# Qifeng Zhou

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## Education

**University of Texas at Arlington** *Sept. 2022 – Now*
*Ph.D. student in Computer Science (GPA 4.0/4.0)*

- Supervisor: Dr. Junzhou Huang
- **Relevant Coursework:** Computer Vision, Machine Learning, Design and Analysis of Algorithms, Distributed Computing, Parallel Processing

**Zhejiang University** *Sept. 2018 – June 2022*
*BS in Chu Kochen Honors College*

- **Relevant Coursework:** C Programming, Python Programming, Object-Oriented Programming (C++), Data Structure

## Publications

**PathM3: A Multimodal Multi-Task Multiple Instance Learning Framework for Whole Slide Image Classification and Captioning** MICCAI 2024

***Qifeng Zhou***, Wenliang Zhong, Yuzhi Guo,Michael Xiao, Hehuan Ma, Junzhou Huang

**MFMF: Multiple Foundation Model Fusion Networks for Whole Slide Image Classification** ACM BCB 2024

Thao M. Dang, Yuzhi Guo, Hehuan Ma, ***Qifeng Zhou***, Saiyang Na, Jean Gao, Junzhou Huang

## Research Projects

**Representation learning with Large Language Model (LLM)** *Sept. 2024 - Now*

- Adapted multimodal large language models (LLaVA-Next-8B) for pathology image multimodal representation learning.
- Utilized prompts within LLMs to effectively bridge modality gaps between different input types, enhancing performance without requiring fine-tuning.

**Muiltmodal Learning for Gigapixel Images Classification** *Apr. 2024 - July 2024*

- Developed a framework integrating image, cell, and text-level features using foundational models to enhance Gigapixel Image classification, improving **AUC score to 98.15**.
- Introduced a novel **three-step cross-attention module** that effectively combines multi-level information for improved feature extraction.
- Designed an abnormality-aware module based on **auto-encoder** to identify abnormal features for instance selection.
- Published a research paper to ACM BCB 2024

**Large Visual-Language Model for Multi-instance Learning (MIL)** *Nov. 2023 - Feb. 2024*

- Developed a multimodal, multi-task MIL framework for Gigapixel image classification and captioning, improving **5% accuracy and 0.2 BLEU scores** with SOTA method.
- Developed a **query-based transformer** to align whole slide images (WSIs) with captions.
- Introduced a **MIL Visual Prompt Generator (VPG)** to incorporate enriched visual representations into **Large Language Models (FLAN-T5)** by taking advantage of instance correlation.
- Published a research paper to MICCAI 2024

## Technologies

**Programming Languages:** Python, C++, C
**Machine Learning Tools:** Pytorch, Tensorflow, Keras, Jax, Sklearn, Hugging Face, Git, Shell, DDP, Slurm