

Xinyue WEI

(+1)858-241-4166 ◇ sarahwei0210@gmail.com ◇ <https://sarahweiii.github.io>

EDUCATION

University of California San Diego, USA 03/2021 – Present
Ph.D. in Electrical and Computer Engineering Advisor: Prof. Hao Su

Tongji University, China 09/2016 – 06/2020
B.E. in Computer Science and Technology
GPA: 4.6/5.0 (90.98/100)

RESEARCH EXPERIENCE (SELECTED)

Maniskill2: A Unified Benchmark for Generalizable Manipulation Skill

Research Assistant at University of California San Diego 03/2022 – 08/2022
Advisor: Prof. Hao Su

- Designed six soft-body tasks in simulation environments and generated demonstrations with motion planning.
- Utilized behavior cloning methods to solve the soft-body tasks with given demos.

Approximate Convex Decomposition for 3D Meshes with Collision-Aware Concavity and Tree Search

Research Assistant at University of California San Diego 02/2021 – 01/2022
Advisor: Prof. Hao Su

- Proposed a novel collision-aware concavity metric that encourages preserving the collision conditions by penalizing the inclusion of regions that are far away from the original shape.
- Decompose shapes by directly cutting 3D solid meshes with 3D planes, which ensures intersection-free convex hulls and avoids the defects caused by voxelization. Provided a lightweight mesh cutting implementation, which is 100x faster than off-the-shelf libraries
- Proposed utilizing the Monte Carlo tree search to determine cutting planes, which simulates and searches multiple future actions before each cutting. Multi-step search is more likely to find cutting planes that lead to a better global solution and avoids unnecessary cuttings.

End-to-End Adaptive Monte Carlo Denoising and Super-Resolution

Research Intern at Tencent AI Lab 02/2020 – 02/2021
Advisor: Dr. Haozhi Huang, Dr. Jue Wang

- Proposed a new framework called SRD-based Monte Carlo rendering, which further accelerates the MC rendering pipeline by joint super-resolution and denoising.
- Designed the first neural network architecture for SRD-based Monte Carlo rendering based on insightful analysis of the network requirements for super-resolution and denoising.
- Utilized deformable convolution to adaptively learn the appropriate receptive field required by different stages and semantics.

Nuisance-Label Supervision: Robustness Improvement by Free Labels

Research Intern at Johns Hopkins University 11/2019 – 06/2020
Advisor: Prof. Alan Yuille

- Designed Nuisance-label Supervision module to improve model robustness by adversarial training with nuisance labels as extra supervision, breaking the spurious correlation, i.e. using inaccurate information to make predictions.
- Proposed three practical and low-cost ways of acquiring nuisance labels, which consist of existing metadata, parameters from data augmentation and synthetic data generation.
- Demonstrated the effectiveness of the proposed module on action recognition handling image corruption and appearance changes, such as background, human clothes, etc.

PUBLICATIONS

1. Jiayuan Gu, Fanbo Xiang, Xuanlin Li, Zhan Ling, Xiqiang Liu, Tongzhou Mu, Yihe Tang, Stone Tao, **Xinyue Wei**, Yunchao Yao, Xiaodi Yuan, Pengwei Xie, Zhiao Huang, Rui Chen, Hao Su. *ManiSkill2: A Unified Benchmark for Generalizable Manipulation Skills*. (ICLR 2023)
2. **Xinyue Wei***, Minghua Liu*, Zhan Ling, Hao Su. *Approximate Convex Decomposition for 3D Meshes with Collision-Aware Concavity and Tree Search*. (SIGGRAPH 2022, journal track)
3. **Xinyue Wei**, Weichao Qiu, Yi Zhang, Zihao Xiao, Alan Yuille. *Nuisance-Label Supervision: Robustness Improvement by Free Labels*. 2021 IEEE/CVF International Conference on Computer Vision Workshops (ICCVW). IEEE 2021.
4. **Xinyue Wei**, Haozhi Huang, Yujin Shi, Hongliang Yuan, Li Shen, Jue Wang. *End-to-End Adaptive Monte Carlo Denoising and Super-Resolution*. arXiv preprint arXiv:2108.06915, 2021
5. Yi Zhang*, **Xinyue Wei***, Weichao Qiu, Zihao Xiao, Gregory D. Hager Alan Yuille. *RSA: Randomized Simulation as Augmentation for Robust Human Action Recognition*. arXiv preprint arXiv:1912.01180, 2019

WORK EXPERIENCE

Adobe Research Intern Advisor: Dr. Zexiang Xu	06/2022 – Present
University of California San Diego Research Assistant at Su Lab Advisor: Prof. Hao Su	02/2021 – Present
Tencent AI Lab Research Intern at AI graphics group Advisor: Dr. Haozhi Huang, Dr. Jue Wang	02/2020 – 02/2021
Johns Hopkins University Research Intern at CCVL Advisor: Prof. Alan Yuille	06/2019 – 10/2019
Tongji University Research Assistant at VILL Advisor: Prof. Cairong Zhao	09/2018 – 06/2020

SKILLS

- **Programming Languages:** Python, C/C++, Shell
- **Tools:** Blender, Unreal Engine, Mitsuba

HONORS AND SERVICES

Reviewer for CVPR'22'23, SIGGRAPH'22, ECCV'22, ICCV'23
UCSD Electrical and Computer Engineering Department Fellowship 2021
Tongji Outstanding Undergraduate (top 2%)
Tongji Scholarship for Excellent Undergraduates 1st prize (top 5%)