

# 三维生成，敢问路在何方？

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# 三维生成，请问路在何方？

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三维生成，我想弱弱的问一下路在何方？

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# 我与三维生成的十年之痒！

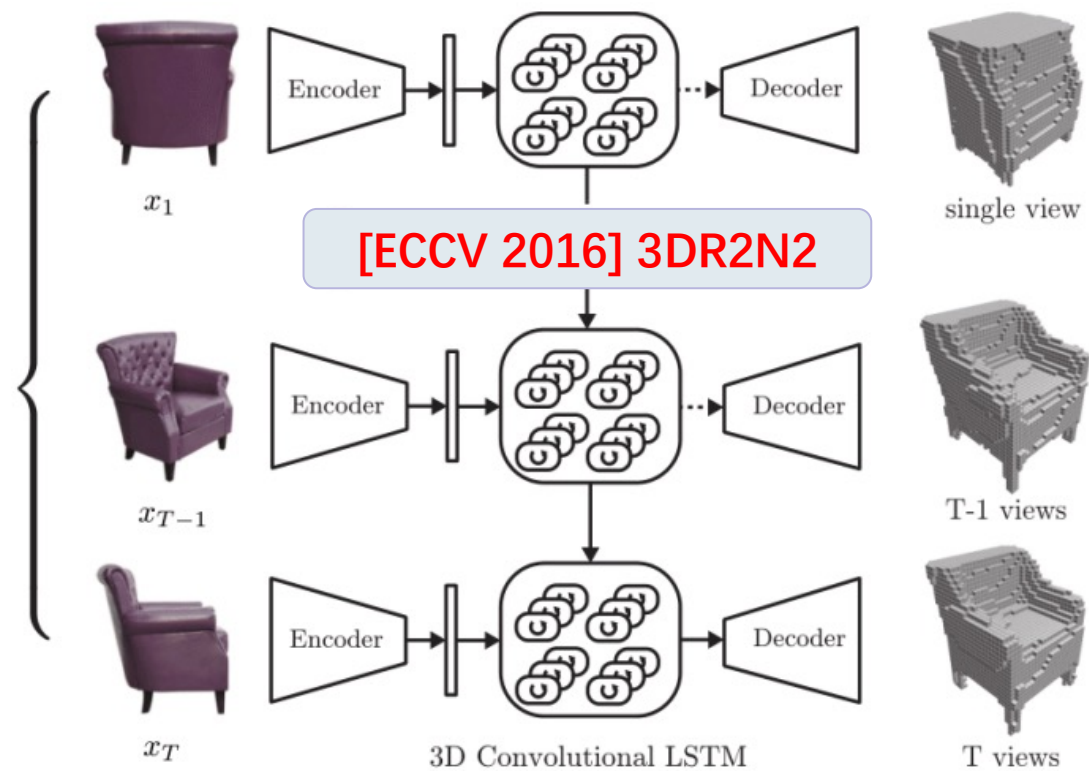
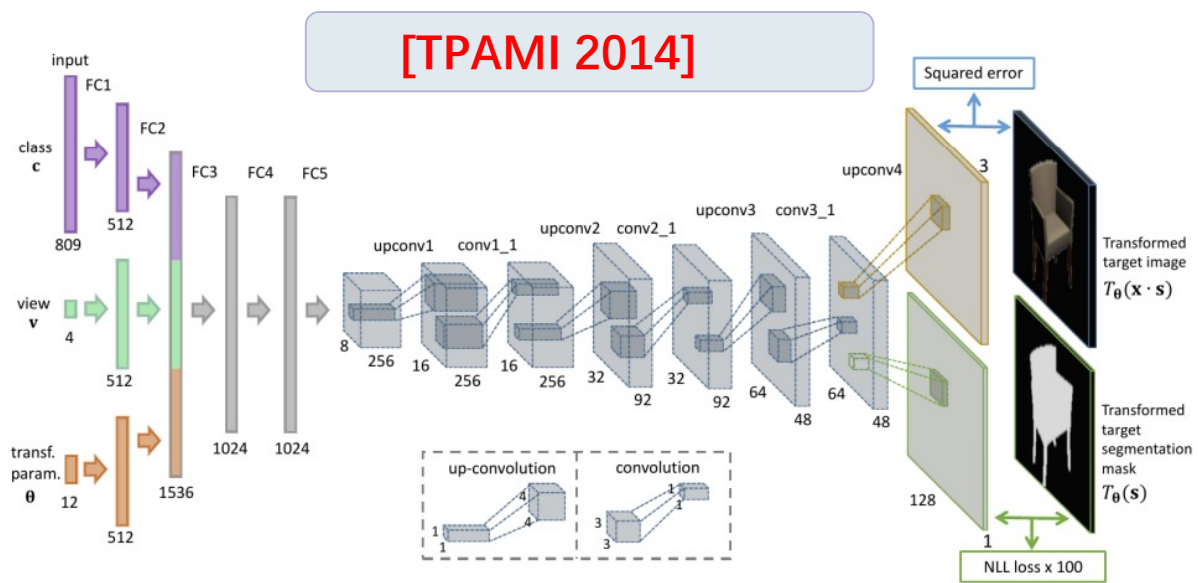


