Jie Min

Grad Student at University of Pennsylvania

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Education

Year	Institute	Degree	Publications*	GPA
2019 - Present	University of Pennsylvania	Master of Science in Engineering, Robotics	CVPR20'[1] ECCV20'[2]	4.0/4.0 top1%
2015 - 2019	ShanghaiTech University	Bachelor of Computer Science and Engineering	ICCV19'[3]	3.7/4.0 top10%

Highlighted Events:

- Exchange Program at University of Chicago, GPA 4.0/4.0.
- Research Assistant in LILY Lab at Nanyang Technological University, Singapore.
- Research Assistant in GRASP Lab at University of Pennsylvania, advised by Prof. Jianbo Shi and Prof. Kostas Daniilidis.
- * Published 3 papers in Computer Vision conferences: CVPR20', ECCV20', ICCV19'.

Relevant Courses

Advanced Topic in Explainable AI (CIS700) / A+	Advanced Topic in Machine Perception (CIS680) / A
Machine Perception (CIS580) / A+	Deep Learning in Data Science (CIS522) / A
Big Data (CIS545) / A	Linear, Nonlinear and Integer Optimization (ESE504) / A
Operating System (CIS 130) / A+	Mathematical Modeling (GEMA 1007) / A+
Computer Vision & Computational Photography (CS 581) / TA	Data Structure and Algorithm (CS 101W) / TA

Technical Skills

- **Technologies:** Python, C++, Pytorch/Tensorflow, Linux, Multi-GPU Server, Latex, Vim, HTML, Git, SQL
- **Research Interests:** 3D Human Motion Imitation, GAN, Amodal Segmentation, Object Placement

Selected Research Experiences/Publications

- **Nested Scale-Editing GAN: Nested Scale-Editing for Conditional Image Synthesis(CVPR20')** [1]

  Mentor: **Prof. Jianbo Shi**, GRASP Lab, University of Pennsylvania.
  - Achieve **scale independent editing** while expanding **scale-specific diversity**, with introducing novel nested scale **disentanglement loss** and progressive diversification constraint to scale-specifically control conditional image synthesis.
  - Surgically manipulate coarse/fine level generation results, for image out-painting, interactively recover facial identities, etc.

- **Learning Object Placement by Inpainting for Compositional Data Augmentation (ECCV20')** [2]

  Mentor: **Prof. Jianbo Shi**, GRASP Lab, University of Pennsylvania.
  - Study the problem of common sense placement of visual objects in images. **Re-composition of object-scene** with property of **contextual relationship preservation**, to learn diverse yet plausible object placements without any human labeling.
  - We achieve diversity by applying **Normalized diversification** between **encoding and location space**.
  - Two useful applications lie in inserting objects with content-ware relationship to boost the performance of perception tasks. Second, Learning meaningful features for object/scene retrieval and image classification.

- **Liquid-Warping GAN (ICCV19')** [3]

  Mentor: **Prof. Shenghua Gao**, SVIP Lab, ShanghaiTech University. Website / Demos: https://svip-lab.github.io/project/impersonator.html
  - Given two single-view images, we use HRM to estimate human pose/shape/camera info, calculate transformation matrix T.
  - With no learnable parameters in recover module, we can train only one task. And change different inputs, to recover both pose/shape/view in this unified framework.
  - "Copy-paste" warping methods can't hallucinate unseen pixels which results in unrealistic. We use GAN to infer hided pixels instead, and simultaneously warp features on each layer of our model. Results become smoother with less artifacts.

- **Semantic Scene Composition for Amodal Instance Segmentation**

  Mentor: **Prof. Jianbo Shi**, GRASP Lab, University of Pennsylvania.
  - Use content-aware composition to estimate affine matrix given objects, discriminate on producing partial occluded scenes.
  - With ground-truths for each object, we can give objects free unsupervised annotations even they are half-occluded.
  - Estimate coordiante for cropped occluded objects and introduce world coordinate of the whole scene to better understand scene structure and objects relationship.

- **Instance-aware Image Super-Resolution (CVPR21')**

  Mentor: **Prof. Jianbo Shi**, GRASP Lab, University of Pennsylvania.
  - First unsupervised method for Instance-aware Image Super-Resolution. Novel architecture leverages off-the-shelf detector.
  - Focus on generating more object-level details yet more natural and smoother images than previous SR networks, fuse extracted object-level and image-level features to produce high resolution images.

Selected Projects

- DAVid GAN: Detect Anomalies in Video with GAN
- Auto-Picking: Protein Particle Recognition/Segmentation given high-resolution but low-quality Cryo-electron Microscopy images.
- LSTM-PPO: Memory Adaptive PPO and other methods to Reinforcement Learning in Car Racing Task
- Training a Sparse-Reward Agent for First-Person Shooter Game using DDRQN and Curriculum Learning.
- Using Kinect to Detect Human Skeleton and Gestures Point-To-Point Control AR Game Models to Fight.
- Multimodal Unsupervised "Inverse Style Transfer" on Human Face.