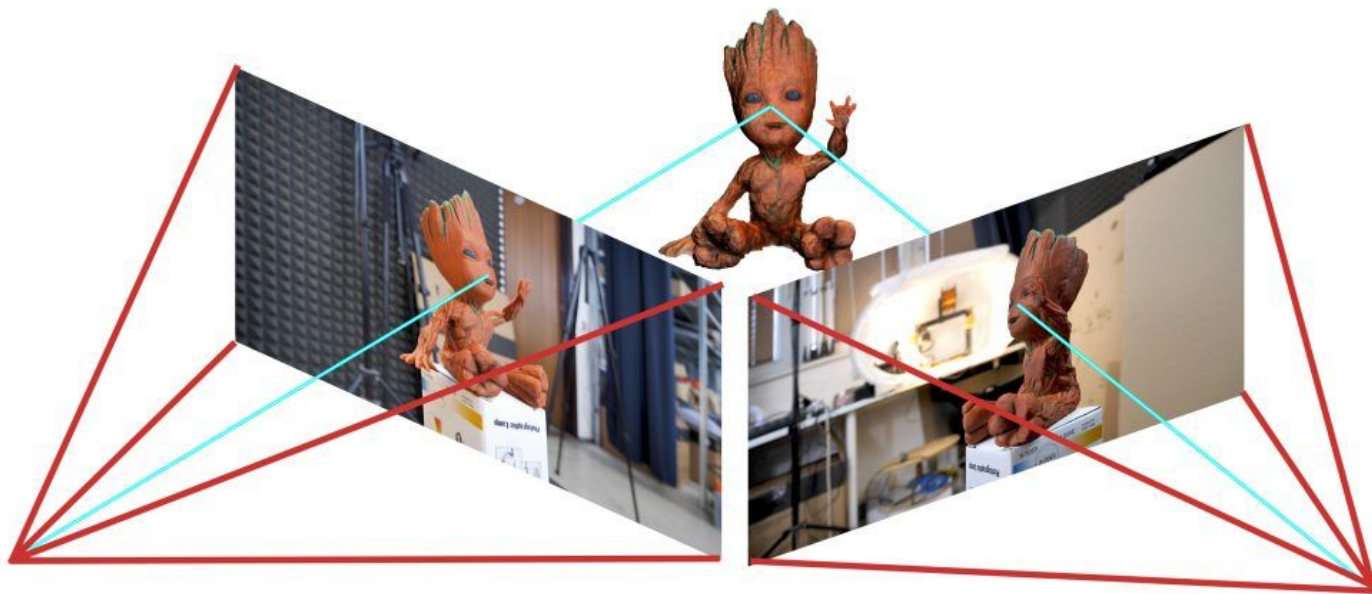


# Nuages de Points et Modélisation 3D

8 - Geometric vision

# I - Structure from motion

# Epipolar