# “一见钟情” - 2015

- 神奇，兴奋，充满想象力

## Learning to Generate Chairs, Tables and Cars with Convolutional Networks

Alexey Dosovitskiy, Jost Tobias Springenberg, Maxim Tatarchenko, Thomas Brox

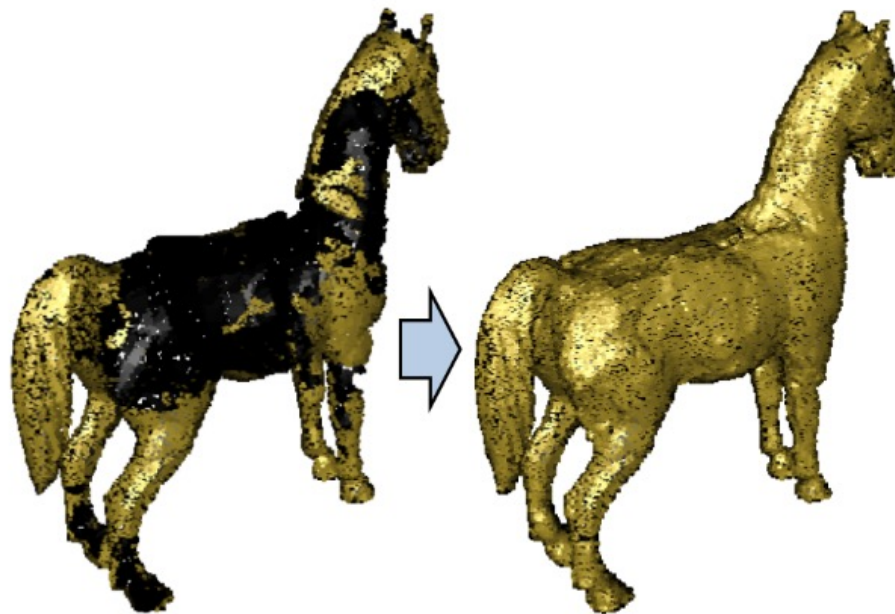


# “博得芳心” - 2017

- 找到了人生努力的方向，至死不渝



[SIGGRAPH 2017]  
DeepSketch2Face

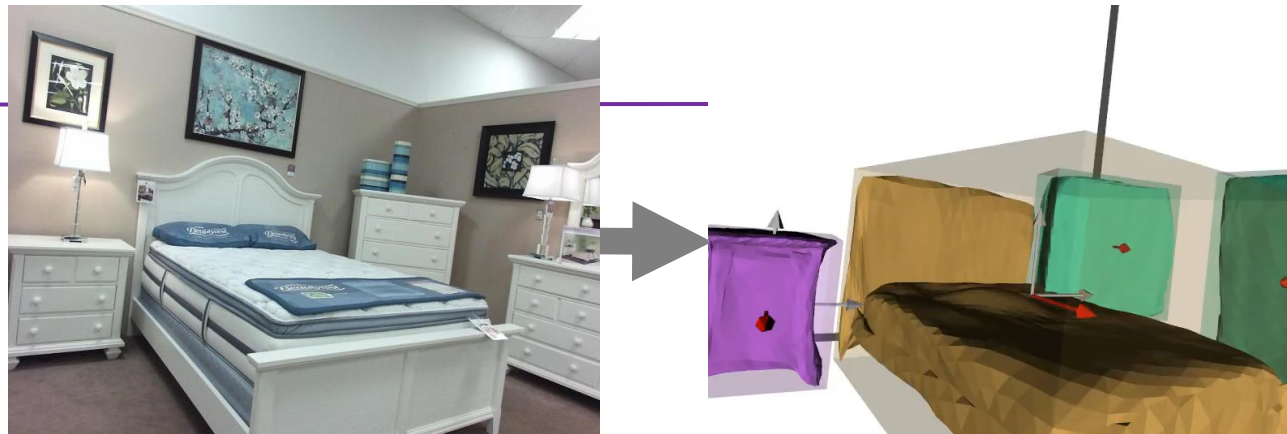


[ICCV 2017 Spotlight]  
High-resolution Completion



# “如胶似漆” - 2018-2023

- **Category-specific 3D Generation**
  - chair/table/.../scene
  - face/body/hair/garment



