

# MonoNeRF: Learning Generalizable NeRFs from Monocular Videos without Camera Poses

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# ~~Per-scene Optimization~~

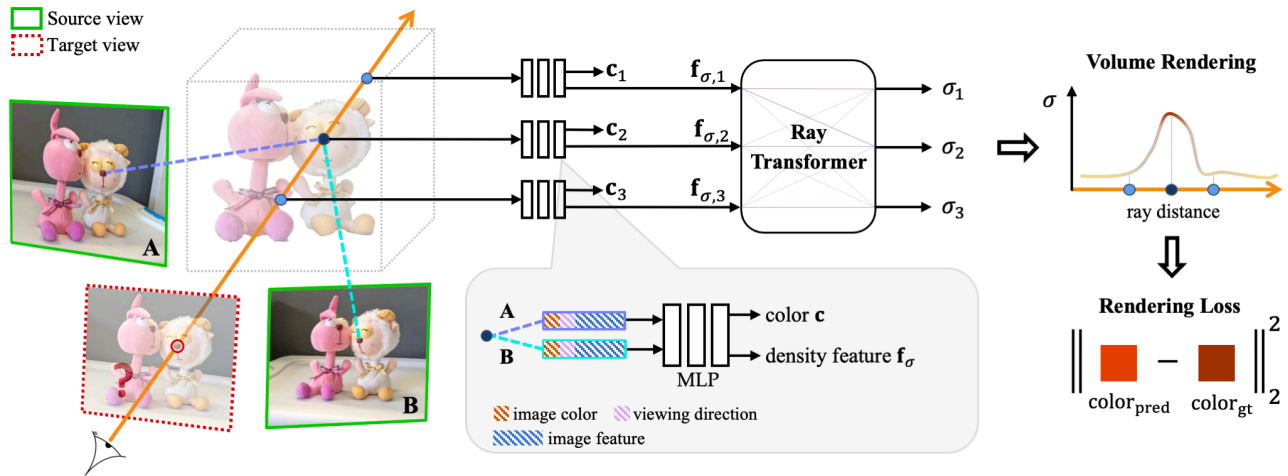
## Generalizable NeRFs



NeRFs have achieved promising progress on rendering photorealistic images

# ~~Requirement on camera poses~~

Can we learn generalizable NeRFs without camera poses?