geometry



# Multiview reconstruction



# Deep blending

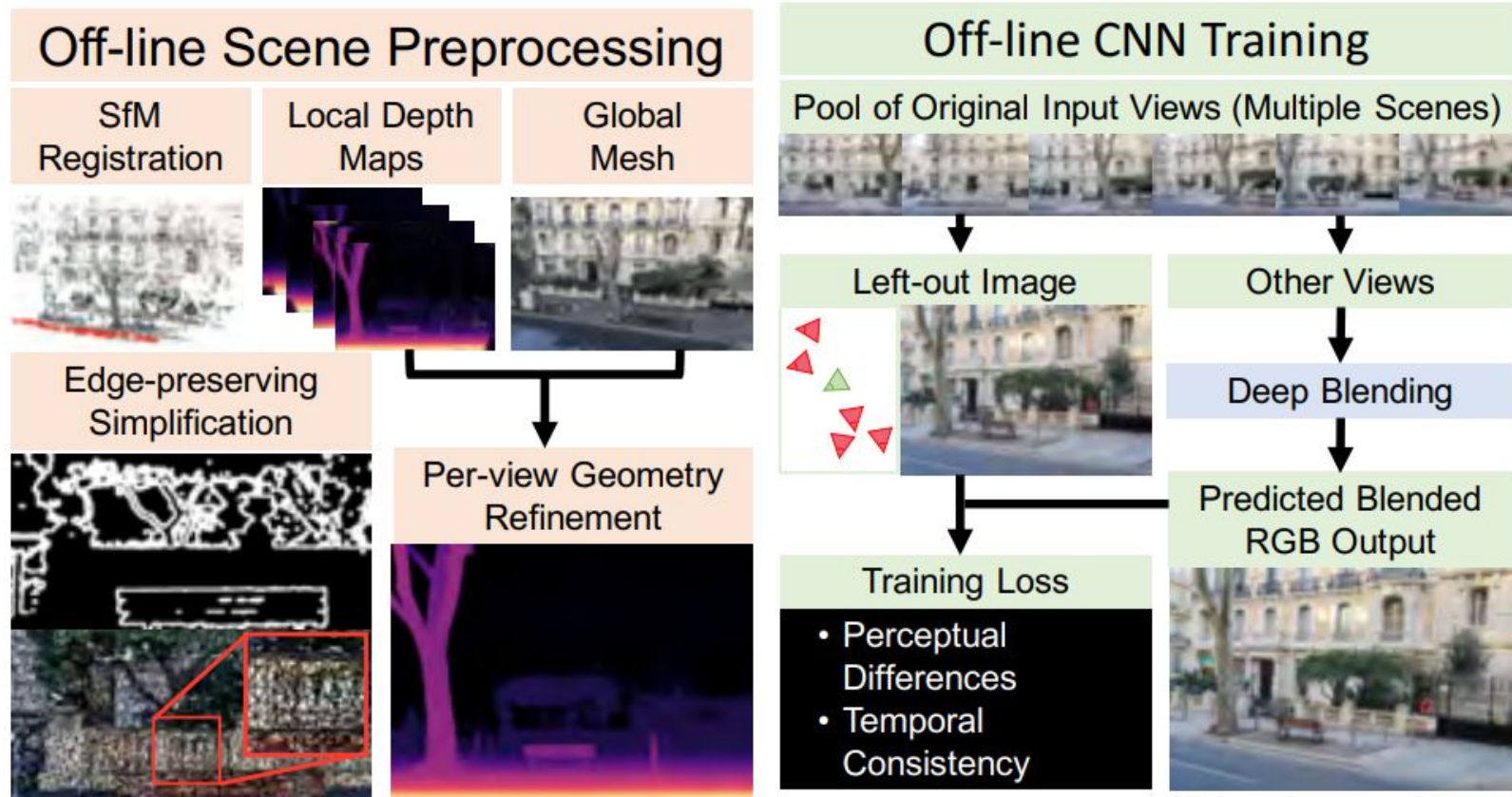
**Top:**  
Mesh-based rendering  
(RealityCapture)