[CVPR 2020 Oral] Total3D



[CVPR 2019 Oral] SkeletonNet



[CVPR 2023 Highlight] HairStep

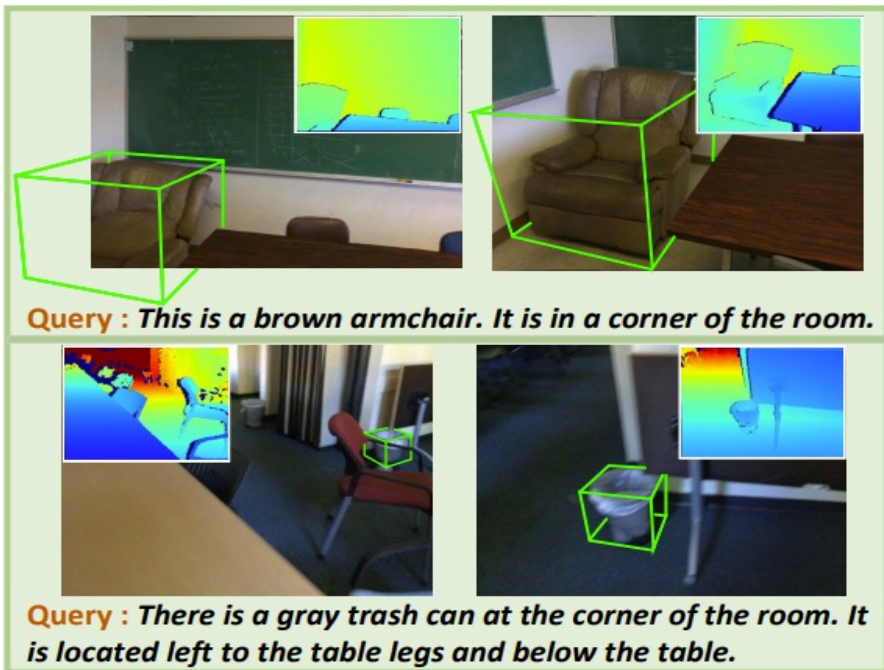


[ECCV 2020 Oral] DeepFashion3D



# “开点小差” - 2020-2023

- 多模态感知/图像生成等



[CVPR 2021] Refer-it-in-RGBD



[Siggraph 2023] FashionTex