IBRNet



GPNR

Several efforts have been made on generalizable NeRFs

Monocular  
Depth



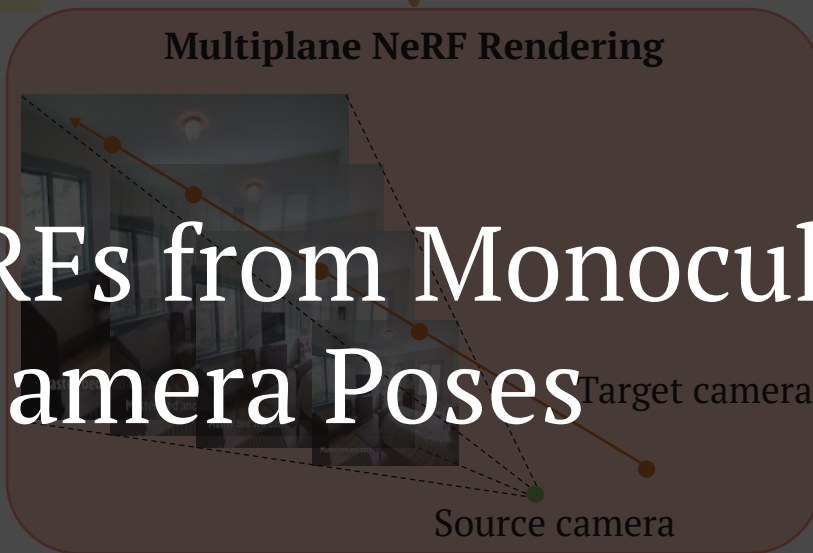
Input Video



Encoder

# Learn Generalizable NeRFs from Monocular Videos without Camera Poses

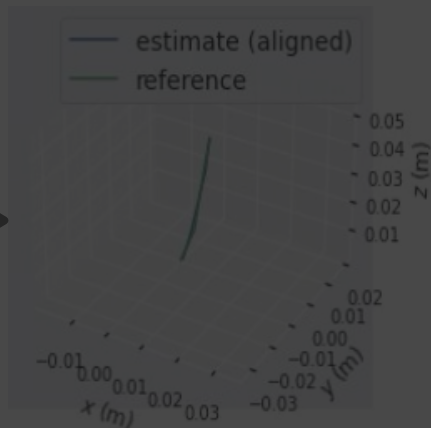