**Bottom:**  
Point-based approach  
(COLMAP)

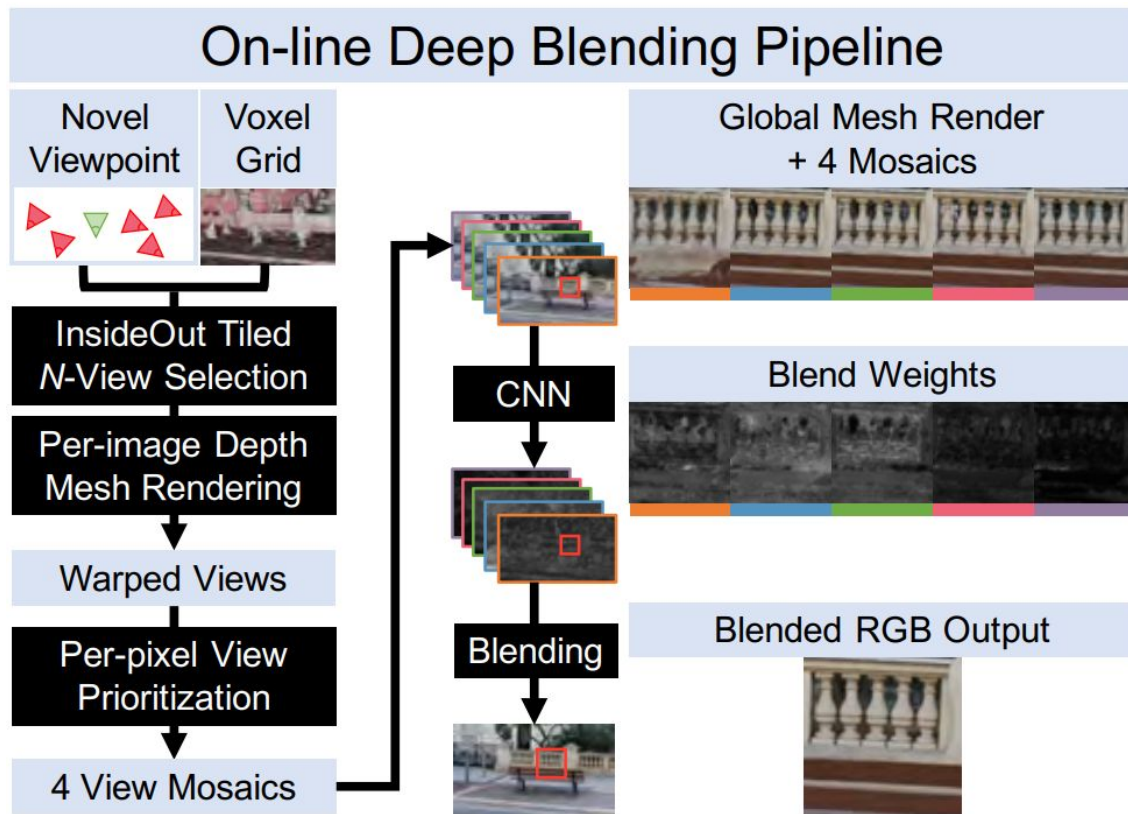




# Deep blending



# Deep blending



# Deep blending





# Deep blending

Video at <https://repo-sam.inria.fr/fungraph/deep-blending/>