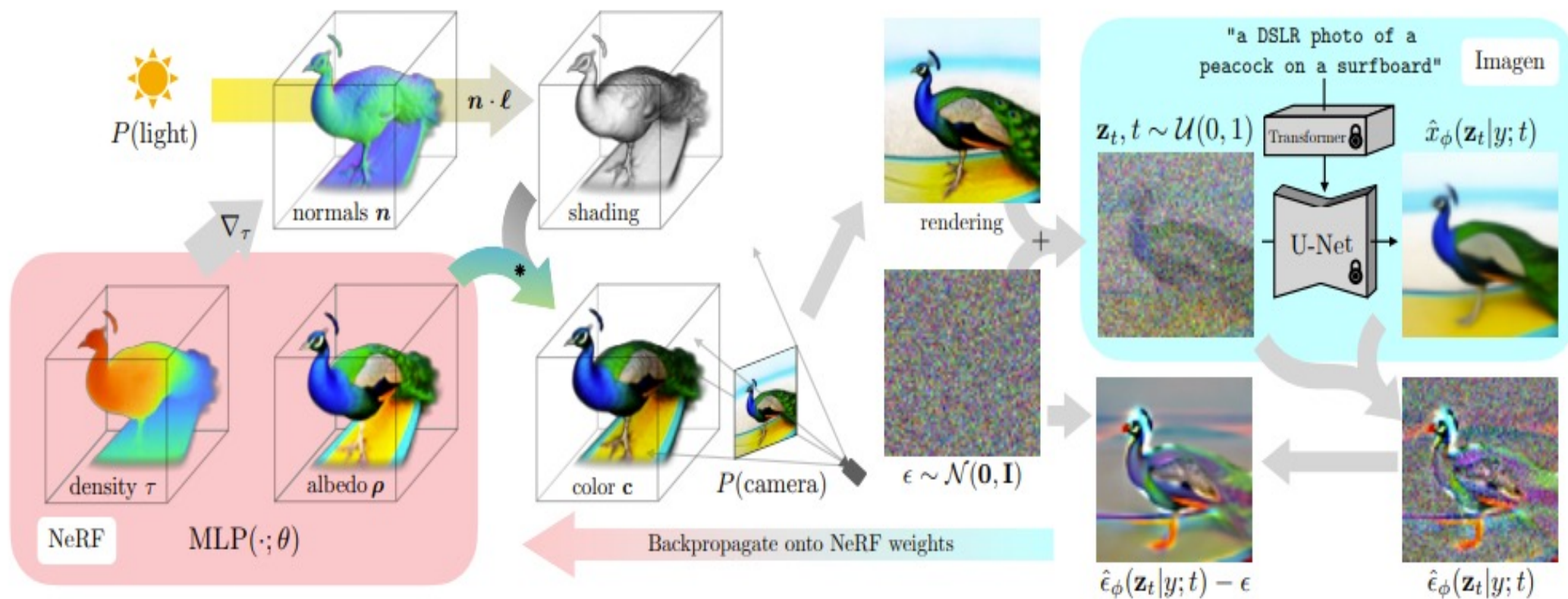


[CVPR 2025] RobustMVTON



# “重燃激情” - 2023年

- 从 category-specific 到 open-world



# “坚定不移” - 2023-2024

- Dreamfusion/Magic3D/MVDream...
  - 多头问题、速度问题
- LRM/LGM/GRM...
  - 精度问题、泛化问题
- Clay/Tripo/Meshy/Hunyuan...
  - 对齐问题、开源问题