Multiplane NeRF Rendering

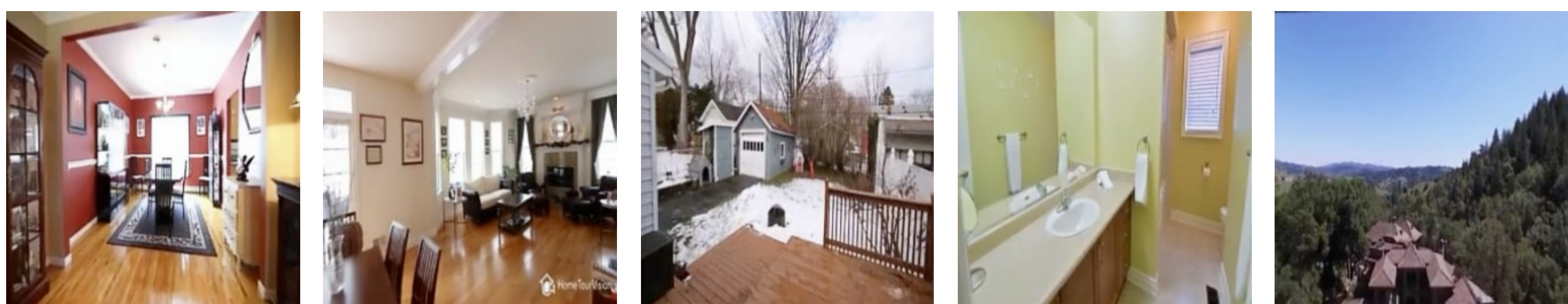


Novel View  
Reconstruction

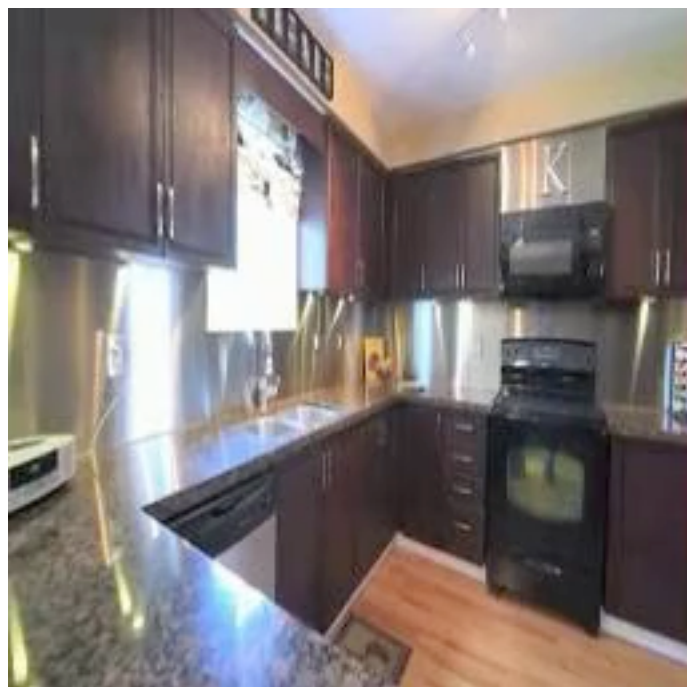


Camera  
Trajectory

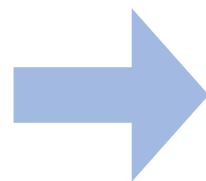




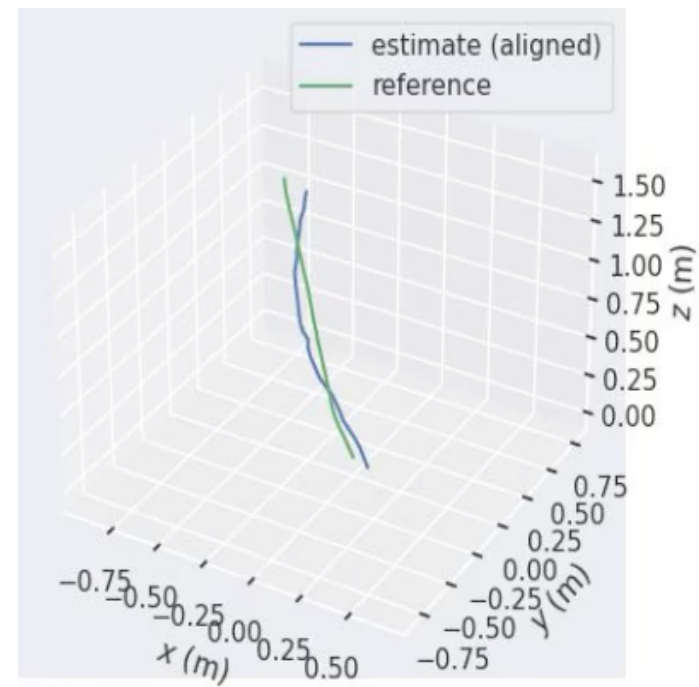