# II - Neural Radiance Fields

# NeRF

Input Images

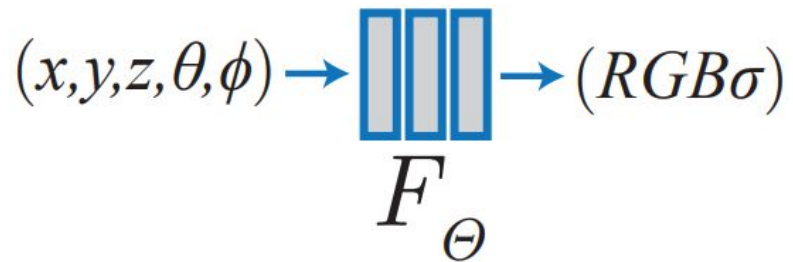


Optimize NeRF



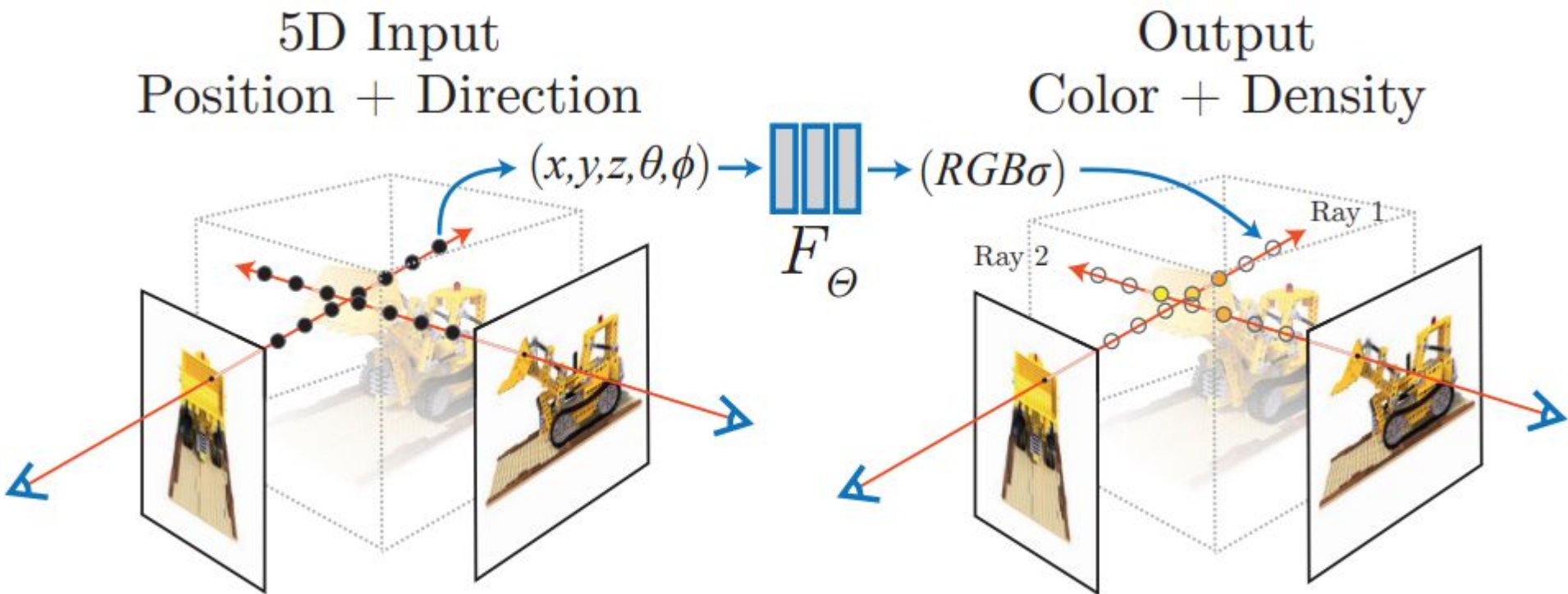
Render new views

