Hanxiang Ren

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Education

Zhejiang University – Hangzhou, Zhejiang Sep 2021 – Present

Ph.D student: Computer Science
- *Advisor: Prof. Youyi Zheng, Prof. Yanchao Yang*
- **Research Interests**: Computer Graphics, Robotics, Hypernetworks, Unsupervised Learning, Domain Transfer

Harbin Institute of Technology – Harbin, Heilongjiang Aug 2016 – Jul 2021

B.Eng: Computer Science
- **GPA**: 3.7/4.0
- **Distinction**: *Honor School* (Top 10% students in HIT)
- **Thesis**: Implementation of Face Capture and Reenactment System
  Implement a modified version of the system described in the paper *Deep Video Portraits* (Siggraph 2018), including fitting a 3D face model to 2D images using differentiable renderer, inpainting and reenactment using a modified version of pix2pix method

Massachusetts Institute of Technology (MIT) – Cambridge, MA Sep 2018 – May 2019
- **Overall GPA**: 5.0/5.0
- **Courses**: Machine Learning, Advances in Computer Vision, Randomized Algorithms, Computer Language Engineering, Feedback System Design

Research Experience

Optimization-Biased Hypernetworks for Generalizable Policy Generation Sep 2023 – Oct 2024

Advisors: Prof. Yanchao Yang, Prof. Difan Zou
- Proposed HyPoGen, a novel HyperNet architecture for zero-shot generalizable policy learning, which mimics gradient flow patterns observed during target MLP network training
- The experimental results demonstrate that the proposed architecture achieves strong generalization capabilities even with limited training data, significantly outperforming classical hypernetwork structures
- The architecture has demonstrated superior performance across various tasks, with additional related works from our research group currently under submission
- Work accepted to ICLR 2025

ADeLA: Automatic Labeling for Viewpoint Shifts in Segmentation Dec 2020 – Nov 2021

Advisors: Prof. Yanchao Yang
- Discovered that Segmentation Networks degrade sharply as viewpoint changes horizontally (from 30% at 0° to 2% at 90°)
- Proposed a new method to mitigate this degradation by using the attention mechanism to align visual features at different viewpoints, and utilize the alignment pattern to transfer labels between viewpoints
- Our method improved mIoU by up to 10% at 40° and increased relative performance by up to 150% at 90° compared to baseline models
- Work published in CVPR 2022 as **Oral Presentation** (5%)

Laziness in Motion Planning Oct 2018 – May 2019

Advisors: Ph.D Gustavo Goretkin, Prof. Leslie Kaelbling
- Studied effect of lazy edge evaluation on search time in motion planning problems where edge evaluation is expensive
- Proposed a "lookahead" method that factored in edge weight, reducing the rewiring operation time of lazy motion planning by up to 50%
- Investigated effect of tie-breaking schemes on time efficiency and proposed a rewiring criterion that reduced the number of edge evaluations by up to 66%

Internship Experience

Research Intern, SenseTime Inc. – Beijing, China Jun 2019 – Jun 2020

Mentor: Associate Director Jing Shao
- Designed an altered version of Canny edge detection algorithm for portrait segmentation and successfully integrated it into UnionPay QuickPass

- Investigated degradations in face imaging data and helped improve standards of image collection
- Proposed an image masking augmentation method based on Cutout that increased validation accuracy by 2% at 0.001% fpr
- Developed a deepfake pipeline including 3D morphable model fitting with differentiable renderer, dense correspondence, and GAN-based facial texture generation

Honors and Awards

- Higgs Graduate Student Award — Dec 2022
- ACM-International Collegiate Programming Contest – Tsingtao Regional (**Gold Medal**) — Nov 2017
- China Collegiate Programming Contest – Northeast Region (**First Place**) — May 2018
- Scholarship for Outstanding Students (**top 10% students at Honor School**) — 2017, 2018, 2019

Skills and Interests

- Programming Languages and Frameworks: Experienced in C/C++, Python, Java, Julia, Matlab, Scala, SQL, LaTeX, PyTorch
- Sports: Basketball, Scuba Diving

Activities

- Teaching Assistant of C language and Programming at ZJU — Spring 2022