[CVPR 2023] MVIingnet



Stable & Sharp Normal Estimation



I. Monocular Surface Recon



II. Multi-view Surface Recon



III. Normal Enhancement

Real-World Applications

[SigAsia 2024, TOG] StableNormal



[CVPR 2024 Highlight] RichDreamer



# “信念崩塌” - 2024年底



## Structured 3D Latents for Scalable and Versatile 3D Generation

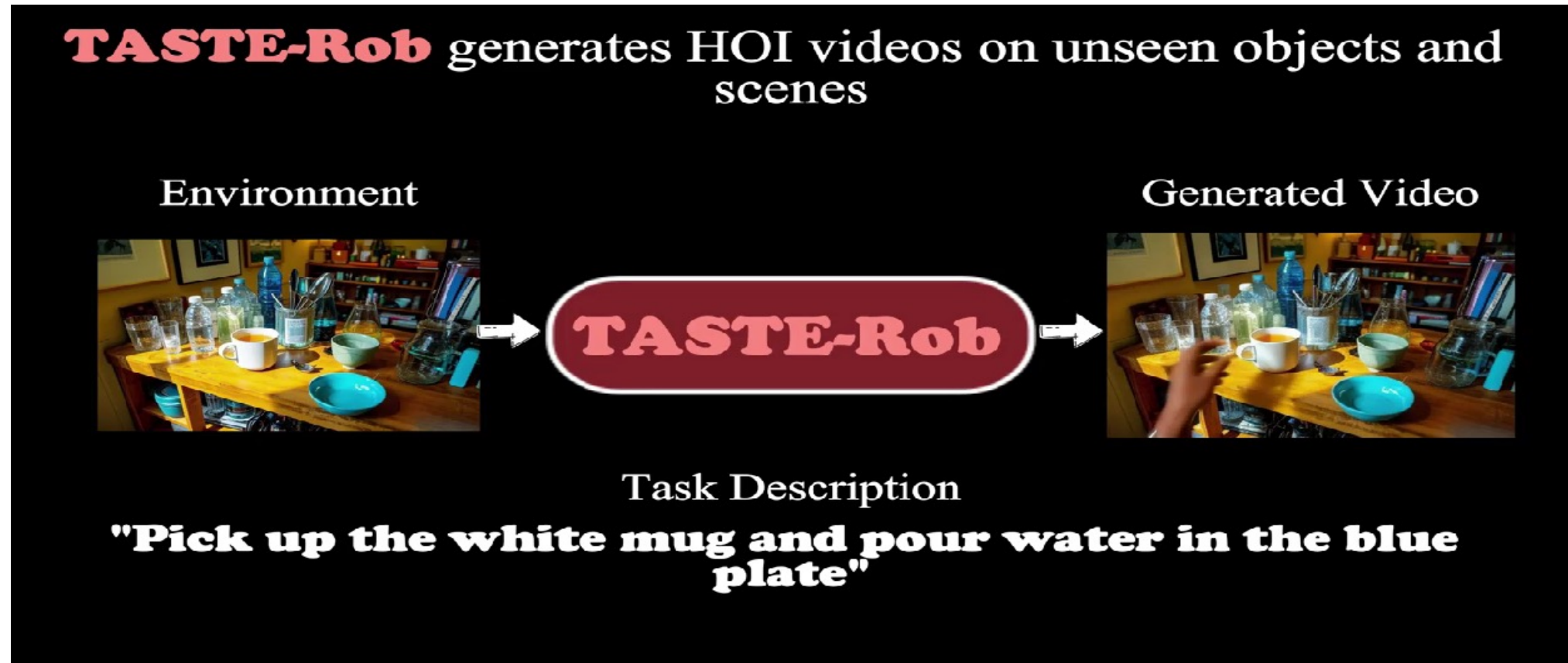
Jianfeng Xiang<sup>1,3</sup> Zelong Lv<sup>2,3</sup> Sicheng Xu<sup>3</sup> Yu Deng<sup>3</sup> Ruicheng Wang<sup>2,3</sup>  
Bowen Zhang<sup>2,3</sup> Dong Chen<sup>3</sup> Xin Tong<sup>3</sup> Jiaolong Yang<sup>3</sup>

<sup>1</sup>Tsinghua University    <sup>2</sup>USTC    <sup>3</sup>Microsoft Research