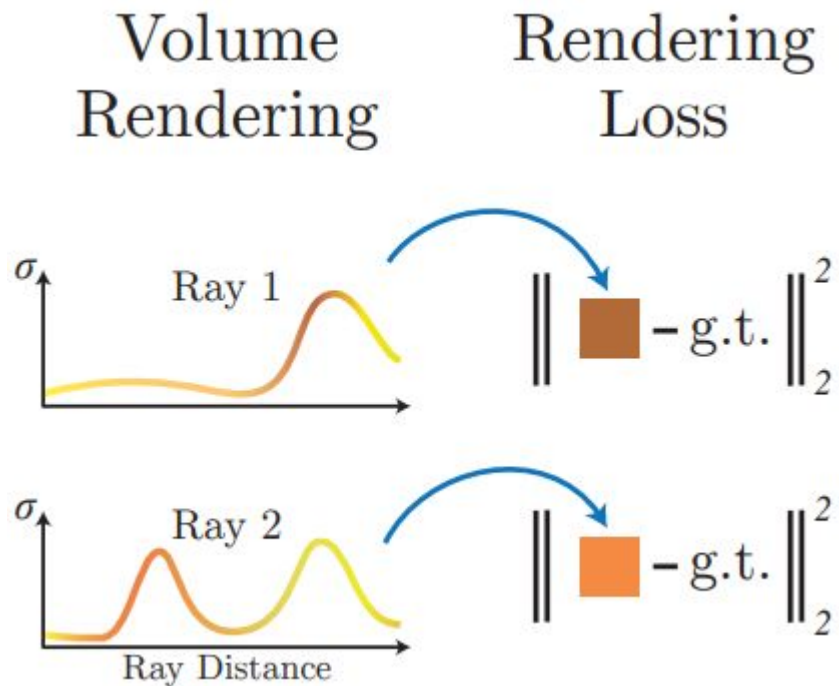






# NeRF

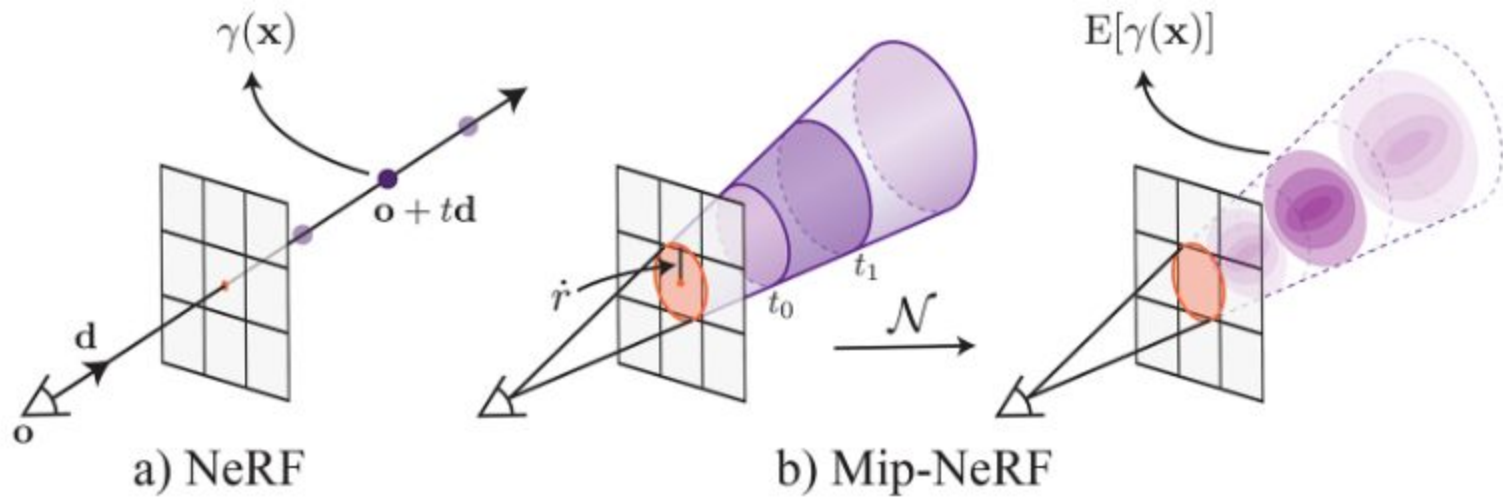




# NeRF

Videos at <https://www.matthewtancik.com/nerf>

# Mip-NeRF

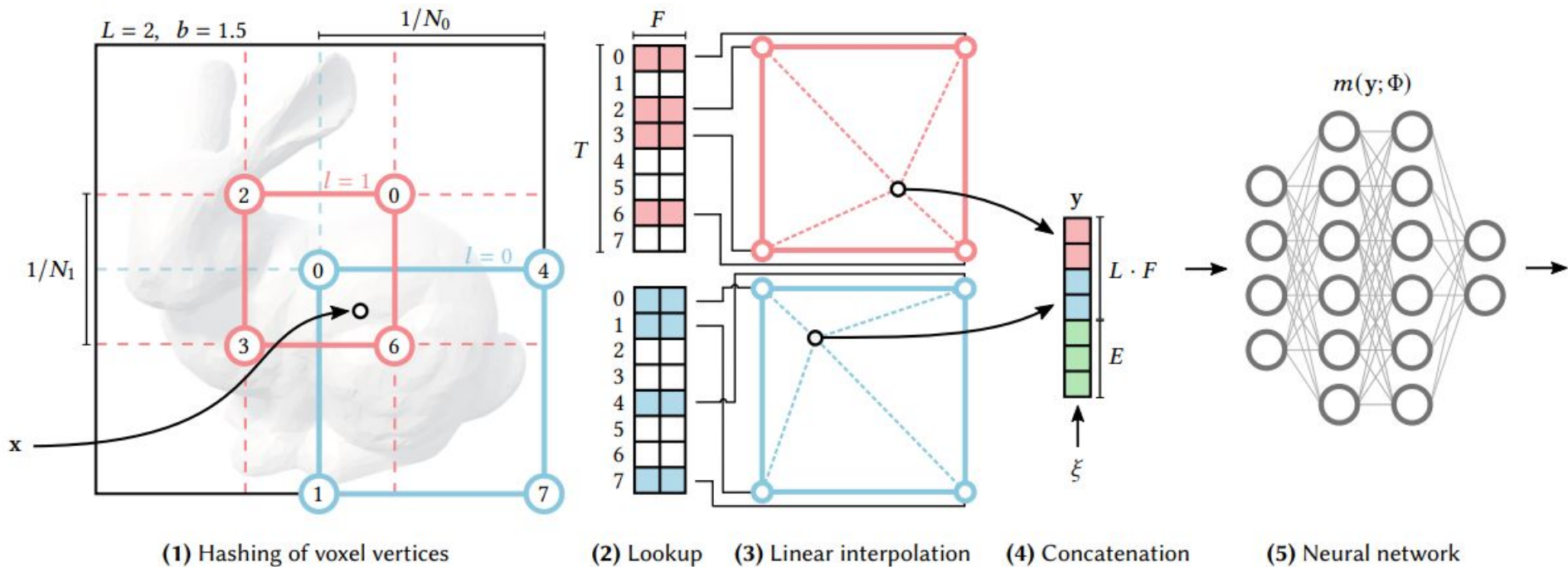


