Yongming Rao

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Education

Department of Automation, Tsinghua University
Beijing, China
2018-present

PhD student in Computer Vision

Advisor: Prof. Jiwen Lu

Department of Electronic Engineering, Tsinghua University
Beijing, China
2014-2018

B.E. in Electronic Engineering

PBC School of Finance, Tsinghua University
Beijing, China
2015-2018

Minor in Finance

Publications

* indicates equal contribution

Peer-Reviewed Conference Publications

[1] **Yongming Rao***, Wenliang Zhao*, Guangyi Chen, Yansong Tang, Zheng Zhu, Jie Zhou, Jiwen Lu
DenseCLIP: Language-Guided Dense Prediction with Context-Aware Prompting
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022

[2] Xumin Yu*, Lulu Tang*, **Yongming Rao***, Tiejun Huang, Jie Zhou, Jiwen Lu
Point-BERT: Pre-training 3D Point Cloud Transformers with Masked Point Modeling
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022

[3] Jinglin Xu*, **Yongming Rao***, Xumin Yu, Guangyi Chen, Jie Zhou, Jiwen Lu
FineDiving: A Fine-grained Dataset for Procedure-aware Action Quality Assessment
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022, **Oral Presentation**

[4] Ziyi Wang,**Yongming Rao**, Xumin Yu, Jie Zhou, Jiwen Lu
SemAffiNet: Semantic-Affine Transformation for Point Cloud Segmentation
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022

[5] Tianpei Gu, Guangyi Chen, Junlong Li, Chunze Lin,**Yongming Rao**, Jie Zhou, Jiwen Lu
Stochastic Trajectory Prediction via Motion Indeterminacy Diffusion
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022

[6] Xiuwei Xu, Yifan Wang, Yu Zheng, **Yongming Rao**, Jiwen Lu, Jie Zhou
Back to Reality: Weakly-supervised 3D Object Detection with Shape-guided Label Enhancement
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022

[7] **Yongming Rao**, Wenliang Zhao, Zheng Zhu , Jiwen Lu , Jie Zhou
Global Filter Networks for Image Classification
Thirty-fifth Conference on Neural Information Processing Systems (**NeurIPS**), 2021

[8] **Yongming Rao**, Wenliang Zhao, Benlin Liu, Jiwen Lu, and Jie Zhou, Cho-Jui Hsieh
DynamicViT: Efficient Vision Transformers with Dynamic Token Sparsification
Thirty-fifth Conference on Neural Information Processing Systems (**NeurIPS**), 2021

[9] Xumin Yu*, **Yongming Rao***, Ziyi Wang, Zuyan Liu, Jiwen Lu , Jie Zhou
PoinTr: Diverse Point Cloud Completion with Geometry-Aware Transformers
IEEE International Conference on Computer Vision (**ICCV**), 2021, **Oral Presentation**

[10] Yi Wei , Shaohui Liu, **Yongming Rao**, Wang Zhao, Jiwen Lu , Jie Zhou
NerfingMVS: Guided Optimization of Neural Radiance Fields for Indoor Multi-view Stereo
IEEE International Conference on Computer Vision (**ICCV**), 2021, **Oral Presentation**

[11] **Yongming Rao***, Benlin Liu*, Yi Wei , Jiwen Lu , Cho-Jui Hsieh , Jie Zhou
RandomRooms: Unsupervised Pre-training from Synthetic Shapes and Randomized Layouts for 3D Object Detection
IEEE International Conference on Computer Vision (**ICCV**), 2021

[12] **Yongming Rao***, Guangyi Chen*, Jiwen Lu , Jie Zhou
Counterfactual Attention Learning for Fine-Grained Visual Categorization and Re-identification
IEEE International Conference on Computer Vision (**ICCV**), 2021

[13] Wenliang Zhao*, **Yongming Rao***, Ziyi Wang, Jiwen Lu , Jie Zhou
Towards Interpretable Deep Metric Learning with Structural Matching
IEEE International Conference on Computer Vision (**ICCV**), 2021

[14] Xumin Yu*,**Yongming Rao***, Wenliang Zhao, Jiwen Lu , Jie Zhou
Group-aware Contrastive Regression for Action Quality Assessment
IEEE International Conference on Computer Vision (**ICCV**), 2021

[15] Yi Wei*, Ziyi Wang*, **Yongming Rao***, Jiwen Lu , Jie Zhou
PV-RAFT: Point-Voxel Correlation Fields for Scene Flow Estimation of Point Clouds
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021

[16] Benlin Liu*, **Yongming Rao***, Jiwen Lu , Jie Zhou , Cho-Jui Hsieh
Multi-Proxy Wasserstein Classifier for Image Classification
35th AAAI Conference on Artificial Intelligence (**AAAI**), 2021

[17] Guangyi Chen*, **Yongming Rao***, Jiwen Lu, and Jie Zhou
Temporal Coherence or Temporal Motion: Which is More Critical for Video-based Person Re-identification?
16th European Conference on Computer Vision (**ECCV**), 2020

[18] Benlin Liu, **Yongming Rao**, Jiwen Lu, and Jie Zhou, Cho-Jui Hsieh
MetaDistiller: Network Self-Boosting via Meta-Learned Top-Down Distillation
16th European Conference on Computer Vision (**ECCV**), 2020

[19] **Yongming Rao**, Jiwen Lu, and Jie Zhou
Global-Local Bidirectional Reasoning for Unsupervised Representation Learning of 3D Point Clouds
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020

[20] Cheng Ma, **Yongming Rao**, Yean Cheng, Ce Chen, Jiwen Lu, and Jie Zhou
Structure-Preserving Super Resolution with Gradient Guidance
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020