(a) Single-view Novel View Synthesis



Input Video



(b) Monocular Depth



(c) Camera Trajectory

# Results

Novel View Synthesis

# Novel View Synthesis

**Input View**



**VideoAE**



**MonoNeRF**



# Novel View Synthesis

**Input View**



**VideoAE**



**MonoNeRF**





# Novel View Synthesis

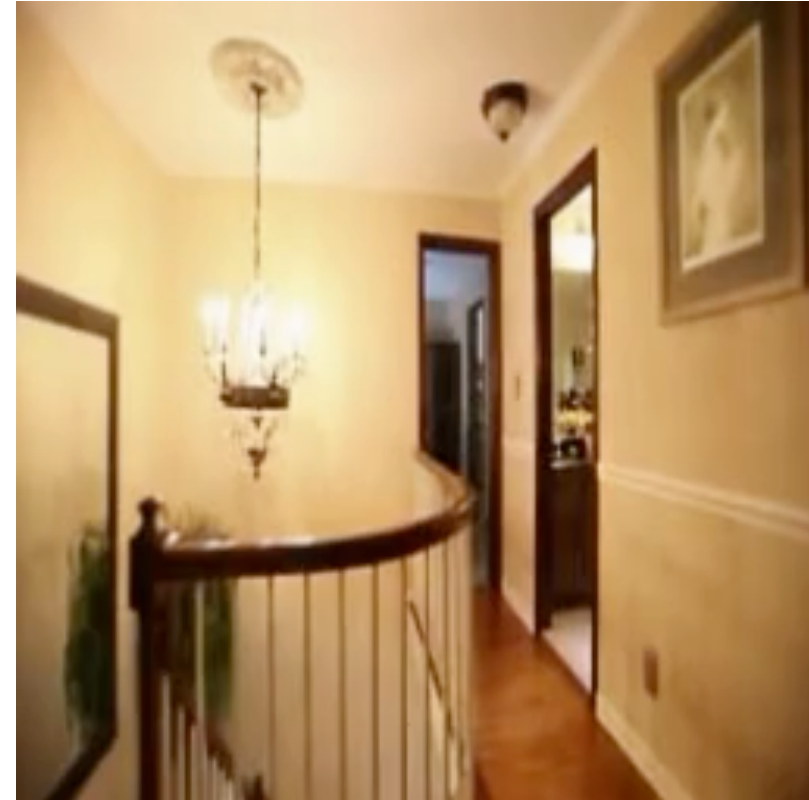
**Input View**



**VideoAE**



**MonoNeRF**



# Results

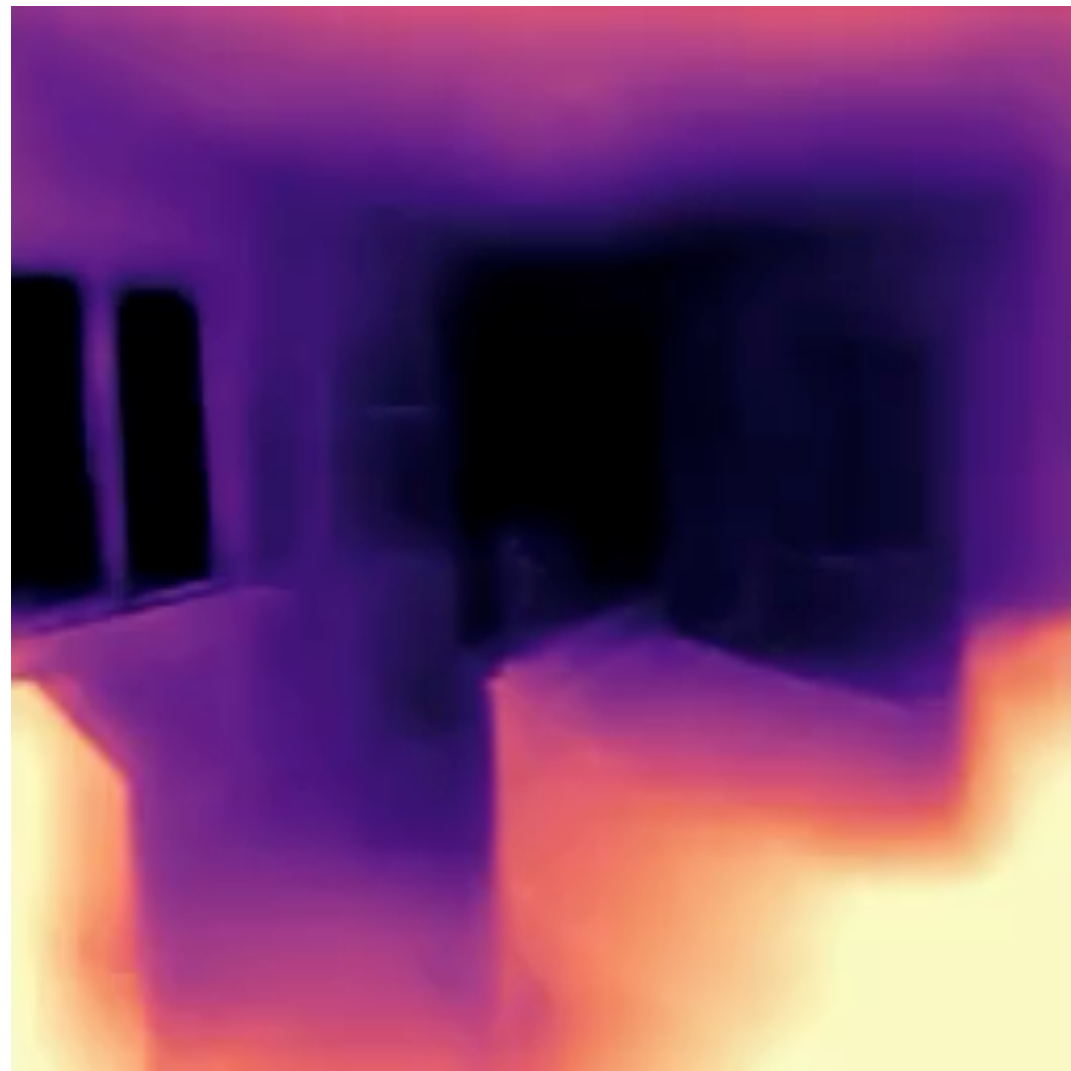
## Depth Estimation

# Depth Estimation

Input Video