# Mip-NeRF

Videos for Mip-NeRF: <https://jonbarron.info/mipnerf/>

Videos for Mip-NeRF 360: <https://jonbarron.info/mipnerf360/>

# InstantNGP

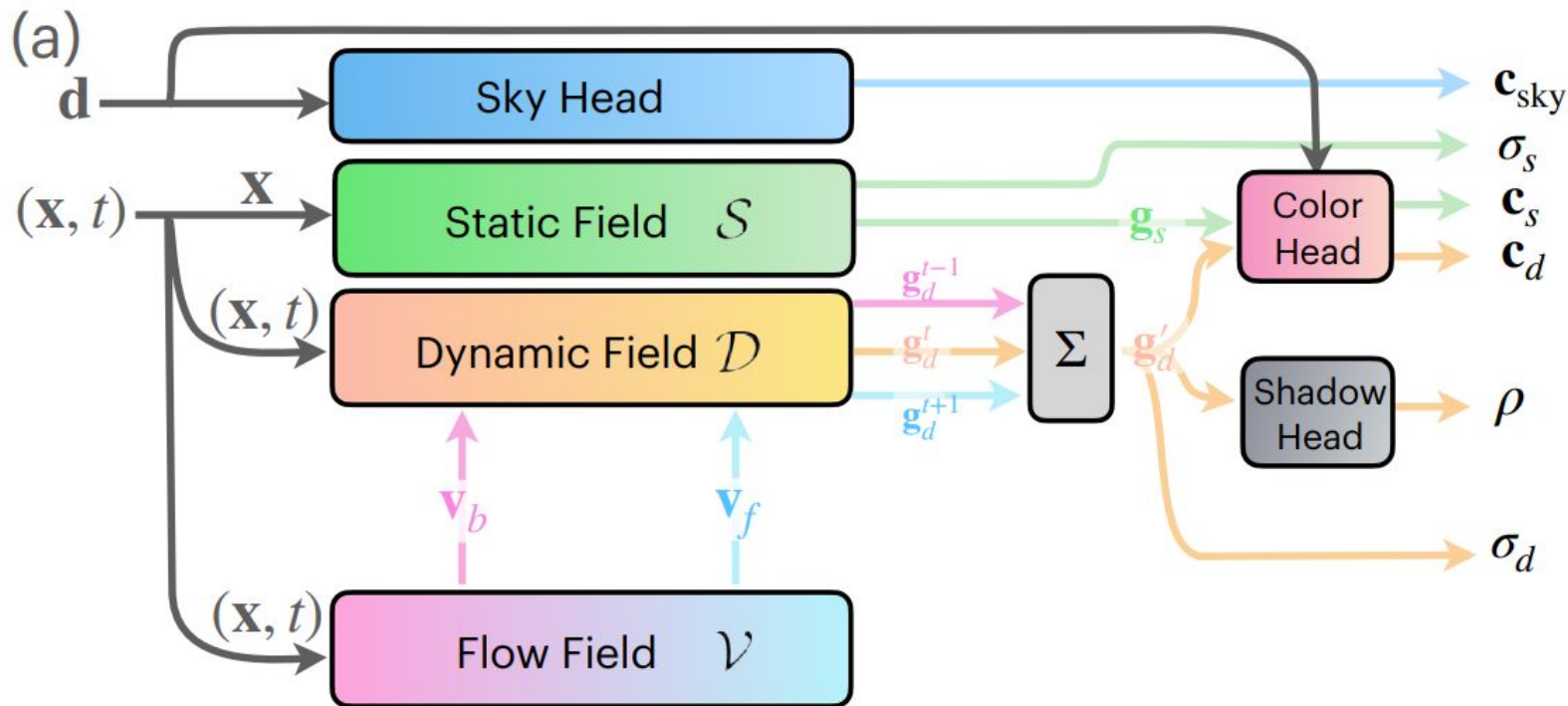




