XINYU GONG

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EDUCATION

The University of Texas at Austin (UT Austin) *2021 - Present*
Ph.D., Electrical and Computer Engineering, advised by Dr. Atlas Wang.

Texas A&M University (TAMU) *2018-2021*
Ph.D., Computer Science, advised by Dr. Atlas Wang.

University of Electronic Science and Technology of China (UESTC) *2014-2018*
B.E., Computer Science.

RESEARCH INTERESTS

Machine Learning: Few-shot Learning, Neural Architecture Search, Generative Model.

Application: Action Recognition, Object Detection, Image Generation, Style Transfer, Pose Estimation.

PROGRAMMING SKILLS

Languages: Python, Bash, Matlab, C, CSS, LaTeX, VHDL.
Libraries: PyTorch, TensorFlow, Keras, Numpy, OpenCV, Jupyter, Matplotlib.

PROFESSIONAL EXPERIENCE

Meta Reality Lab Sunnyvale, CA
Research Intern *May 2022-Nov 2022*

· Hosts: Dr. Sreyas Mohan, Dr. Naina Dhingra, Dr. Yilei Li & Dr. Rakesh Ranjan

- Proposed and studied Multimodal Generalization (*MMG*), a novel and practical problem to investigate how a multimodal system can generalize when data from certain modalities is limited or missing.
- Introduced *MMG-Ego4D*, a dataset to facilitate the study of *MMG* problem in ego-centric action recognition task, under both many-shot and few-shot settings. Built a strong baseline model to solve *MMG* problem, using contrastive learning and cross-modality alignment.

PicsArt AI Austin, TX
Research Intern *Sept 2021-Jan 2022*

· Host: Dr. Humphrey Shi

- Delivered a few-shot generative adversarial network, which can learn new image classes with minimum computational cost incrementally: designed a hypernetwork to enable the efficient new classes learning ability, improved model's generalizability via weakening the discriminator and involving data augmentation.

Facebook AI Menlo Park, CA
Research Intern *June 2021-Aug 2021*

· Hosts: Dr. Yin Li, Dr. Juan-Manuel Perez-Rua, Dr. Yanghao Li & Dr. Zhicheng Yan

- Designed a high-performance incremental few-shot object detection model: proposed a weakly-supervised data augmentation technique and a compact architecture design to improve the model's generalizability.

Facebook AI Menlo Park, CA
Research Intern *May 2020-Aug 2020*

· Hosts: Dr. Zheng Shou, Dr. Heng Wang & Dr. Zhicheng Yan

- Designed an efficiency-orientated neural architecture search algorithm for video action recognition task: proposed a multivariate two-stream search space and a progressive search strategy.

Horizon Robotics Cupertino, CA
Research Intern *May 2019-Aug 2019*

· Hosts: Yuan Li, Dr. Xianming Liu & Dr. Qian Zhang

- Proposed a neural architecture search algorithm for pose estimation task: designed an effective multi-scale search space and a bi-level search algorithm for macro structure-wise and micro cell-wise search.

INVITED TALKS

1. I'm invited to present my work "Sandwich Batch Normalization" in Lyft, 2021.

SELECTED PUBLICATIONS

- **Gong, X.**, Mohan, S., Dhingra, N., Bazin, J., Li, Y., Wang, Z., & Ranjan, R. *"MMG-Ego4D: Multimodal Generalization in Egocentric Action Recognition"* Conference on Computer Vision and Pattern Recognition (**CVPR 2023**)
- Chen, W., Huang, W., **Gong, X.**, Hanin, B., & Wang, Z. *"Deep Architecture Connectivity Matters for Its Convergence: A Fine-Grained Analysis"* Conference on Neural Information Processing Systems (**NeurIPS 2022**).
- Fan, Z., Jiang, Y., Wang, P., **Gong, X.**, Xu, D., & Wang, Z. *"Unified Implicit Neural Stylization"* European Conference on Computer Vision (**ECCV 2022**).
- **Gong, X.**, Chen, W., Chen, T., & Wang, Z. *"Sandwich Batch Normalization: A Drop-In Replacement for Feature Distribution Heterogeneity"* Winter Conference on Applications of Computer Vision (**WACV 2022**).
- **Gong, X.**, Wang, H., Shou, Z., Feiszli, M., Wang, Z., & Yan, Z. *"Searching for Two-Stream Models in Multivariate Space for Video Recognition"* International Conference on Computer Vision (**ICCV 2021**).
- Chen, W.,**Gong, X.**, & Wang, Z. *"Neural architecture search on imagenet in four gpu hours: A theoretically inspired perspective"* International Conference on Learning Representations (**ICLR 2021**).
- Ardywibowo, R., Boluki, S., **Gong, X.**, Wang, Z., & Qian, X. *"NADS: Neural Architecture Distribution Search for Uncertainty Awareness"* International Conference on Machine Learning (**ICML 2020**).
- Ding, S., Chen, T., **Gong, X.**, Zha, W., & Wang, Z. *"AutoSpeech: Neural Architecture Search for Speaker Recognition"* Conference of the International Speech Communication Association (**InterSpeech 2020**)
- Chen, W., **Gong, X.**, Liu, X., Zhang, Q., Li, Y., & Wang, Z. *"FasterSeg: Searching for Faster Real-time Semantic Segmentation"* International Conference on Learning Representations (**ICLR 2020**)
- **Gong, X.**, Chang, S., Jiang, Y., & Wang, Z. *"AutoGAN: Neural Architecture Search for Generative Adversarial Networks"* International Conference on Computer Vision (**ICCV 2019**)
- Jiang, Y., **Gong, X.**, Liu, D., Cheng, Y., Fang, C., Shen, X., Yang, J., Zhou, P. & Wang, Z. *"Enlightengan: Deep light enhancement without paired supervision"* IEEE Transactions on Image Processing (**TIP**)
- Liu, R., Liu, Y., **Gong, X.**, Wang, X., & Li, H. *"Conditional adversarial generative flow for controllable image synthesis"* Conference on Computer Vision and Pattern Recognition (**CVPR 2019**)
- **Gong, X.**, Huang, H., Ma, L., Shen, F., Liu, W., & Zhang, T. *"Neural Stereoscopic Image Style Transfer"* European Conference on Computer Vision (**ECCV 2018**)

SELECTED TECHNICAL REPORT

- **Gong, X.**, Shi, H., & Wang, Z. *"EI-GAN: Efficient Incremental Few-Shot Image Generation Without Forgetting"* under review at a conference
- **Gong, X.**, Yin, L., Pérez-Rúa, J., Li, Y., Yan, Z., & Wang, Z. *"WS-iFSD: Weakly Supervised Incremental Few-shot Object Detection Without Forgetting"* under review at a conference
- **Gong, X.**, Chen, W., Jiang, Y., Yuan, Y., Liu, X., Zhang, Q., Li, Y. & Wang, Z. *"Autopose: Searching multi-scale branch aggregation for pose estimation"* arXiv preprint.