

Zhuoran Yu

PH.D RESEARCHER · UW-MADISON

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Computer Vision · Deep Learning · Label-Efficient Learning

Education

University of Wisconsin-Madison

PH.D IN COMPUTER SCIENCE

- Advisor: Yong Jae Lee

Madison, WI

Sep 2021 - Present

Georgia Institute of Technology

MASTER OF SCIENCE IN COMPUTER SCIENCE

- GPA: 4.0/4.0

Atlanta, GA

Aug 2018 - Aug 2020

University of Waterloo

B.MATH IN COMPUTER SCIENCE AND APPLIED MATH(DOUBLE MAJOR)

- Graduate With Distinction & Dean's Honor List
- Arthur Beaumont Memorial Scholarship

Waterloo, Canada

Jan. 2014 - June 2018

Research Interests

Learning with Minimal Supervision

{semi, self, }-supervised learning for fundamental computer vision tasks

Learning with imperfect data

Learning with noisy labels, long-tail learning

Efficient Deep Learning

Improving performance of on-device models

Publication

Denoising and Selecting Pseudo-Heatmaps for Semi-Supervised Human Pose Estimation

ZHUORAN YU*, MANCHEN WANG*, YANBEI CHEN, PAOLO FAVARO, DAVIDE MODOLO (* EQUAL CONTRIBUTION)

Winter Conference on Applications of Computer Vision (WACV), Waikoloa, Hawaii, 2024

InPL: Pseudo-labeling the Inliers First for Imbalanced Semi-supervised Learning

ZHUORAN YU, YIN LI, YONG JAE LEE

International Conference on Learning Representations (ICLR), Kigali Rwanda, 2023

Group R-CNN for Weakly Semi-supervised Object Detection with Points

SHILONG ZHANG*, ZHUORAN YU*, LIYANG LIU*, XINJIANG WANG, AOJUN ZHOU, KAI CHEN (* EQUAL CONTRIBUTION)

Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), New Orleans, 2022

Scale-Equalizing Pyramid Convolution for Object Detection

XINJIANG WANG*, SHILONG ZHANG*, ZHUORAN YU, LITONG FENG, WEI ZHANG (* EQUAL CONTRIBUTION)

Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Virtual, 2020

Past Projects

[1] Semi-Supervised Learning for 2D Human Pose Estimation

AWS AI Rekognition

INTERNSHIP RESEARCH

May. 2022 - Aug. 2022

- Proposed two key mechanism for heatmap-based human pose estimators under SSL scenario: Pseudo-label Augment and Cross-model Label Selection
- Pseudo-Label Augment: combining weak and strong augmentations through affine transformations in pseudo-label generation stage
- Cross-model Label Selection: using uncertainty estimation to select pseudo-labels from multiple students for better quality of pseudo-labels

[2] Semi-Supervised Object Detection

Georgia Tech

MASTER RESEARCH

Aug. 2020 - May. 2020

- Proposed a novel consistency-based approach that enforces consistency between different scales of features
- Combined soft and hard pseudo-labels to densify gradients
- Advanced the performance of Faster R-CNN with 1% labeled data by 3 mAP over prior-arts

[3] Making Neural Networks Executable at Multiple Resolutions

SenseTime Research

INTERNSHIP RESEARCH

May 2019 - Nov 2019

- Propose a multi-resolution training strategy to tackle the accuracy drop from training-testing resolution discrepancy
- Propose scale-specific BN to deal with the running statistics discrepancy between different resolutions

[4] SenseKitchen: A Real-World Object Detection System for Food Safety Guards

SenseTime Research

INDUSTRY RESEARCH

July 2019 - Dec 2019

- Analyze computation overheads of object detectors and reduce the parameters of computation-intensive parts
- Achieve 1% higher recall with 5x faster inference speed over previously released models

Experience

AWS AI Rekognition

Seattle, WA

APPLIED SCIENTIST INTERN

May 2022 - Aug 2022

- Semi-supervised learning for 2D human pose estimation
- Proposed Pseudo-label Augment and Cross-model Pseudo-label selection: achieved 4+% absolute AP improvement over prior art with 1K labeled human instances
- Submitted to CVPR 2023 submission

Georgia Tech

Atlanta, GA

GRADUATE RESEARCH, MENTOR: ZSOLT KIRA

Aug 2020 - July 2021

- Semi-Supervised Object Detection: a multi-scale consistency approach
- Self-Supervised Learning aids RL agent(starcraft environment)

Research Intern

Shenzhen, China

SENSETIME RESEARCH, MENTOR: XINJIANG WANG AND KAI CHEN

May 2019 - Dec. 2019

- Efficient Deep Learning to reduce the latency of deep neural networks
- Object Detection on both industrial production and academic research

Skills

Languages Python, Java, C/C++, Matlab

Frameworks Pytorch, TensorFlow, Numpy, Pandas, Scikit-Learn

Teaching Assistantship

UNIVERSITY OF WISCONSIN-MADISON

Fall 2021 **CS 354 Machine Organization and Programming**

Madison, WI

GEORGIA INSTITUTE OF TECHNOLOGY

Spring
2020-2021 **CS 7643 Deep Learning**

Atlanta, GA

Spring
2019 **CS 7641 Machine Learning**

Atlanta, GA

Honors & Awards

UNIVERSITY OF WISCONSIN-MADISON

2021 **First-Year Graduate Scholarship**

Madison, WI

UNIVERSITY OF WATERLOO

2018 **Arthur Beaumont Memorial Scholarship**

Waterloo, Canada

2014-18 **Dean's Honor List** multiple times

Waterloo, Canada