TAOJIANNAN YANG

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EDUCATION

University of Central Florida (UCF) *Aug. 2021 - Aug. 2023*
Ph.D. in Computer Science
Advisor: Dr. Chen Chen

University of North Carolina at Charlotte (UNCC) *Jan. 2019 - Aug. 2021*
Ph.D. in Electrical and Computer Engineering
Advisor: Dr. Chen Chen

University of Science and Technology of China (USTC) *Sep. 2013 - Jun. 2017*
Bachelor of Science in Electronic Information Engineering

RESEARCH INTEREST

Efficient Deep Learning: Multimodal generative models, foundation model adaptation, efficient neural networks, adaptive neural networks, self-supervised learning.
Applications: Video understanding, object detection and segmentation, pose estimation.

WORK EXPERIENCE

Applied Scientist, Amazon Web Services (AWS) *Aug. 2023 - Present*

- Developing AutoML toolboxes to help customers train and deploy state-of-the-art machine learning models with minimum coding.
- Doing fundamental research in multimodal large language models and diffusion models.

Applied Scientist Intern, Amazon Web Services (AWS) *May. 2022 - Dec. 2022*
Advisor: Dr. Yi Zhu, Dr. Yusheng Xie, Dr. Mu Li

- Worked on a fundamental research project of adapting foundation image models for efficient video understanding with minimal training.
- Achieved competitive performance with state-of-the-art video models on multiple video benchmarks while using only 9% tunable model parameters.
- The work has been accepted to the top machine learning conference ICLR. 90+ citations in 1 year.

Research Intern, ByteDance *May. 2021 - Oct. 2021*
Advisor: Dr. Linjie Yang, Dr. Xiaojie Jin

- Thoroughly analyzed the limitations of existing training-free neural architecture search metrics.
- Proposed a new neural architecture search method which overcomes the drawbacks of previous works and achieved better performance on multiple benchmarks using lower search cost.
- The work has been accepted to the top computer vision conference WACV and a patent has been filed.

Research Assistant, UCF *Aug. 2021 - Aug. 2023*
Advisor: Dr. Chen Chen

- Completed multiple research projects including adaptive neural networks, improved deep representation learning, video understanding, and a new action recognition benchmark.
- Works have been accepted to top conferences and journals such as ECCV, NeurIPS, TPAMI, etc.
- Mentored 2 Master students and 4 junior PhD students in conducting research projects. Works have been accepted to top conferences such as CVPR and ICCV.

PUBLICATIONS

(* indicates equal contribution. Google Scholar Citations: 1628.)
https://scholar.google.com/citations?user=Z_--q5UAAAAJ&hl=en#

Preprints

1. M Li, **T Yang**, H Kuang, J Wu, Z Wang, X Xiao, C Chen. "ControlNet++: Improving Conditional Controls with Efficient Consistency Feedback". *arXiv:2404.07987*

Journals ("IF" denotes Impact Factor)

1. C Zheng, W Wu, C Chen, **T Yang**, S Zhu, J Shen, N Kehtarnavaz, M Shah. "Deep Learning-Based Human Pose Estimation: A Survey". *ACM Computing Surveys, 2023. (IF=14.324)*

2. **T Yang**, S Zhu, M Mendieta, P Wang, R Balakrishnan, M Lee, T Han, M Shah, C Chen. "MutualNet: Adaptive ConvNet via Mutual Learning from Different Model Configurations". *IEEE Transaction on Pattern Analysis and Machine Intelligence (**TPAMI**), 2022. (IF=24.314)*

3. S Zhu, **T Yang**, C Chen. "Visual Explanation for Deep Metric Learning". *IEEE Transactions on Image Processing (**TIP**), 2021. (IF=11.041)*

4. Y Shen, S Zhu, **T Yang**, C Chen, D Pan, J Chen, L Xiao, Q Du. "Bdanet: Multiscale convolutional neural network with cross-directional attention for building damage assessment from satellite images". *IEEE Transactions on Geoscience and Remote Sensing, 2021. (IF=8.125)*

Conferences

1. A Deng*, **T Yang***, C Chen. "A Large-scale Study of Spatiotemporal Representation Learning with a New Benchmark on Action Recognition". *International Conference on Computer Vision (**ICCV**), 2023*

2. **T Yang**, Y Zhu, Y Xie, A Zhang, C Chen, M Li. "AIM: Adapting Image Models for Efficient Video Action Recognition". *International Conference on Learning Representations (**ICLR**), 2023.*

3. **T Yang**, L Yang, X Jin, C Chen. "Revisiting Training-free NAS Metrics: An Efficient Training-based Method". *Winter Conference on Applications of Computer Vision (**WACV**), 2023*

4. M Mendieta, **T Yang**, P Wang, M Lee, Z Ding, C Chen "Local Learning Matters: Rethinking Data Heterogeneity in Federated Learning". *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022 (**Best Paper Finalist, 33 out of 8161**)*

5. **T Yang**, S Zhu, C Chen. "GradAug: A New Regularization Method for Deep Neural Networks". *Neural Information Processing Systems (**NeurIPS**), 2020*

6. **T Yang**, S Zhu, C Chen, S Yan, M Zhang, A Willis. "MutualNet: Adaptive ConvNet via Mutual Learning from Network Width and Resolution". *European Conference on Computer Vision (**ECCV**), 2020 (**Oral, 104 out of 5205**)*

7. C Zheng, M Mendieta, **T Yang**, C Chen "HeatER: An Efficient and Unified Network for Human Reconstruction via Heatmap-based TransformER". *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023*

8. W Yu, S Zhu, **T Yang**, C Chen. "Consistency-based active learning for object detection". *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshop (**CVPR**), 2022*

9. C Zheng, S Zhu, M Mendieta, **T Yang**, C Chen, Z Ding. "3D Human Pose Estimation with Spatial and Temporal Transformers". *International Conference on Computer Vision (**ICCV**), 2021*

10. S Zhu, **T Yang**, C Chen. "VIGOR: Cross-View Image Geo-localization beyond One-to-one Retrieval". *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021*

11. W Yu*, **T Yang***, C Chen. "Towards Resolving the Challenge of Long-tail Distribution in UAV Images for Object Detection". *Winter Conference on Applications of Computer Vision (**WACV**), 2021*

12. S Zhu, **T Yang**, C Chen. "Revisiting Street-to-Aerial View Image Geo-localization and Orientation Estimation". *Winter Conference on Applications of Computer Vision (**WACV**), 2021*

13. Y Shen, S Zhu, **T Yang**, C Chen. "Cross-directional Feature Fusion Network for Building Damage Assessment from Satellite Imagery". *Neural Information Processing Systems (**NeurIPS**) (Artificial Intelligence for Humanitarian Assistance and Disaster Response Workshop), 2020*

14. C Li, **T Yang**, S Zhu, C Chen, S Guan. "Density Map Guided Object Detection in Aerial Images". *IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**) (EarthVision Workshop), 2020*

PROFESSIONAL SERVICES

Journal Reviewer
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Image Processing
IEEE Transactions on Circuits and Systems for Video Technology
Neurocomputing
Journal of Real-Time Image Processing
Signal, Image and Video Processing

Conference Reviewer
ICCV 2021-2023, ECCV 2022, CVPR 2022-2024, ICML 2022, ICLR 2022-2024, NeurIPS 2021-2023, ACMMM 2021, ICME 2021

Volunteer
NeurIPS 2020

PROGRAMMING LANGUAGES AND TOOLBOXES

Most experienced with: Python. PyTorch.

Some experience with: Matlab, C/C++. TensorFlow, Caffe, OpenCV.