Mingfei Chen

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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

RESEARCH EXPERIENCE

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

Project: Online Multi-object Tracking (MOT)

- Addressed the challenges of the online multi-object tracking problem as the primary researcher.
- 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 has been submitted to ICCV2021.

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.

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.
- Used foreground/background segmentation and human detection to discover all the human bodies in the video.
- Applied guided filter, detection to improve the segmentation performance, especially under distant multi-person scenarios.

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.
- [2] **Mingfei Chen**, Yue Liao, Si Liu, Fei Wang, Chen Qian, Jenq-Neng Hwang. "TR-MOT: Multi-Object Tracking by Reference." Submitted to ICCV 2021.

MISCELLANEOUS

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