# InstantNGP

Videos at: <https://nvlabs.github.io/instant-ngp/>

# EmerNeRF

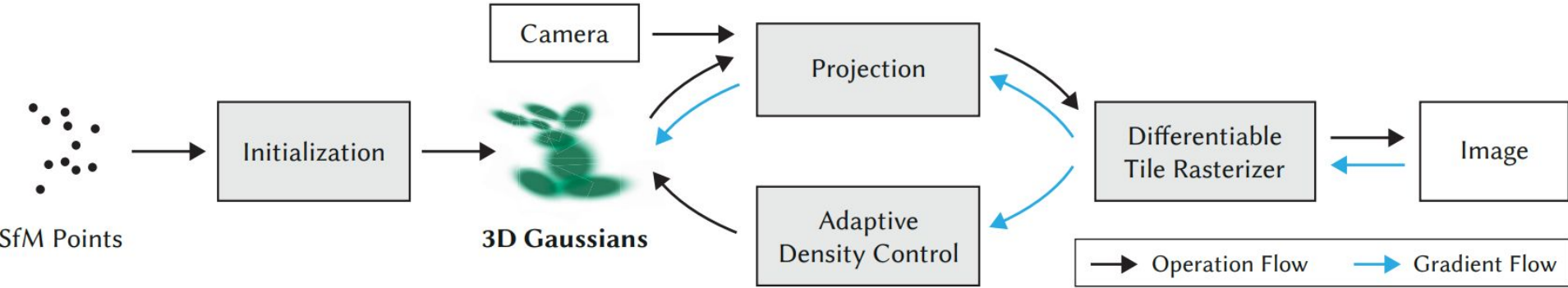


# EmerNeRF

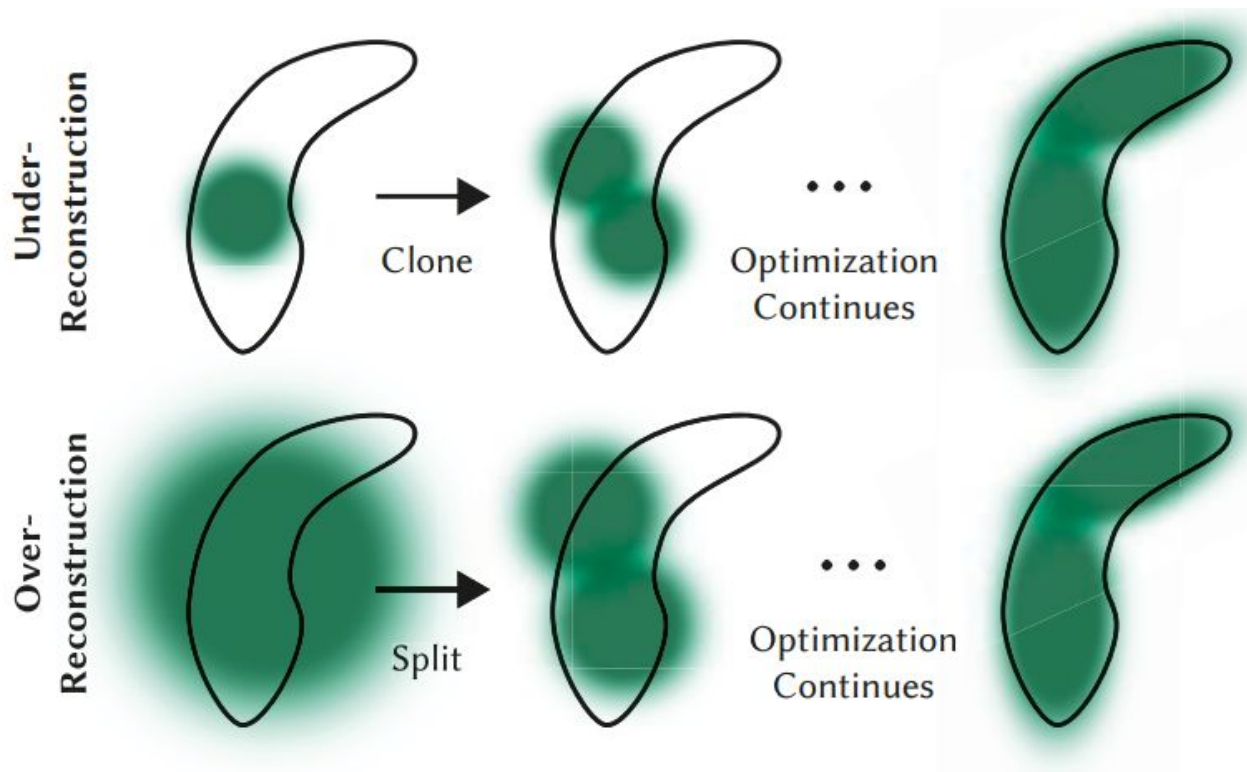
Videos at: <https://emernerf.github.io/>

