Zixuan Huang

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EDUCATION

Carnegie Mellon University **Pittsburgh, USA**
Master of Robotics, Aug 2022 **GPA: 4.08/4.3**
Coursework: Computer Vision(16720), Deep Reinforcement Learning for Robotics(16881), Graduate Machine Learning(10701), Planning and decision making in Robotics(16782)

City University of Hong Kong **Hong Kong, China**
Bachelor of Science in Computer Science, June 2020 **GPA: 3.82/4.3 (TOP 5%)**
Coursework: Advanced Programming, Operating Systems, Design and Analysis of Algorithms
Awards: Dean's List

PUBLICATION

Seeing the unseen: Occlusion reasoning for cloth manipulation

***Zixuan Huang**, Xingyu Lin, David Held* Work in progress

- Deals with self-occlusion of cloth by reconstructing the full mesh of cloth explicitly.
- Addresses the ambiguity of occluded regions by pluralistic sampling.
- Adapts the state estimation model to real-world by dynamics-guided self-supervised finetuning.

Learning Visible Connectivity Dynamics for Cloth Smoothing

Xingyu Lin, Yufei Wang*, **Zixuan Huang**, David Held* Conference on Robot Learning 2021

- Learns a particle-based dynamics model for cloth by graph neural networks and smooths the cloth by planning.
- Accommodates the issue of partial observability by graph imitation: an asymmetric learning approach that let the student model with partial observations to imitate a teacher model with full-state information.
- It can generalize to cloths with novel shapes and real world in a zero-shot manner.

StyleMixer: Semantic-aware Multi-style Transfer Network

Zixuan Huang*, Jinghuai Zhang*, Jing Liao Computer Graphics Forum 38(7):469-480, Proc. Pacific Graphics 2019

- Designed the first region-based multi-style transfer framework to incorporate different styles coherently according to semantic correspondence.
- Computes the semantic correspondence of content image and style image by cross-attention.
- Transfers the styles to semantically aligned regions by voting and achieve local consistency by clustering in latent space.

PROJECT

World Model with Rank-preserved Pseudo Rewards

***Zixuan Huang**, Xingyu Lin, David Held*

- Modeling the absolute value of rewards by predictive estimation is overly constrained for planning since we only care about the ordering of candidate plans.
- Proposed a ranking-based reward learning method that only models the pairwise relationship over different trajectories.
- It makes learning easier by dilating the solution space and also improves the robustness of model.

A Privacy-preserving Image Classification Framework with a Learnable Obfuscator

*Xiangyi Meng, **Zixuan Huang**, Yuefeng Du, Antoni Chan, Cong Wang*

- Designed and implemented an adversarial training framework to prevent privacy leakage.
- Constructed an obfuscator and an adversary with opposite goals; the former extracts useful features for classification and removes sensitive information while the latter attempts to recover the sensitive information.
- Trained the model with different techniques, including two time-scale update rule (TTUR), gradient penalty, and multi-adversaries.

Experience

Siemens, Hong Kong *Student intern, September 2018–June 2019*

- Built a video-based real-time violence detection system by I3D model. Tackled with sparsely labeled data by multiple instance learning.
- Developed data dashboard by Angular and Spring Boot. Retrieve data from PostgreSQL and visualized them in accordance with the business logic.

Hong Kong Applied Science and Technology Research Institute *Student intern, June 2018–July 2018*

- Learned and study the source code of Caffe for customization.
- Implemented toolkits for machine learning platform by C++. For example, BN Merger, a tool for merging the computation of Batch Normalization into previous Conv or FC layers on deploy for faster inference.

SKILLS

Programming language: Python, C++, JAVA, SQL
Frameworks: Pytorch, TensorFlow