# “没抵住诱惑” - 2025

- 具身智能/视频生成/世界模型/空间智能/多模态大模型

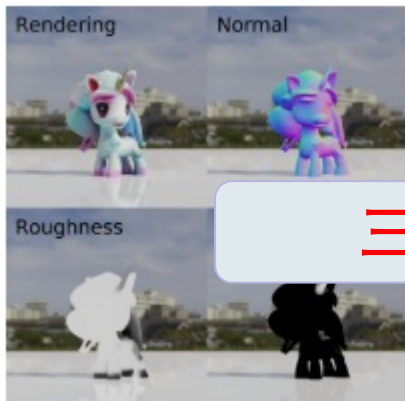


[CVPR 2025] TASTE-Rob



# 同行观察

## “渣”的代表



### 3DTopia-XL: Scaling High-quality 3D Asset Generation via Primitive Diffusion

Zhaoxi Chen, Jiaxiang Tang, Yuhao  
Yushi Lan, Tengfei Wang, Haozhe  
Ziwei Liu.

三维生成

PDF Project Page Code Demo

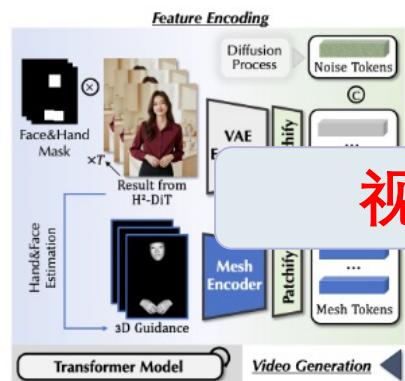


### Benchmarking and Improving Bird's Eye View Perception Robustness in Autonomous Driving

Shaoyuan Xie, Kai Chen, Ziyue  
Wei Ren, Liang Pan,  
Ziwei Liu.

自动驾驶

PDF Code



### AudCast: Audio-Driven Human Video Generation by Cascaded Diffusion Transformers

Jiazhi Guan, Kaisivuan Wang, Zi  
Liang, Yuka  
Wang, Youjun

视频生成

PDF Project Page



### EgoLife: Towards Egocentric Life Assistant

Jingkang Yang, Shuai Liu, Hanming Guo, Yubo Dong, Xiamengwei  
Zhang, Sichen  
Wang, Bei O  
Yuanhan Zhang, Peiyuan Zhang, Fangzhou Hong, Joerg Widmer,  
Francesco Gringoli, Lei Yang, Bo Li, Ziwei Liu.

具身智能

PDF Project Page Code Demo



# 同行观察

## • 忠 的典范



### Lodge++: High-quality and Long Dance Generation with Vivid Choreography Patterns

Arxiv 2024 Project [bib]

Ronghui Li, Hongwen Zhang, Zhang, Xiu Li, Yebin Liu.



### 3D Gaussian Parametric Head Model

ECCV 2024 Project [bib]

Yuelang Xu, Lizhen Wang, Zerong Zheng, Zhaoqi Su, Yebin Liu.



### HumanSplat: Generalized Structure Priors

NeurIPS 2024 Project [bib]

Panwang Pan<sup>1\*</sup>, Zhuo Su\*, C Shen, Yadong Mu, Yebin Liu.



### MeshAvatar: Learning High-quality Triangular Human Avatars from Multi-view Videos

ECCV 2024 Project [bib]

Yushuo Chen, Zerong Zheng, Zhe Li, Chao Xu, Yebin Liu.



### Human4DiT: 360-degree Transformer

SIGGRAPH ASIA 2024 (Jou)

Ruizhi Shao\*, Youxin Pang\*, Z



### Tele-Aloha: A Low-budget and High-authenticity Telepresence System Using Sparse RGB Cameras

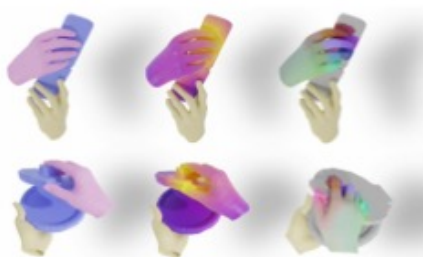
SIGGRAPH 2024 Project [bib]

Hanzhang Tu, Ruizhi Shao, Xue Dong, Shunyuan Zheng, Hao Zhang, Lili Chen, Meili Wang, Wenyu Li, Siyan Ma, Shengping Zhang, Boyao Zhou, Yebin Liu.



