Mingfei Chen

+65 85393929 | lasiafly@uw.edu

EDUCATION

Huazhong University of Science and Technology Sep 2016 - Jun 2020
Computer Science and Technology Bachelor Wuhan, China

- GPA: 3.96 / 4.00
- Honors & Awards:
  - Huazhong University of Science and Technology Undergraduate Excellent Student (Top 1% in 35000)
  - Huazhong University of Science and Technology Merit Student Scholarship

University of Washington, Seattle Sep 2021 - Jun 2023
Electrical and Computer Engineering Master Seattle

RESEARCH EXPERIENCE

National University of Singapore & Sea AI Lab Jun 2021 - Present
Advisor: Shuicheng Yan, Jiashi Feng Singapore

Project: Controllable High-Fidelity 3d Human Modeling (High-fidelity 3D Rendering)

- Developed NeRF-based controllable high-fidelity modeling algorithm for 3d humans, using 2D images under several views.
- Proposed one effective and efficient model to render different persons, with high generalization ability. Improved the mesh rendering accuracy and the RGB fidelity.
- Collected and processed a large-scale dataset for pretraining, and explored online self-supervised fine-tuning strategies on the real-life dataset, under 3 cameras with an angle of 120 degrees to each other.

Sensetime & University of Washington, Seattle Nov 2020 - Jun 2021
Advisor: Jenq-Neng Hwang Beijing, China

Project: Online Multi-object Tracking (MOT)

- Proposed a novel online MOT framework that allowed the detection and association process to aggregate features according to their different requirements respectively.
- Designed a reliable track association module that predicted the motion and representative appearance embedding for each track, and then jointly performed the location and appearance matching based on them.
- The new method improves the association effectiveness and also keeps competitive detection accuracy, reaches SOTA performance on MOT17 as an online MOT tracker.
- The paper will be submitted to AAAI2022.

Sensetime & Beihang University Jul 2020 - Nov 2020
Advisor: Si Liu Beijing, China

Project: Human-object Interaction (HOI)

- Formulated HOI detection as a set prediction problem as the primary researcher. The new formulation breaks the instance-centric and location limitations of the existing methods.
- Proposed a novel one-stage HOI framework with transformer to adaptively aggregate the most suitable features. Designed an instance-aware attention module to introduce the instance information into the interaction branch.
- Without introducing any extra features, our method achieves 31% relative improvement over the second-best one-stage method on the HICO-DET dataset especially.
- The paper has been accepted to CVPR2021.

University at Buffalo-SUNY & Chinese University of Hong Kong, Shenzhen Jul 2019 - Nov 2019
Advisor: Chang Wen Chen, Junsong Yuan Shenzhen, China

Project: Cross-modal Video Retrieval (Vision Language)

- Addressed the natural language video retrieval efficiency and effectiveness problem as the primary researcher.
- Devised a temporal anchor-free structure that performed retrieval directly on each temporal location within the target region. Built a top-down pyramid structure to make use of diverse temporal receptive fields, and a dilated convolutional module to integrate vision-language features more comprehensively.
- The new method reduces retrieval time by a factor of 5 and outperforms previous work by 10% on retrieval accuracy.
- Outstanding undergraduate graduation thesis.

PUBLICATIONS

- [1] **Mingfei Chen***, Yue Liao*, Si Liu, Zhiyuan Chen, Fei Wang, Chen Qian. "Reformulating HOI Detection as Adaptive Set Prediction." Accepted to CVPR 2021.

INTERNSHIP EXPERIENCE

SenseTime Jul 2020 - Present
Research Intern, Sensetime Research Beijing, China

- Conducted research on visual relation recognition, such as Human-object Interaction and Multi-object Tracking.
- Applied the proposed method in research to the real-life application scenario (e.g., dangerous action recognition in the intelligent car) and further optimized the model based on the real-life data.

ByteDance Sep 2019 - Apr 2020
Research Intern, Computer Vision Group Shenzhen, China

- Reconstructed the hand pose detection network with a lightweight backbone. Finetuned and validated the new model based on millions of real-life user data, ensuring the high run speed while maintaining the comparatively robust detection precision.
- Improved detection and segmentation performance for humans, especially under distant multi-person scenarios.

Sea Jul 2021 - Present
Research Intern, AI Lab Singapore

• Developed controllable high-fidelity modeling algorithm for 3d humans based on NeRF, using 2D human images under several views. Improved the effectiveness, efficiency and generalization ability of the algorithm.

MISCELLANEOUS

- **Skills:** Python , PyTorch , C , C++ , Java , Verilog , SQL