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Tian Liu

Objective

Ph.D. student in Computer Vision looking for Summer 2025 internship in machine learning research scientist / engineer.

Education

Ph.D., Computer Science, Texas A&M University, GPA: 4.0 2023-now
M.S., Computer Science, Texas A&M University, GPA: 4.0 2020-2023
M.S., Petroleum Engineering, Texas A&M University, GPA: 3.9 2016-2019
B.S., Petroleum Engineering, China University of Petroleum Beijing, GPA: 3.8 2011-2015

Internship/Work Experience

System Software Intern*,* Storage Arcus and Primera Stack Team, HPE, Houston, Texas Summer 2021, Summer 2022
- Developed efficient tools (C) for searching structs and mapping admin space using page table walking
- Improved usage and efficiency (15× faster) of multiple Python extensions for faster debugging (C, Python)

Field Engineer, Measurements While Drilling Services, Schlumberger, Houston, Texas 2019-2020
- Operated downhole tools to measure wellbore directions and interpret formation Gamma data for well placement

Research Interest

- **Computer vision (focus):** adapt *Vision-Language Models* to downstream tasks in zero-shot and few-shot setup
- **Cyber-physical systems**: computer vision for precision irrigation, voice assistant for emergency medical services
- **Interdisciplinary research**: applying machine learning models to solve healthcare and geoscience problems

Research Experience

Graduate Research Assistant, Computer Vision Lab, TAMU, by Prof. Shu Kong 2023-now
- Analyzed failures of SOTA multimodal systems (e.g. GPT-4V); exposed imbalanced concept distribution in pretraining data; proposed REtrieval-Augmented Learning (REAL) for improving VLMs' zero-shot recognition
- Explored retrieval-augmented learning for few-shot recognition using VLMs; proposed Stage-Wise Augmented fineTuning (SWAT) to mitigate the imbalanced distribution and domain gaps issues, outperforming SOTA by >10%

Graduate Research Assistant, Embedded & Networked Sensor System Lab, TAMU, by Prof. Radu Stoleru 2020-2023
- Developed precision irrigation system on Raspberry Pi 4 by estimating hyperlocal rainfall from doorbell cameras
- Developed end-to-end mobile voice assistant system to assist emergency medical services during disaster response

Graduate Research Assistant, Information & Operation Management Dept, TAMU, by Prof. Esmaeil Keyvan 2023-now
- Developed safe reinforcement learning algorithm for personalized medical prescription; tested on 12,501 patients
- Developed Weibull and Cox-PH survival models for estimating CVD Risk using All-of-Us dataset (23,795) patients

Publications

1. **Tian Liu,** Huixin Zhang, Shubham Parashar, Shu Kong. "Few-Shot Recognition via Stage-Wise Augmented Finetuning". Submitted to NeurIPS 2024 (under review).
2. Shubham Parashar*, Zhiqiu Lin*, **Tian Liu*** (*co-first authors), et al. "The Neglected Tails in Vision Language Models". CVPR 2024.
3. Liuyi Jin, **Tian Liu**, et al. "EMSAssist: An End-to-End Mobile Voice Assistant at the Edge for Emergency Medical Services". MobiSys 2023.
4. **Tian Liu,** Liuyi Jin, et al. "ERIC: Estimating Rainfall with Commodity Doorbell Camera for Precision Residential Irrigation". Submitted to BuildSys 2024 (under review).
5. **Tian Liu**, Ruxin Zhang. "A Machine Learning-based Hybrid Model for Fracture Parameterization and Distribution Prediction in Unconventional Reservoirs". Computers and Geotechnics, 2024.
6. **Tian Liu,** Hongquan Chen, et al. "Integration of time-lapse seismic data using the onset time approach: The impact of seismic survey frequency". Journal of Petroleum Science and Engineering", 2020.
7. Junyu Cao, Esmaeil Keyvanshokooh, **Tian Liu**. "Safe Reinforcement Learning with Contextual Information: Theory and Applications". SSRN, 2023.

Selected Awards

- TAMU CSE Department Travel Grant, 2024
- TAMU CSE Department Graduate Teaching Assistant Excellence Award (1 each year), 2024
- 1st place of SPE Student Paper Contest in TAMU, 1st place in Gulf Coast Region, 3rd place in Global, 2018
- National Scholarship (highest honor in China), 2012