Depth Estimation

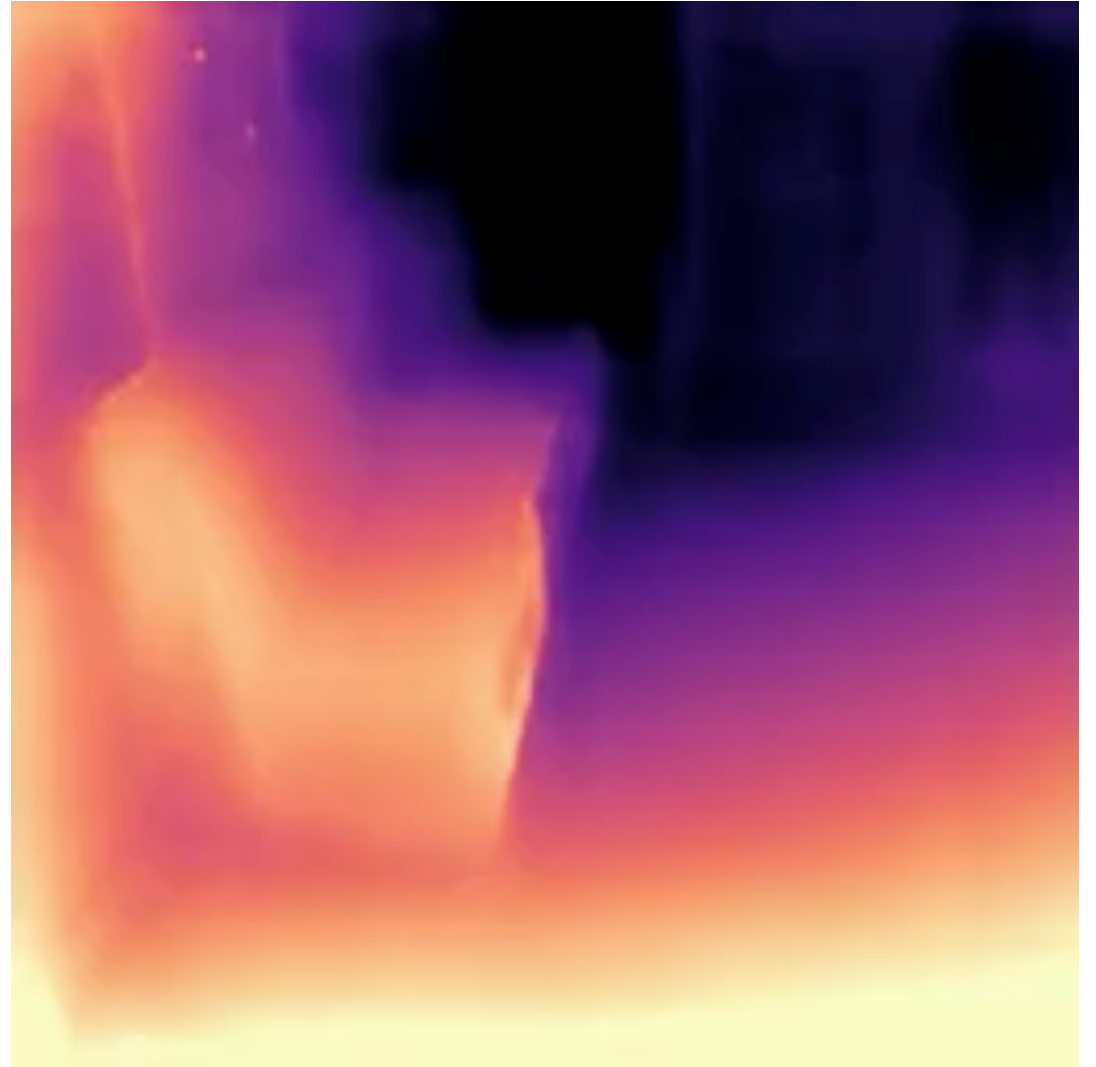


# Depth Estimation

**Input Video**



**Depth Estimation**

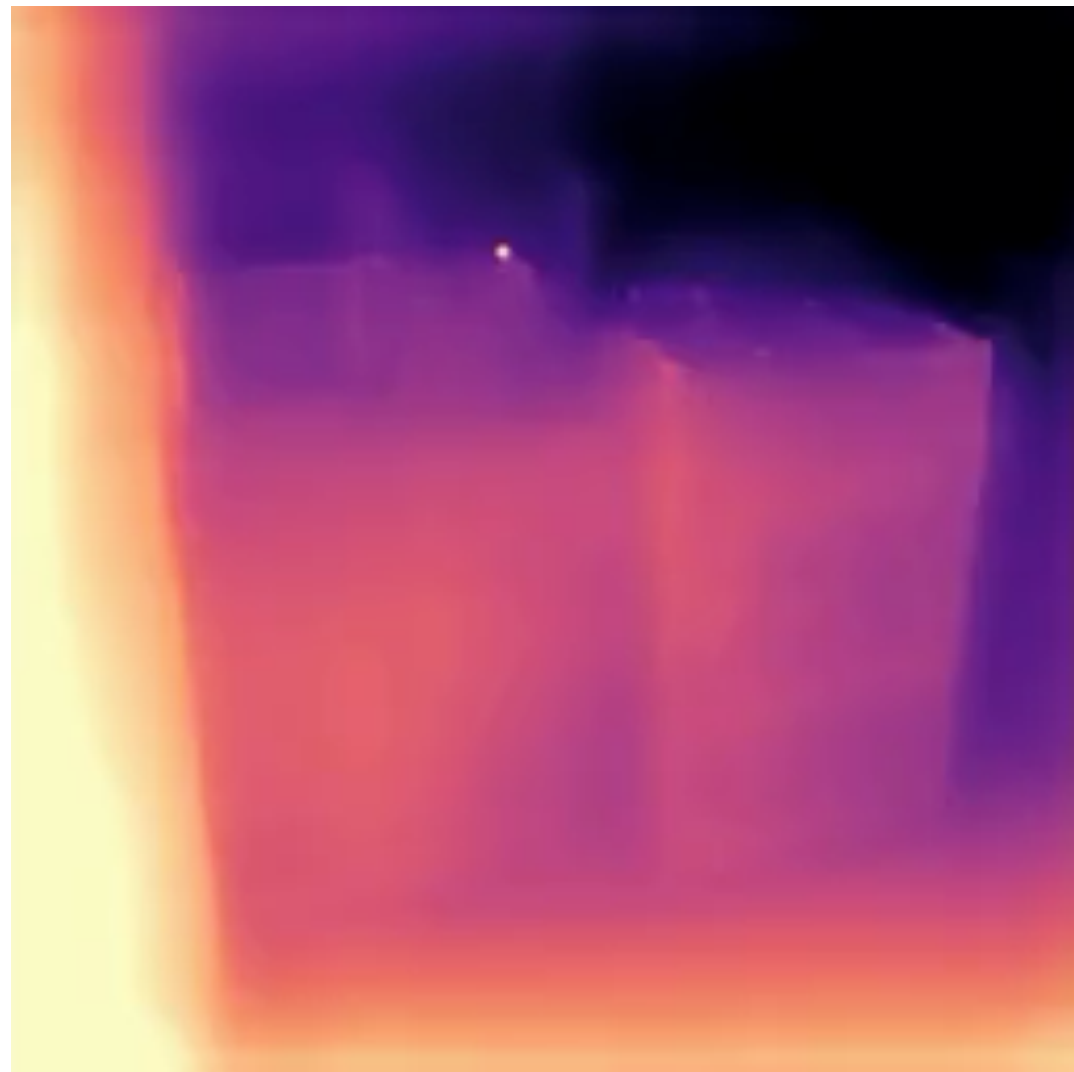


# Depth Estimation

Input Video



Depth Estimation



# Results

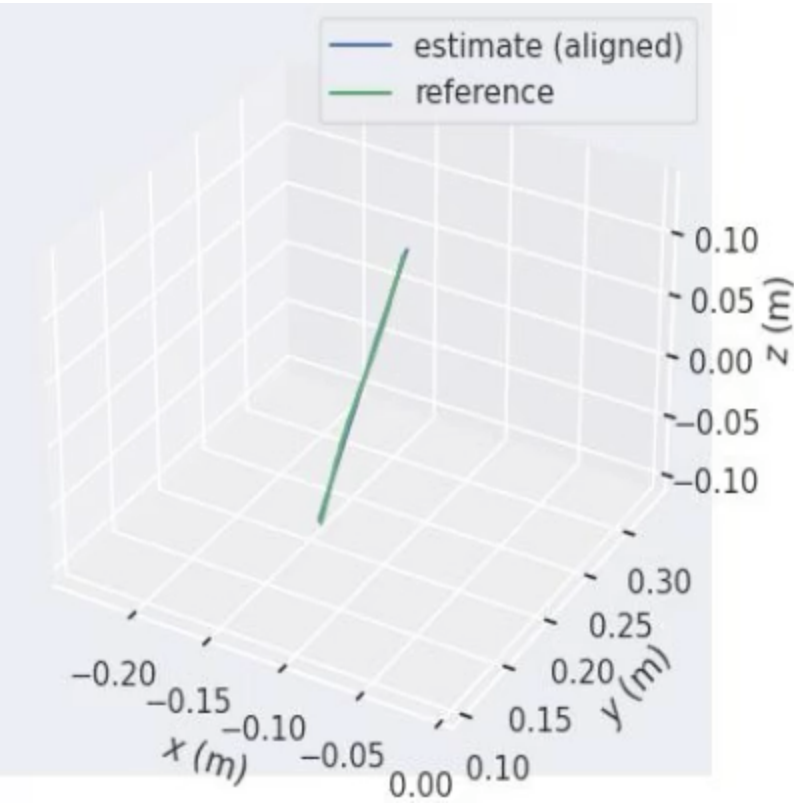