# 同行观察

- “忠”的典范



## ManiDext: Hand-Object Manipulation Synthesis via Continuous Correspondence Embeddings and Residual-Guided Diffusion

Arxiv 2024 Preprint

具身智能

Jiajun Zhang, Yuxiang Zhang, Liang An, Mengcheng Li, Hongwen Zhang, Zonghai Hu, Yebin Liu.



## Three-dimensional surface motion capture of multiple freely moving pigs using MAMMAL

Nature Communications

AI for Science [bib]

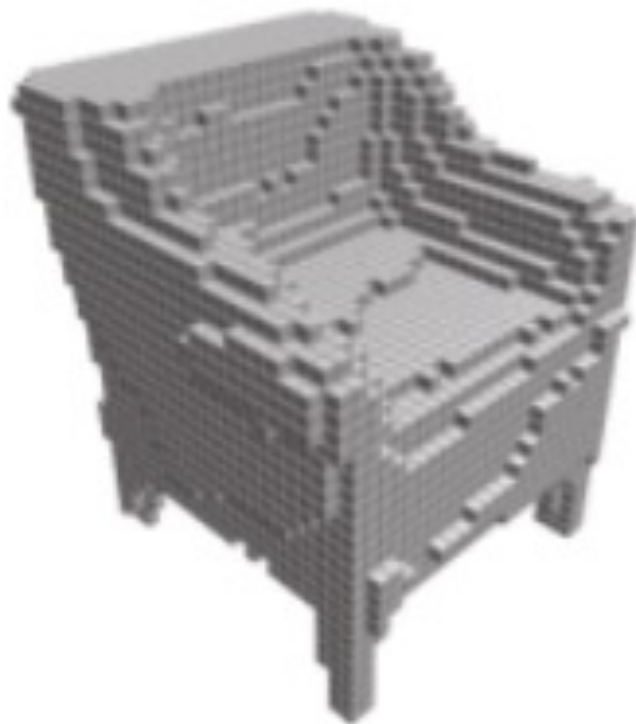
Liang An, Jilong Ren, Tao Yu, Tang Hai, Yichang Jia, Yebin Liu.



# 十年之痒如何破？



2015



3DR2N2

2025



Hi3DGen



# 方法一：找新鲜感

[Arxiv 2025] Exploring Disentangled and Controllable Human Image Synthesis: From End-to-End to Stage-by-Stage



# 方法二：找刺激感

[Arxiv 2025] Hi3DGen: High-fidelity 3D Geometry Generation from Images via Normal Bridging



a.Hunyuan3D-2.0

b.Clay

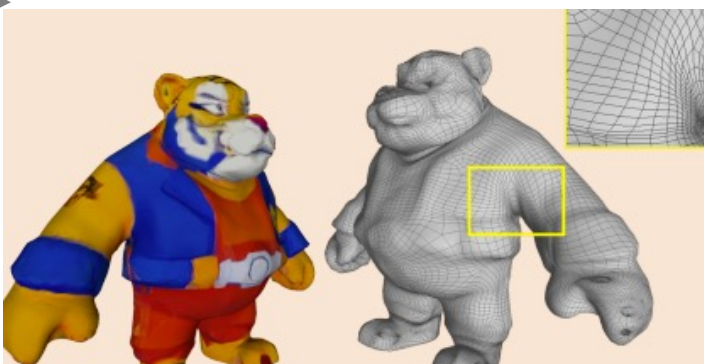
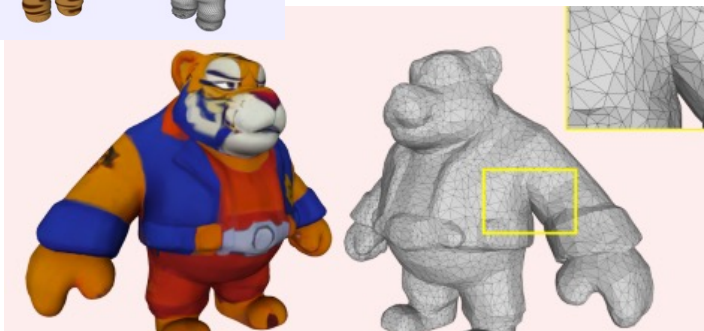
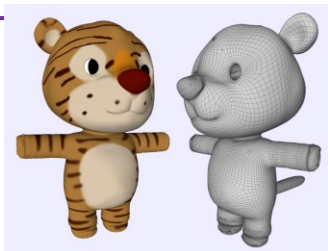
c.Tripo-2.5

