Shiyi Lan

PERSONAL INFORMATION

Tel: (240) 701-2979
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RESEARCH INTERESTS

(1) Object Detection (2) 3D Object Detection (3) Instance Segmentation (4) Correspondence Learning (5) Unsupervised/Weakly-Supervsided Learning

PROGRAMMING SKILLS

C/C++, Python, JavaScript, HTML/CSS, Golang, Java, Scala, Cuda, PyTorch, Tensorflow, Caffe, MXNet, Django, Flask, Tornado, AngularJS, ReactJS, KoaJS, MongoDB, PostgreSQL

WORK EXPERIENCE

Amazon Go Seattle, WA
Applied Research Intern 05/24/2021 - 08/27/2021
(Mentor: Leonid Pishchulin ; Manager: Bhara Singh)
- Fundamental research in Object Detection
- Developing a high-precision object detection architecture.

NVIDIA Research Santa Clara, CA
Research Intern, Machine Learning Group 01/27/2020 - 12/20/2020
(Mentor: Zhiding Yu; Manager: Anima Anandkumar)
- Fundamental research in deep learning and computer vision
- Consultation and technology transfer to NVIDIA products
- Developing a general object detection architecture.

Wormpex AI Research Bellevue, WA
Research Intern (Mentor: Zhou Ren; Manager: Gang Hua) 05/25/19 - 8/19/19
- Intern Project: Real-time deep object detector
- Proposed an anchor-free real-time deep object detector that bridges center-keypoint-based object detectors and edge-keypoint-based object detectors.
- State-of-the-art performance on MS COCO and Pascal VOC.
- One paper accepted to CVPR 2020

Bytedance AI Lab Beijing, China
Research Intern, AI Lab (Mentor: Yuning Jiang), 05/06/2018 - 08/18/2018
- Intern Project: Deep Recommendation Warm-up System
- Introduced deep learning into Recommendation system
- Designed and implemented the offline training and inference architecture

Megvii Technology Beijing, China
Research Intern, (Mentor: Yuning Jiang, Gang Yu) 07/04/2016 - 05/01/2018
- Intern Project: Proposing Instance Segmentation Candidates by Deep Feature Pyramid Network
- Proposed the neck module that uses feature pyramid to generate multi-scale deep feature map for instance segmentation proposals.
- One paper accepted to CVPR2017

EDUCATION

University of Maryland, College Park College Park, MD
Ph.D. Computer Science (Advisor: Prof. Larry S. Davis) 2018-Present

Fudan University Shanghai, China
B.S. Computer Science and Technology 2014 - 2018

HONORS & AWARDS

- 2017 1st place in MS COCO Object Detection, 2rd place in MS COCO Instance Segmentation
- 2015 The ICPC International Collegiate Programming Contest (ACM/ICPC) 2015 Shenyang Regional Contest, Silver Medal Award (Rank 18/˜300).
- 2013 National Olympiad in Informatics of China, Bronze Medals(Rank 122/˜400).

SELECTED PUBLICATIONS

1. **Shiyi Lan**, Zhiding Yu, Christopher Choy, Subhashree Radhakrishnan, Guilin Liu, Yuke Zhu, Larry Davis, Animashree Anandkumar, "DISCO-BOX: Real-Time Detection, Instance Segmentation, and Semantic Correspondence From Bounding Box Supervision", International Conference on Computer Vision (**ICCV**), 2021.

2. Tianrui Guan*, Jun Wang*, **Shiyi Lan**†, Rohan Chandra, Zuxuan Wu, Larry Davis, Dinesh Manocha, "M3DETR: Multi-representation, Multi-scale, Mutual-relation 3D Object Detection with Transformers", Winter Conference on Applications of Computer Vision (**WACV**), 2022. † means the corresponding author.

3. Jun Wang*, **Shiyi Lan***, Mingfei Gao, Larry S. Davis, "InfoFocus: 3D Object Detection for Autonomous Driving with Dynamic Information Modeling." *European Conf. on Comp Vision (**ECCV**)*, 2020. This paper addresses the modeling issue in 3D Object Detection caused by uniform data distribution using POI Pooling and attention modules

4. **Shiyi Lan**, Zhou Ren, Yi Wu, Larry S Davis, Gang Hua, "SaccadeNet: A Fast and Accurate Object Detector" *IEEE Conf. on Comp Vision and Pattern Recognition (**CVPR**)*, 2020. This paper proposed a fast and accurate keypoint based object detectors, which achieves the state-of-the-art performance on MS COCO dataset.

5. **Shiyi Lan**, Ruichi Yu, Gang Yu, Larry S Davis, "Modeling Local Geometric Structure of 3D Point Clouds using Geo-CNN", *IEEE Conf. on Comp Vision and Pattern Recognition (**CVPR**)*, 2019. This paper proposed a convolution-like operator for PointNet, which preserves local geometric relationship among points using decomposition and aggregation module.

6. *Hexiang Hu, ***Shiyi Lan**, Yuning Jiang, Zhimin Cao, Fei Sha. "FastMask: Segment Multi-scale Object Candidates in One Shot" *IEEE Conf. on Comp Vision and Pattern Recognition (**CVPR**)*, 2017, Spotlight. It enables multi-scale object segmentation to be executed in one-shot.

Previous Projects

- Individual Project: Neural Style Transfer iPhone Camera 2017
  A camera application on iOS that can apply neural style filter to photos. A SqueezeNet pretrained on ImageNet and MXNet ported to iOS are used in this project. I solved many compatibility issues in the project and my pull request to these issues for MXNet is accepted by MXNet Official Development Group.
- Individual Project: Online HTML5 video player with floating comments 2017 A Chrome extension which can wrap HTML5 and shows the real-time floating comments. KoaJS, ReactJS are used in this project.
- Alchemy: A deep learning toolkits based on Caffe and OpenCV, which supports data pre-processing such as cropping, resizing, interpolation for detection and segmentation.
- Fudan Unversity StudentNet ChannelV: 2015 - 2016
  A Youtube-like video website for students to watch, search, upload and share videos. AngularJS and Django are used in the project including a uploader supporting resuming from breakpoint, a danmaku(rolling comments) system, a video searcher and many good-looking pages.

Academic Services

- Conference Reviewer: AAAI20, CVPR21, ICCV21
- Journal Reviewer: IJCV20

Courses & Teaching

Ph.D. Courses Taken:

CMSC726: Machine Learning
CMSC723: Computational Linguistics I
CMSC818N: Robotics
CMSC818: Distributed and Cloud-Based Storage Systems
CMSC740: Advanced Computer Graphics
CMSC751: Parallel Algorithms

Teaching Assistant:

CMSC351 Algorithms (Fall 2020)
CMSC426 Computer Vision (Spring 2020)
CMSC420 Data Structure (2018 Fall - 2019 Spring)