

EDUCATION

- The Hong Kong University of Science and Technology** Hong Kong
Bachelor of Engineering - Computer Science Aug. 2018
Last 2 Years Major GPA: 3.9 / 4.3
Postgraduate Courses: Robotics Perception(A), Deep-learning Theory(A), Data Mining(A), Parallel Programming(A+, 2nd/54)
Relevant Undergraduate Courses: Algorithms and Data Structures (A+, 1st/75), Artificial Intelligence(A), Deep-learning(A-), Mathematical Analysis(A), Computer Graphics(A+), Functional Programming and Compiler(A+)

RESEARCH EXPERIENCE

- The Hong Kong University of Science and Technology** Hong Kong
Supervisor: Prof. Chi-Keung Tang & Dr. Yu-Wing Tai Aug. 2021 - Present
 - Conditional Human Motion Prediction.** We propose a semi-supervised human motion prediction method. Based on single-frame SMPL input, our model can predict N frames forward and backward, conditioned on the human action input. (In Progress)
 - Learning Transferable Part-Level Representations by Language Supervision.** We propose a multi-modal training method that instead of training with one-hot labels, we utilize the pre-trained language model to map labels into continuous feature space; with our novel human-part level training pipeline, the model can be trained on multiple fully-labeled dataset simultaneously by supervised learning and partially-labeled datasets by semi-supervised learning. Our method outperforms SOTA by a large margin. (CVPR2022 submission, First Author)
- S-Lab, Nanyang Technological University.** Remote
Supervisor: Prof. Ziwei Liu Jan.2021 - Mar. 2021(Part-time)
 - Vision transformer** Considering the drawback of visual transformer (ViT) that requires a large amount of pretraining data and high computation cost, we designed an image-to-token module and a locally-enhanced layer. The models achieved similar or better performance with less than 1/3 of training iteration compare to original ViT. (ICCV 2021)
 - Differentiable dynamic wiring network** We find that a fixed architecture may not be suitable for different data with high diversity. We address this issue by proposing Differentiable Dynamic Wirings, which learns the instance-aware connectivity that creates different wiring patterns for different instances. (ICCV 2021)
- SenseTime Group Ltd.** Hong Kong
Supervisor: Dr. Junjie Yan Sept 2018 - Sept. 2019
 - Network Pruning via Differentiable Markov Process.** We model the channel pruning of neural networks as a Markov Process, with transition probabilities computed by a set of learnable parameters. The marginal probability of each network channel can be computed and fused into the network; thus, the Markov process could be optimized together with model parameters by gradient descent. Our method achieved SOTA results in various models on ImageNet dataset. (CVPR2020 Oral, First author)

PUBLICATIONS

- Kun Yuan, **Shaopeng Guo**, Ziwei Liu, Xinyu Xu, Aojun Zhou, Fengwei Yu, Wei Wu, "Incorporating Convolution Designs into Visual Transformers", IEEE International Conference on Computer Vision (ICCV) 2021
- Kun Yuan, Quanquan Li, **Shaopeng Guo**, Dapeng Chen, Aojun Zhou, Fengwei Yu, Ziwei Liu, "Differentiable Dynamic Wirings for Neural Networks", IEEE International Conference on Computer Vision (ICCV) 2021
- Shaopeng Guo**, Yujie Wang, Quanquan Li, Junjie Yan, "DMCP: Differentiable Markov Channel Pruning for Neural Networks", IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021, **(Oral, 5.03% acceptance rate)**

EMPLOYMENT

- The Hong Kong University of Science and Technology** Hong Kong
Research Assistant Aug.2021 - Present
- SenseTime Group Ltd.** Hong Kong
Research and Development May. 2019 - Jul. 2021
 - Large Model Pre-training.** Lead a small group with 4 members, work on transferring the knowledge from a large pre-trained model (trained on 400M web images) to variety of small models with few-shot learning and meta-learning.
 - Deep Vision Model Training Framework.** One of two members that implement and maintain an efficient training framework including all widely used models, SOTA supervised, semi-supervised, and unsupervised training methods.
 - Model production Tool Chain.** Participate in developing the internal tool chain for "production-ready" model, establish a complete pipeline from model pre-training to hardware deployment.
- R&D Intern* Sept. 2018 - May 2019
 - Network Quantization for Efficient Inference.** Define network quantization as a convex optimization problem, the information loss from 32bit floating point to 4bit integer was represented by our proposed reconstruction loss, which was convex and could be optimized iteratively by gradient-based method. The quantized models had negligible accuracy loss and 2x faster inference speed on both GPUs and mobile processors.
- Tencent YouTu Lab.** Shen Zhen, China
R&D Intern Sept. 2017 - Jan. 2018
 - Detection Driven Reinforcement Learning for 3D Game Playing.** Formulate the navigation in 3D immersive environment as reinforcement learning problem, and introduced an auxiliary task that learning to distinguish the foreground objects and background. A region proposal network was proposed to be the encoder of auxiliary task.