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CHENHONGYI YANG

EDUCATION

University of Edinburgh *02/2021 - 02/2024*
Ph.D. in Engineering
Boston University *09/2018 - 06/2020*
M.S. in Computer Science
University of Science and Technology of China *09/2014 - 06/2018*
B.E. in Computer Science and Technology

PUBLICATIONS

- **C. Yang**, M. Ochal, A. Storkey, E. Crowley "Prediction-Guided Distillation for Dense Object Detection", ECCV 2022
- **C. Yang**, Li, Huang, E. Crowley "Contrastive Object-level Pre-training with Spatial Noise Curriculum Learning", Arxiv 2111.13651
- **C. Yang**, Z. Huang, N. Wang "QueryDet: Cascade Sparse Query for Small Object Detection", CVPR 2022 (Oral)
- **C. Yang***, Z. Chen*, Q. Li, F. Zhao, Z. Zha, F. Wu "Disentangle Your Dense Object Detector", ACM MM 2021 (Oral)
- **C. Yang**, V. Ablavsky, K. Wang, Q. Feng, M. Betke "Learning to Separate: Detecting Heavily-Occluded Objects in Urban Scenes", ECCV 2020
- K. Wang, **C. Yang,** M. Betke "Consistency Regularization with High-dimensional Non-adversarial Source-guided Perturbation for Unsupervised Domain Adaptation in Segmentation", AAAI 2021

RESEARCH PROJECTS

Prediction Guided Knowledge Distillation of Dense Object Detectors *12/2021 - 03/2022*
University of Edinburgh– Supervisor: Dr. Elliot J Crowley
• Propose PGD, a new knowledge distillation framework for dense object detectors. PGD distill every object in key predictive regions and use an adaptive weighting scheme for weighting distillation loss in such regions. (Arxiv Preprint)

Object-level Self-supervised Pre-training Through Curriculum Learning *06/2021 - 11/2021*
University of Edinburgh– Supervisor: Dr. Elliot J Crowley, Collaborated with Horizon AI
• CCOP is an object-level self-supervised learning approach. It uses elective search to find rough object regions and use them to build an inter-image object-level contrastive loss and an intra-image object-level discrimination loss so that the model can learn detailed regional features. Moreover, a curriculum learning mechanism to allows the model to consistently acquire a useful learning signal. (Arxiv Preprint)

Studies about Disentanglement in Dense Object Detectors *01/2021 - 04/2021*
University of Edinburgh– Collaborated with USTC
• Investigated the conjunction problem in the state-of-the-art dense object detectors. Based on our finds, we propose Disentangled Dense Object Detector (DDOD) where simple and effective disentanglement mechanisms are designed and integrated the dense object detectors. (ACM MM 2021 Oral)

Fast Small Object Detection on High-resolution Features *04/2020 - 12/2020*
TuSimple– Supervisor: Dr. Naiyan Wang
• Proposed a novel query mechanism to accelerate the inference speed of feature-pyramid based object detectors. it first predicts the coarse locations of small objects on low-resolution features and then computes the accurate detection results using high-resolution features sparsely guided by those coarse positions. (CVPR 2022 Oral)

Non-adversarial Domain Adaptation for Semantic Segmentation *03/2020 - 09/2020*
Boston University – Supervisor: Prof. Margrit Betke
• Proposed a non-adversarial domain adaptation method for semantic segmentation. It aligns the two domains through the continuous parameterization of them, which is achieved through a bidirectional learning paradigm. The proposed approach creates SOTA performance on two commonly used domain adaptation datasets. (AAAI 2021)

Detecting Occluded Objects in Urban Scenes *06/2019 - 11/2019*
Boston University – Supervisors: Prof. Margrit Betke & Dr. Vitaly Ablavsky
• Proposed a new NMS algorithm, which is based on a novel bounding box level embedding mechanism, to promote the detection recall in heavy occlusion scenes. An improved R-FCN with self-attention is also designed to align semantic features and geometric features of each bounding box. (ECCV 2020)

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WORK EXPERIENCE

Research Intern in Perception Algorithm *05/2020 – 02/2021*

TuSimple – *Supervisor: Dr. Naiyan Wang*

• Proposed QueryDet that incorporates a novel Cascade Sparse Query mechanism to achieve fast inference of feature-pyramid based object detectors when using high-resolution features. (CVPR 2022)

• Integrated QueryDet and some newly proposed detection techniques into the SimpleDet detection toolkit.

SKILLS

Python, C, C++, Java, HTML/CSS/Javascript, PyTorch, Tensorflow, MXNet, Latex