[21] Cheng Ma, Zhengyu Jiang, **Yongming Rao**, Jiwen Lu, and Jie Zhou
Deep Face Super-Resolution with Iterative Collaboration between Attentive Recovery and Landmark Estimation
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020

[22] **Yongming Rao**, Jiwen Lu, and Jie Zhou
Spherical Fractal Convolution Neural Networks for Point Cloud Recognition
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019

[23] Yansong Tang, Dajun Ding, **Yongming Rao**, Yu Zheng, Danyang Zhang, Lili Zhao, Jiwen Lu, and Jie Zhou
COIN: A Large-scale Dataset for Comprehensive Instruction Video Analysis
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019

[24] **Yongming Rao**, Dahua Lin, Jiwen Lu, and Jie Zhou
Learning Globally Optimized Object Detector via Policy Gradient
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2018, **Spotlight Presentation**

[25] Ji Lin*, **Yongming Rao***, Jiwen Lu, and Jie Zhou
Runtime Neural Pruning
The Thirty-first Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2017

[26] **Yongming Rao**, Ji Lin, Jiwen Lu, and Jie Zhou
Learning Discriminative Aggregation Network for Video-Based Face Recognition
IEEE International Conference on Computer Vision (**ICCV**), 2017, **Spotlight Presentation**

[27] **Yongming Rao**, Jiwen Lu, and Jie Zhou
Attention-aware Deep Reinforcement Learning for Video Face Recognition
IEEE International Conference on Computer Vision (**ICCV**), 2017

[28] Bilong Shen, Ying Zhao, Guoliang Li, Weimin Zheng, Yue Qin, Bo Yuan, and **Yongming Rao**
V-tree: Efficient KNN Search on Moving Objects with Road-Network Constraints
IEEE 33rd International Conference on Data Engineering (**ICDE**), 2017

Peer-Reviewed Journal Publications

[29] **Yongming Rao**, Jiwen Lu, and Jie Zhou
PointGLR: Unsupervised Structural Representation Learning of 3D Point Clouds
IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**, *IF: 16.389*), 2022

[30] Cheng Ma, **Yongming Rao**, Jiwen Lu, and Jie Zhou
Structure-Preserving Image Super-Resolution
IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**, *IF: 16.389*), 2021

[31] **Yongming Rao**, Jiwen Lu, and Jie Zhou
Learning Discriminative Aggregation Network for Video-based Face Recognition and Person Re-identification
International Journal of Computer Vision (**IJCV**, *IF: 7.410*), 2019

[32] **Yongming Rao**, Jiwen Lu, Ji Lin, and Jie Zhou
Runtime Network Routing for Efficient Image Classification
IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**, *IF: 16.389*), 2019

Talks

Deep Reinforcement Learning for Computer Vision
CVPR'2019 Tutorial on Deep Reinforcement Learning for Computer Vision *June 2019*

Spherical Fractal Convolution Neural Networks for Point Cloud Recognition
Invited Presentation at 2019 Beijing University Academic Forum on Artificial Intelligence *March 2019*

Learning Globally Optimized Object Detector via Policy Gradient
CVPR'2018 Spotlight Presentation *June 2018*

Runtime Neural Pruning
Invited Presentation at the 15th China Workshop on Machine Learning and Applications (MLA'2017) *Nov 2017*

Learning Discriminative Aggregation Network for Video-Based Face Recognition
ICCV'2017 Spotlight Presentation *Oct 2017*

Honors and Awards

- **1st place in the MVP Point Cloud Completion Challenge (ICCV 2021 Workshop)** *2021*
- **Baidu Top 100 Chinese Rising Stars in AI** *2021*
- CVPR 2021 Outstanding Reviewer *2021*
- ECCV 2020 Outstanding Reviewer *2020*
- 2nd place in Semi-Supervised Recognition Challenge at FGVC7 (CVPR 2020 Workshop) *2020*
- **2019 CCF-CV Academic Emerging Award** *2019*
- **Chinese National Scholarship** *2019*
- ICME 2019 Best Reviewers Award *2019*
- NeurIPS 2019 Top 50% High-Scoring Reviewer *2019*
- 1st prize in Beijing University Academic Forum on Artificial Intelligence *2019*
- 1st place in Momenta Lane Detection Challenge *2018*
- 2017 Sensetime Undergraduate Scholarship *2017*
- 1st place in 17th Electronic Design Contest of Tsinghua University *2016*
- Huawei Innovation Prize in 2016 Tsinghua Challenge Cup *2016*
- EMC Innovation Prize in 2016 Tsinghua Challenge Cup *2016*

Academic Services

Co-Organizer

- Tutorial on Deep Reinforcement Learning for Computer Vision at CVPR 2019.

Conference Senior PC Member

- International Joint Conference on Artificial Intelligence (IJCAI), 2021

Conference Reviewer / PC Member

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2018-2022
- International Conference on Computer Vision (ICML), 2019, 2021

- European Conference on Computer Vision (ECCV), 2020, 2022
- International Conference on Machine Learning (ICML), 2019-2022
- Conference on Neural Information Processing Systems (NeurIPS), 2019-2022
- International Conference on Learning Representations (ICLR), 2021, 2022
- SIGGRAPH Asia 2022
- IEEE Winter Conference on Applications of Computer Vision (WACV), 2020-2022
- IEEE International Conference on Multimedia and Expo (ICME), 2019-2022

Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)
- International Journal of Computer Vision (IJCV)
- IEEE Transactions on Neural Networks and Learning Systems (T-NNLS)
- IEEE Transactions on Image Processing (T-IP)
- IEEE Transactions on Multimedia (T-MM)
- Pattern Recognition (PR)
- Transactions on Machine Learning Research (TMLR)