Camera Pose Estimation

# Camera Pose Estimation

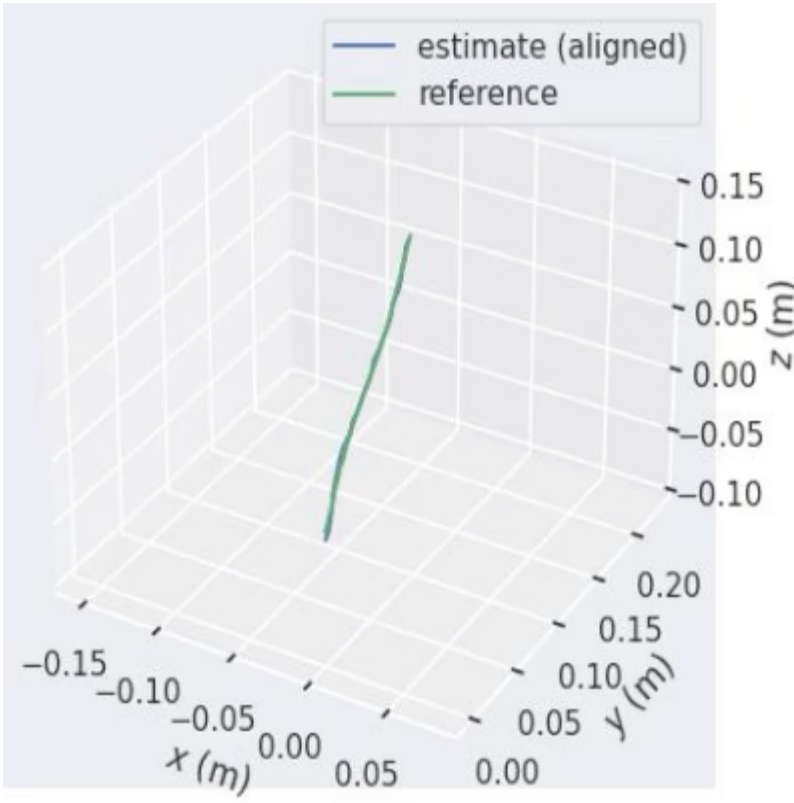
Input Video



VideoAE



MonoNeRF

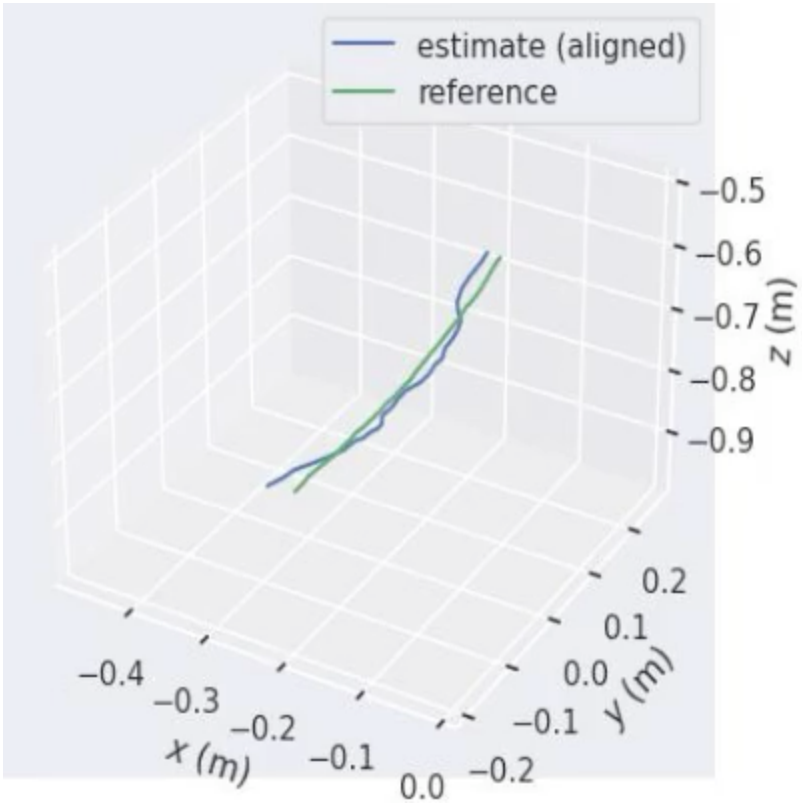


# Camera Pose Estimation

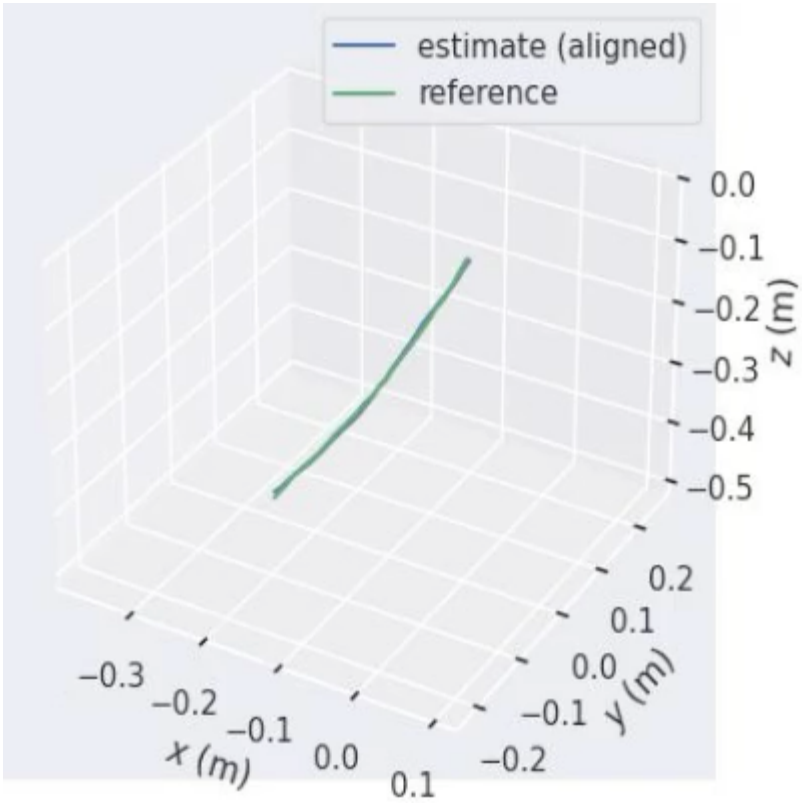
