

Likun Cai

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RESEARCH INTERESTS

- Machine learning
- Computer vision
- Information theory

EDUCATION

University of Toronto, Canada Sep. 2024 - Present
Ph.D. student, Electrical & Computer Engineering
- Advisor: Prof. Ashish Khisti.

Fudan University, China Sep. 2020 - Oct. 2022
Ph.D. student (voluntary withdrawal), Computer Science,
- Research on 2D object detection and unsupervised semantic segmentation.

ShanghaiTech University, China Sep. 2017 - Jul. 2020
Master of Science, Computer Science, GPA: 3.57/4.0
- Research on machine learning and information theory with Prof. Ning Cai.

Xidian University, China Sep. 2013 - Jul. 2017
Bachelor of Engineering, Communication Engineering, GPA: 3.6/4.0

RESEARCH EXPERIENCE

Rednote Nov. 2023 - Sep. 2024
Research Intern with Ziheng Zhang
- Research on large-scale vision-language pre-training with improved loss functions.

ShanghaiTech University Mar. 2023 - Aug. 2023
Research Assistant with Prof. Hao Wang
- Investigated bi-level optimization and its applications in self-supervised learning.

Amazon AI Lab Dec. 2020 - Jul. 2022
Applied Scientist Intern with Yi Zhu and Mu Li
- Constructed a new large-scale benchmark called BigDetection for general 2D object detection pre-training.
- Investigated masked image modeling, language-guided open vocabulary 2D object detection methods, and pixel-level information clustering for unsupervised semantic segmentation.

Tencent GYLab Apr. 2020 - Aug. 2020
Research Intern with Gang Yu
- Investigated generative makeup transfer models with 3D information.
- Contributed to makeup transfer application on mobile devices by pre-processing face dataset and training tailored style-GAN.

PUBLICATIONS

Yijie Zhou, **Likun Cai**, Xianhui Cheng, Qiming Zhang, Xiangyang Xue, Wenchao Ding, and Jian Pu. "OpenAnnotate2: Multi-modal Auto-annotating for Autonomous Driving." *Accepted in IEEE Transactions on Intelligent Vehicles*. 2024.

Yijie Zhou, **Likun Cai**, Xianhui Cheng, Wenchao Ding, Xiangyang Xue, and Zhongxue Gan. “OpenAnnotate3D: Open-Vocabulary Auto-Labeling System for Multi-modal Data.” *International Conference on Robotics and Automation*. 2024.
[paper] [code]

Likun Cai, Zhi Zhang, Yi Zhu, Li Zhang, Mu Li, and Xiangyang Xue. “BigDetection: A Large-scale Benchmark for Improved Object Detector Pre-training.” *CVPR Workshop on Vision Datasets Understanding*. 2022.
[paper] [code]

Likun Cai, Yanjie Chen, Ning Cai, Wei Cheng, and Hao Wang. “Utilizing Amari-Alpha Divergence to Stabilize the Training of Generative Adversarial Networks.” *Entropy*. 2020.
[paper] [code]

Chen, Yanjie, **Likun Cai**, Wei Cheng, and Hao Wang. “Super-Resolution Coding Defense Against Adversarial Examples.” *International Conference on Multimedia Retrieval*. 2020.
[paper]

**ACADEMIC
SERVICES**

Reviewer

The 2nd CVPR Workshop on Vision Datasets Understanding, 2023
The 3rd CVPR Workshop on Vision Datasets Understanding, 2024

**TEACHING
EXPERIENCE**

ShanghaiTech University

Teaching Assistant in Digital Communication
Teaching Assistant in Information Science and Technology

Fall 2019
Spring 2019

SKILLS

Programming: Python, PyTorch, TensorFlow, Matlab.
Languages: Chinese, English: IELTS 7.0