Zhexiao Xiong

314-319-2407 | x.zhexiao@wustl.edu | Linkedin | Github | Webpage

Education

Washington University in St.Louis — St.Louis, MO, USA
Ph.D. in Computer Science Advisor: Prof.Nathan Jacobs — *Aug. 2022 – May 2027(expected)*

Tianjin University — Tianjin, China
B.Eng. in Electrical and Information Engineering — *Sep. 2018 – June 2022*

Research Experience

Graduate Research Assistant — August. 2022 – Present
Washington University in St.Louis — *Advisor: Prof. Nathan Jacobs*

- Research on image synthesis, diffusion models, especially on outdoor scenes.
- Research on stereo matching, depth estimation, and domain adaptation.

Computer Vision Research Intern — Febuary. 2022 – May. 2022
OPPO Research Institute, Beijing, China — *Mentor: Dr.Bo Xu*

- Researched on image matting, propose a framework to use human pose as guidance to achieve whole body matting.

Undergraduate Research Assistant — Jan. 2021 – Jan. 2022
Institute of Automation, Chinese Academy of Sciences, Beijing, China — *Advisor: Prof. Jinqiao Wang*

- Researched on model compression and network pruning, especially the application on Vision Transformer.

Publications

Zhexiao Xiong, Feng Qiao, Yu Zhang, Nathan Jacobs. **StereoFlowGAN: Co-training for Stereo and Flow with Unsupervised Domain Adaptation**, British Machine Vision Conference (BMVC), 2023.

Nanfei Jiang, **Zhexiao Xiong**, Hui Tian, Xiaojie Du, Xu Zhao, Chaoyang Zhao*, Jinqiao Wang. **PruneFaceDet: Pruning Lightweight Face Detection Network by Sparsity Training**, Cognitive Computation and Systems, 2021.

Zhexiao Xiong, Xin Wen, Xu Zhao*, Haiyun Guo, Chaoyang Zhao, Jinqiao Wang. **Two-level Iteration Method for Multi-task Learning with Task-isolated Labels**, International Conference on Computer Vision and Pattern Analysis, 2021.

Research Interests

I am broadly interested in computer vision and multi-modal learning, especially in autonomous driving and remote sensing scenes, including crossview & novel view synthesis, birds-eye-view perception, and fundamental computer vision problems such as stereo matching, optical flow estimation, depth estimation and domain adaptation.

Research Projects

Near panorama synthesis based on Diffusion Model — 03/2023 – present
Washington University in St.Louis — *Advisor: Prof. Nathan Jacobs*

- Utilize geospatial information to guide the diffusion model in near panoramas synthesis task.

Co-training for Stereo and Flow with Unsupervised Domain Adaptation — 01/2023 – 05/2023
Washington University in St.Louis — *Advisor: Prof. Nathan Jacobs*

- Built an end-to-end joint learning framework to combine unsupervised domain translation with optical flow estimation and stereo matching in the absence of real ground truth optical flow and disparity,
- Applied novel constraints on the cycle domain translation process to achieve cross-domain translation with global and local consistency.
- Employed task-specific multi-scale feature warping loss and iterative feature warping loss during the training phase to regulate the training process in both spatial and temporal dimensions.

Vision Transformer pruning — 03/2022 – 08/2022
Institute of Automation, Chinese Academy of Sciences — *Advisor: Prof. Jinqiao Wang and Dr. Xu Zhao*

- Based on L_0 regularization, we proposed a unified framework that jointly applied masks on MSA and MLP layers, which reduce the number of parameters of the model without breaking the original structure of the model.
- Transfered our proposed structured pruning framework to downstream tasks and get the state-of-the-art performance, which does not require consuming computation resources on training on upstream datasets.

Mobile AI 2021 Real-Time Camera Scene Detection Challenge | *Mobile AI Workshop @ CVPR 2021*

- Used two-stage fine-tuning method to improve the accuracy and the model pruning method to improve the model's efficiency.
- Used the float32-to-int8 quantization and model pruning methods to optimize our model.
- Submitted the final TFLite model which can be deployed on mobile platforms and achieved Fast Camera Scene Detection via light-weight network designing and model pruning.

Technical Skills

Programming: Python, C/C++, Java, Matlab
Deep Learning Frameworks: Pytorch, Tensorflow
Languages: English, Chinese