## Input Video



## VideoAE



## MonoNeRF



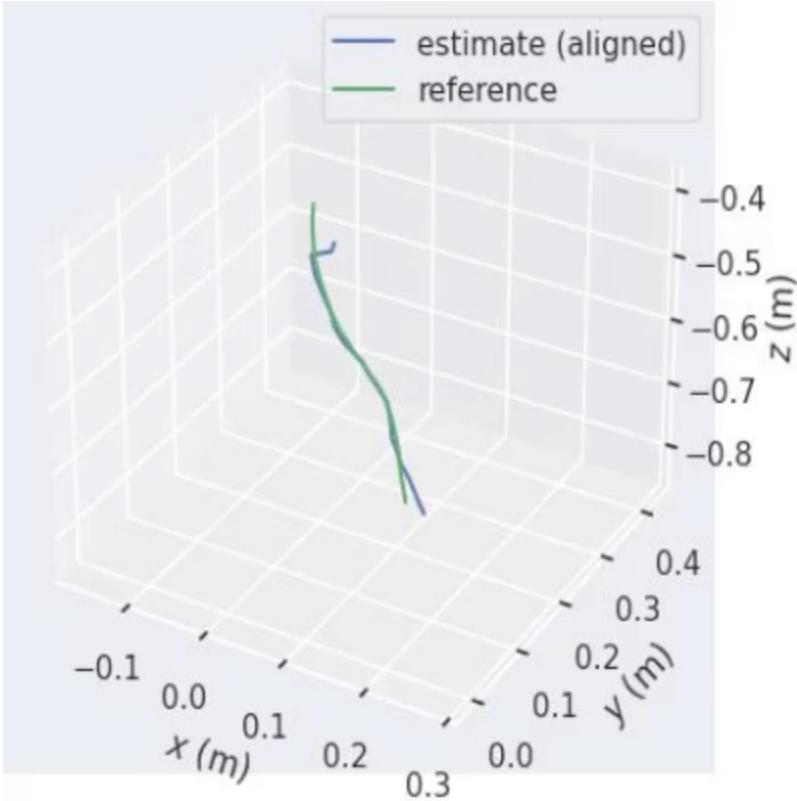


# Camera Pose Estimation

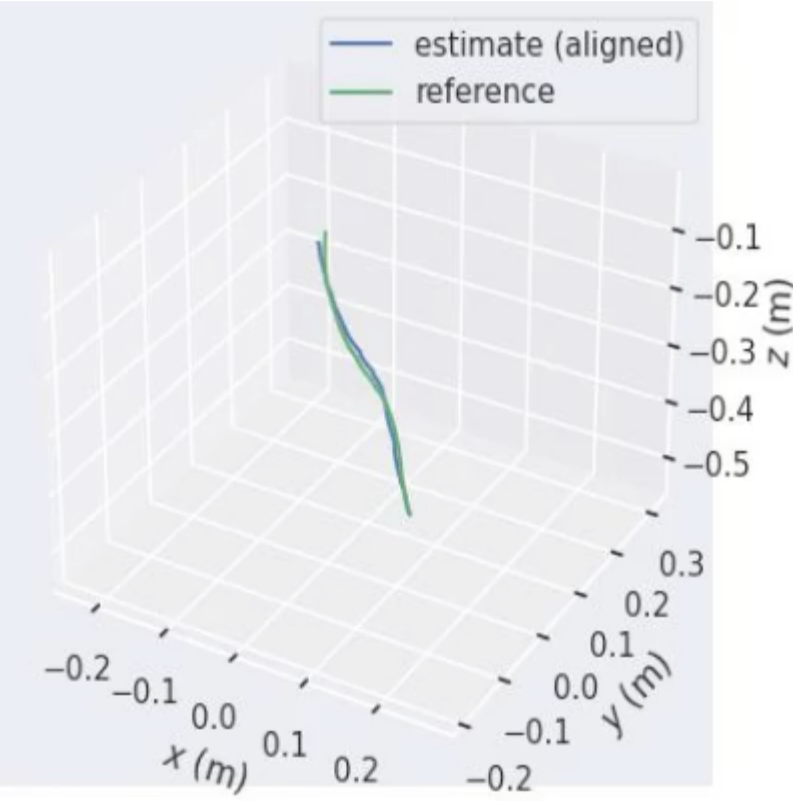
## Input Video



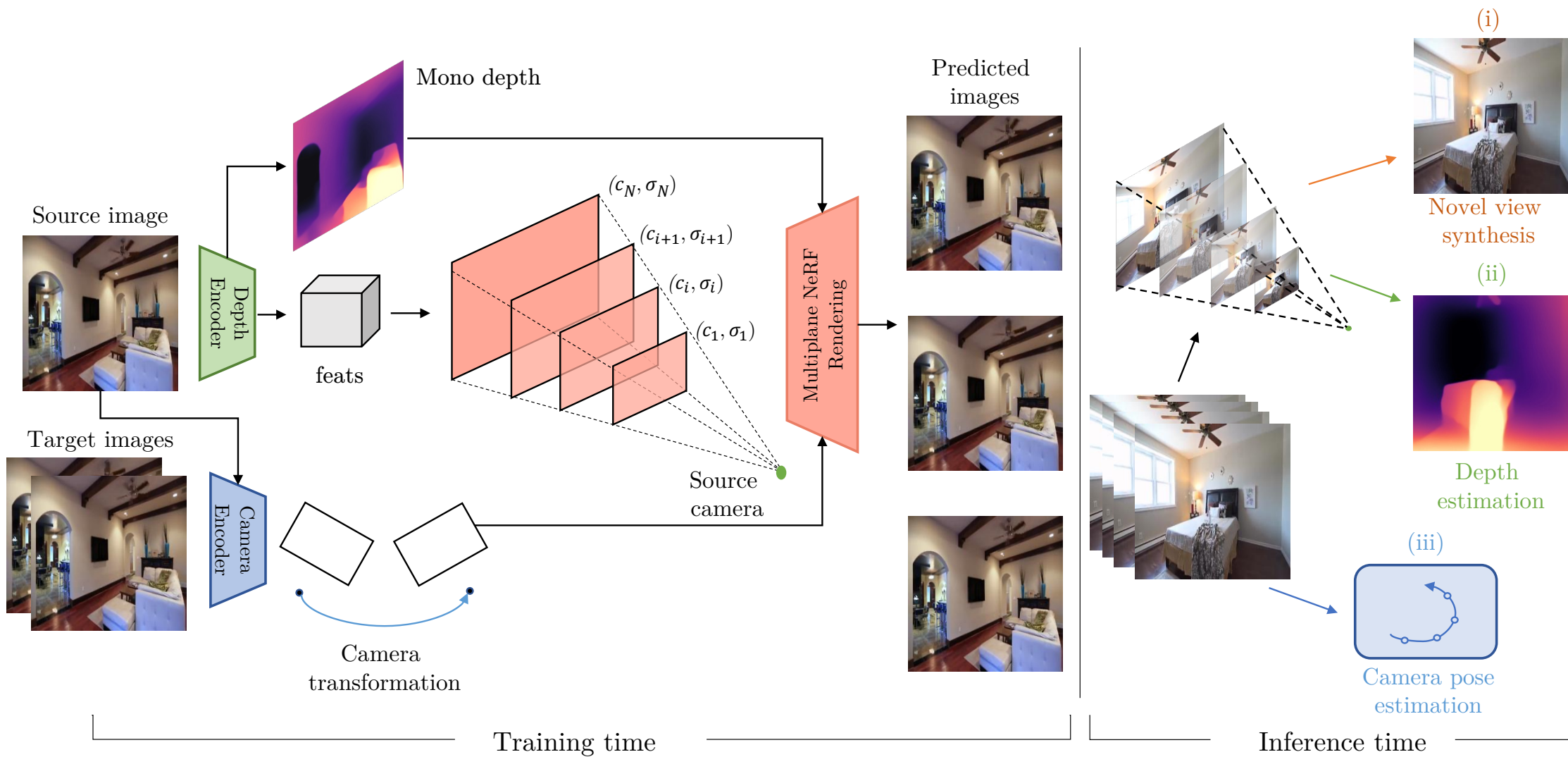
## VideoAE



## MonoNeRF



# Algorithm



**Thanks!**