d.Trellis

e.Hi3DGen(Ours)

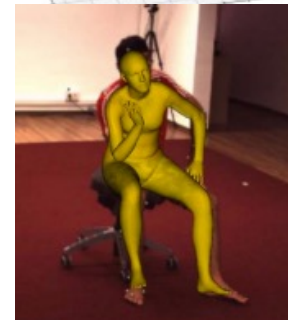
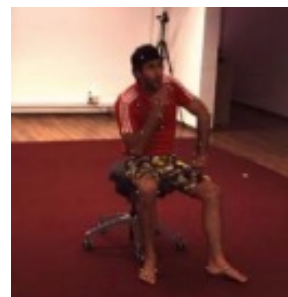


# 方法三：找回初心

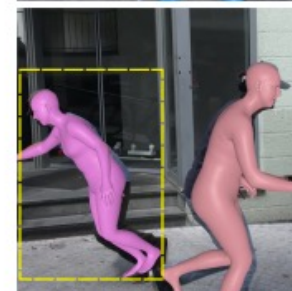
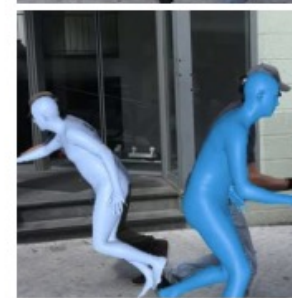
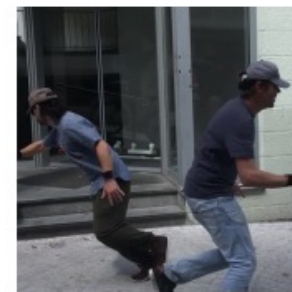
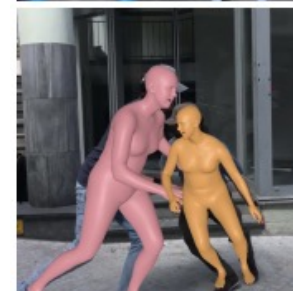


[CVPR 23] RaBit

[CVPR 25] StableScore



[TPAMI 21]  
Hemlets Posh



[CVPR 25]  
Motions as Queries



# 方法四：锻炼身体

户外跑步

## 10.06 公里



### 运动数据

查看详情

训练时长	平均配速	运动消耗
01:06:27	06'36"	872 千卡
总时长	运动负荷	爬升高度
01:06:28	196	220 米
平均步频	平均功率	平均步幅
168	201 瓦	0.89 米

完成 燕园\_...

隐私

...

户外跑步

## 42.25 公里



### 运动数据

查看详情

运动时长	平均配速	运动消耗
05:34:02	07'54"	3350 千卡
总时长	累计爬升	平均步频
05:51:51	287 米	167 步/分

庶刚

2025/04/06 12:28 - 18:00 杭州市 · 晴 · 25°C

...

户外跑步

## 42.22 公里



### 运动数据

训练时长	平均配速	运动消耗
05:12:18	07'23"	3410 千卡
总时长	运动负荷	爬升高度
05:31:55	964	83 米
平均步频	平均功率	平均步幅
183	170 瓦	0.73 米



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# 写在最后

- **GAP Lab @ CUHKSZ**
  - **Generation and Analysis of Pixels, Points and Polygon**
- **Generation: 三维结构生成、动态场景生成**
- **Analysis : 具身感知、空间智能**

**欢迎各种形式的合作！**

**谢谢！**

