Ruolin Ye

cathyye2000@sjtu.edu.cn | YoruCathy.github.io | Github:YoruCathy

Education

Shanghai Jiaotong University — Shanghai, China
Bachelor of Engineering in Information Engineering — *Sep. 2018 – June 2022(expected)*

Experience

Undergraduate Research Intern — Aug. 2019 – Present
Machine Vision and Intelligence Group(MVIG) Lab, SJTU — *Mentor: Professor Cewu Lu*

- Researched on computer vision for robot perception

Publication and drafts

USD-Seg: Learning Universal Shape Dictionary for Realtime Instance Segmentation — arXiv
Tutian Tang, Wenqiang Xu*, **Ruolin Ye**, Lixin Yang, Cewu Lu* — *2020*

H2O: A Benchmark for Visual Human-human Object Handover Analysis — arXiv
Ruolin Ye, Wenqiang Xu*, Zhendong Xue, Tutian Tang, Yanfeng Wang, Cewu Lu* — *2021*

Competition and awards

MCM: The Mathematical Contest in Modeling — Honorable Mention
Responsible for coding — *2019*

MCM: The Mathematical Contest in Modeling — Honorable mention
Responsible for paper writing and visualization — *2020*

Projects

Domain Adaption for Target Driven Tasks | *Domain Adaption* — May. 2021 – Present

- Propose an extremely simple but effective method to make the networks for target driven tasks(detection and instance segmentation) which are trained in simulator work well in real-world domain.
- The method does not need to be trained. It works robustly and greatly outperforms current CycleGan based methods. The experiments are on-going and the paper is in progress.

Parameter Prediction for Domain Specific Language in Robotics | *Robot DSL* — Mar. 2021 – Present

- Define a series of domain specific language to describe motion primitives of robots.
- Predict the DSL function series without parameters based on given instruction in natural language format.
- Fill some missing parameters based on visual information.

H2O Dataset | *Human object handover* — Dec. 2020 – Mar. 2021

- Build a large scale dataset(5 million) with RGBD frames, hand pose of giver and receiver, and object 6D pose to support comprehensive visual analysis of object handover process.
- Transfer human hand pose to robot shadow hand pose, showing the possibility for robot to learn from human.
- Propose a method to predict receiver grasp type based on given object pose and giver hand pose.

Universal Representation for Object Shape | *3D reconstruction* — June 2020 – July 2020

- Separate an object as different parts, each with its own intrinsic dimension, i.e. 1D(line), 2D(plane)and 3D(block)
- Represent each part with a GMM with its correlated dimension, then project back the points to 3D. e.g. Represent a stick with 1D GMM, for its intrinsic dimension is 1D.
- This method is beneficial for robots to assemble components together.

USD-Seg | *Instance segmentation* — Sep. 2019 – May 2020

- Build a fast instance segmentation framework named USD-Seg, which simultaneously regresses bounding box position and coefficients for mask reconstruction, based on bases learned by dictionary learning.
- Propose a new metric AP_E for evaluating realtime methods, by taking efficiency and quality into consideration.
- Achieves 35.8 AP and 27.8 AP_E at 65 fps with YOLOv4 as base detector, 34.1 AP and 28.6 AP_E at 12 fps with FCOS as base detector on COCO dataset, with a Titan Xp GPU.

Selected Courses

Machine Learning **Artificial Intelligence** **Video Coding and Communication**
Thinking and Approach of Programming(Python) **Thinking and Approach of Programming(C++)**

Skills

Programming Languages: Python, MATLAB, C++(can read), Java, CUDA(can read)
Frameworks: PyTorch, Keras, Pybullet, mxnet, mmdetection, ROS(beginner level)
English: Toefl 105(27+29+20+29)

Hobby

Volunteering: 120+ hours as librarian in Shanghai Library, tutor for left behind children in rural area
Music and Sports: I play the Guzheng and the violin. I enjoy long distance running.