Di Chang

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Education

University of Southern California — Los Angeles, California, USA
Doctor of Philosophy in Computer Science — *Aug. 2022 – May. 2027(Anticipated)*

Technical University of Munich — Munich, Bavaria, Germany
Bachelor of Science in Informatics — *Sep. 2021 – Jul. 2022*

Dalian University of Technology — Dalian, Liaoning, China
Bachelor of Engineering in Electronic Information Engineering — *Sep.2018 – Jun. 2021*

Publications

LibreFace: An Open-Source Toolkit for Deep Facial Expression Analysis — WACV(Application Track) 2024
***Di Chang**, Yufeng Yin, Zongjian Li, Minh Tran, Mohammad Soleymani*

- We present LibreFace, an open-source and comprehensive toolkit for accurate and real-time facial expression analysis with both CPU-only and GPU-acceleration versions. LibreFace eliminates the gap between cutting-edge research and an easy and free-to-use non-commercial toolbox.
- We propose to adaptively pre-train the vision encoders with various face datasets and then distillate them to a lightweight ResNet-18 model in a feature-wise matching manner.
- We conduct extensive experiments of pre-training and distillation to demonstrate that our proposed pipeline achieves comparable results to state-of-the-art works while maintaining real-time efficiency.
- LibreFace system supports cross-platform running, and the code is open-sourced in C# (model inference and checkpoints) and Python (model training, inference, and checkpoints).

FG-Net: Facial Action Unit Detection with Generalizable Pyramidal Features — WACV 2024
*Yufeng Yin, **Di Chang**, Guoxian Song, Shen Sang, Tiancheng Zhi, Jing Liu, Linjie Luo, Mohammad Soleymani*

- We propose FG-Net, a data-efficient method for generalizable facial action unit detection. We are the first to utilize StyleGAN model features for AU detection.
- Extensive experiments on the widely-used DISFA and BP4D datasets show that FG-Net has a strong generalization ability for heatmap-based AU detection achieving superior cross-domain performance and maintaining competitive within-domain performance compared to the state-of-the-art.

RC-MVSNet: Unsupervised Multi-View Stereo with Neural Rendering — ECCV 2022
***Di Chang**, Aljaž Božič, Tong Zhang, Qingsong Yan, Yingcong Chen, Sabine Süsstrunk, Matthias Nießner*

- We propose to use NeRF-like rendering to solve ambiguity of correspondences among views in unsupervised multi view stereo, caused by non-Lambertian surfaces and occlusion.
- We achieve state-of-the-art accuracy among all unsupervised MVS methods until now.

Generalized Binary Search Network for Highly-Efficient Multi-View Stereo — CVPR 2022
*Zhenxing Mi, **Di Chang**, Dan Xu*

- We formulate multi view stereo as a binary search problem, and accordingly design three mechanisms to respectively handle classification errors, deal with out-of-range samples and decrease the training memory.
- We achieve state-of-the-art accuracy, and second least memory consumption among all learning-based MVS methods until now.

Experience

Research Scientist Intern (Part-Time) — Aug. 2023 – Nov. 2023
Intelligent Creation Team, Tiktok — *Mentor: Dr. Yichun Shi, Dr. Xiao Yang, Dr. Hongyi Xu, Dr. Guoxian Song*

- Researching on Diffusion Models, Motion Transfer

Research Scientist Intern — May. 2023 – Aug. 2023
Intelligent Creation Team, Tiktok — *Mentor: Dr. Yichun Shi, Dr. Xiao Yang, Dr. Hongyi Xu, Dr. Guoxian Song*

- Researching on Diffusion Models, Image editing

Summer@EPFL Program — Jun. 2022 – Aug. 2022
Funded by IVRL, École Polytechnique Fédérale de Lausanne — *Mentor: Professor Sabine Süsstrunk and Dr. Tong Zhang*

- Researching on 3D Vision, specifically Video Synthesis with Diffusion Models

Guided Research — Mar. 2021 – Jun. 2022
3D AI Group, TUM — *Mentor: Professor Angela Dai*

- Researched on 3D Vision, specifically Single-View Category-level NeRF

Guided Research Sep. 2021 – Mar. 2022
Visual Computing and 3D AI Group, TUM *Mentor: Professor Matthias Niessner and M.Sc Aljaž Božič*

- Researched on 3D Vision, specifically Unsupervised Multi-View Geometry

Undergraduate Research Intern Mar. 2021 – Sep. 2021
Multimedia Lab, The Hong Kong University of Science and Technology *Mentor: Professor Dan Xu*

- Researched on 3D Vision, specifically Multi-View Stereo

Academic Service

ECCV 2022 Conference Reviewer
NeurIPS 2022 Conference Reviewer

Teaching

CSCI 103L Introduction to Programming USC
Teaching Assistant *2022 Fall*

Selected Courses

3D Scanning and Spatial Learning(TUM) **Adcanved Computer Vision(USC)**
Multimodal Probabilistic Learning of Human Communication(USC)
Advanced Analysis of Algorithms(USC)

Skills

Programming Languages: Python(Preferred and proficient), MATLAB,C/C++,Html
Frameworks: PyTorch, Keras, mmdetection