Achieved the SOTA in two famous public datasets.

Volume Prediction of Ellipsoidal Ham, CACV Lab, FCU, Taiwan **11/2018-09/2020**

- Published an article-A Statistical Approach in Enhancing the Volume Prediction of Ellipsoidal Ham in Journal of Food Engineering (Impact Factor: 6.203) as the second author.
- Applied Mask-RCNN to process images of the research object, analyzed the value of major axis, minor axis, extreme points and object orientation of ellipsoidal ham with MATLAB boxplot and got the position of irregular images.
- Worked out the actual volume of the object with its pixel value using the conversion rate after adjusting irregular images
- Applied quadratic polynomial and power function build to conversion rate model of the results.
- Acquired four parameters of the model using LOOO.

INDUSTRY EXPERIENCE

Research Project, Huawei Technology Co., Ltd **01/06/2022-Present**

- Participate in designing the graph compression algorithm for large scales graphs.
- Implement it in C++.

Tencent Game 2022 Engine & Graphics Research Project **01/09/2022-30/12/2022**

- This is a three-month research program to optimize the rendering pipeline in Unreal Engine 4 for mobile device rendering.
- Implemented a dynamic weather system, including atmospheric scattering, volumetric clouds, precipitation, and interactive water surfaces, using deferred rendering techniques.
- Rendering the scene smoothly at 30 frames per second on Android devices with Snapdragon 835 chips, while keeping the GPU load below 70%.

2020 Next Exceptional X Talent Program **01/07/2020-29/08/2020**

- The program is a 60-day intensive summer boot camp with a collection of Googler coaching sessions and online training.
- Attended training sessions in computer algorithm, programming, software development, leadership training.

Financial Data Analyst, Huawei Technology Co., Ltd., Chengdu Research Institute **07/2019-10/2019**

- Conducted visual analysis of financial data using MATLAB and Power BI, and built dynamic mathematical model.
- Calculated the proportion of total annual expense in overall budget, compared monthly and quarterly expense with the budget, did parallel comparison of spending for various modules, made prediction about future cost and gave warnings based on performance of the current year.
- Hosted Commendation Conference of Suppliers for the first half of 2019.

TEACHING

- **COMP6224P: Optimization Theory**
  Teaching Assistant, USTC, Spring 2023
- **COMP6209P: Queuing Theory and Its Application in Computer Networks**
  Teaching Assistant, USTC, Fall 2022, Fall 2023

HONORS AND AWARDS

- First-class Scholarship, University of Science and Technology of China (2020-2021 and 2021-2022)
- National First Prize in the 11th China Adolescents Science and Technology Innovation Contest
- First-class Scholarship, Xiamen University (3%, 2019-2020)
- Second-class Scholarship, Xiamen University (10%, 2018-2019)
- The Highest score in Malaysia, Simon Marais Asia-Pacific Mathematics Competition (2018.10)

ADDITIONAL INFORMATION

Language Skills: Mandarin (native), English (fluent)
Hobbies: photography, film, hiking and playing badminton