# II - Gaussian Splatting

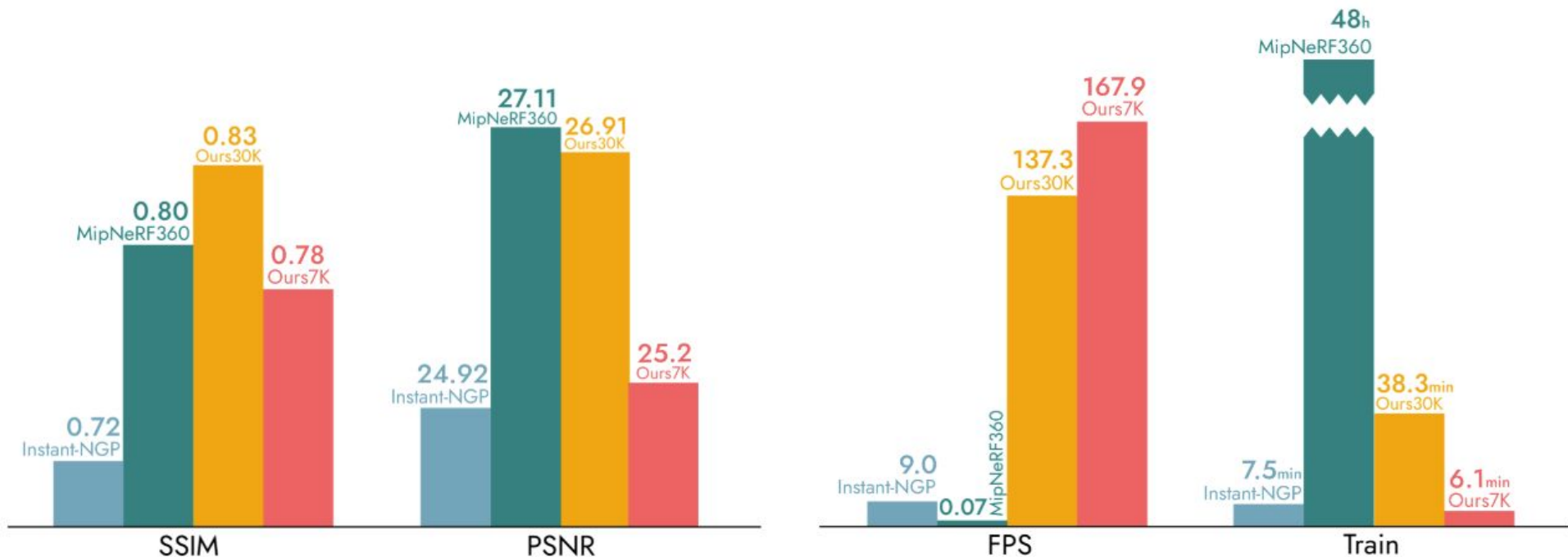
# 3D Gaussian Splatting



# 3D Gaussian Splatting



# 3D Gaussian Splatting

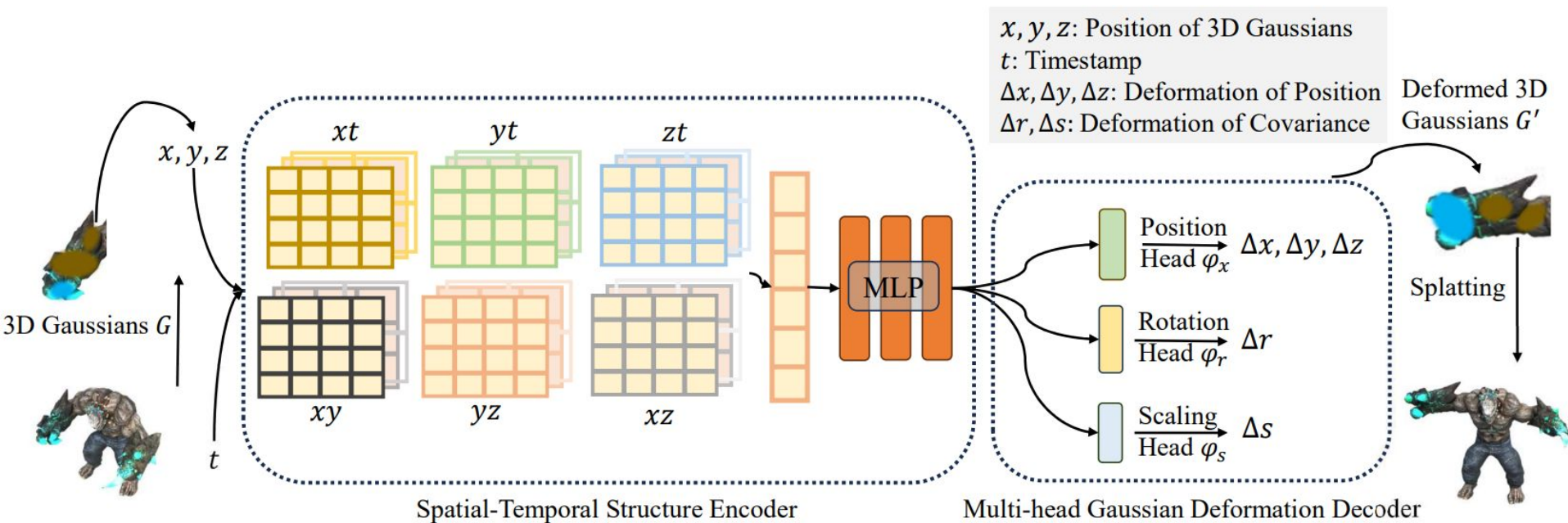




# 3D Gaussian Splatting

Videos at: <https://repo-sam.inria.fr/fungraph/3d-gaussian-splatting/>

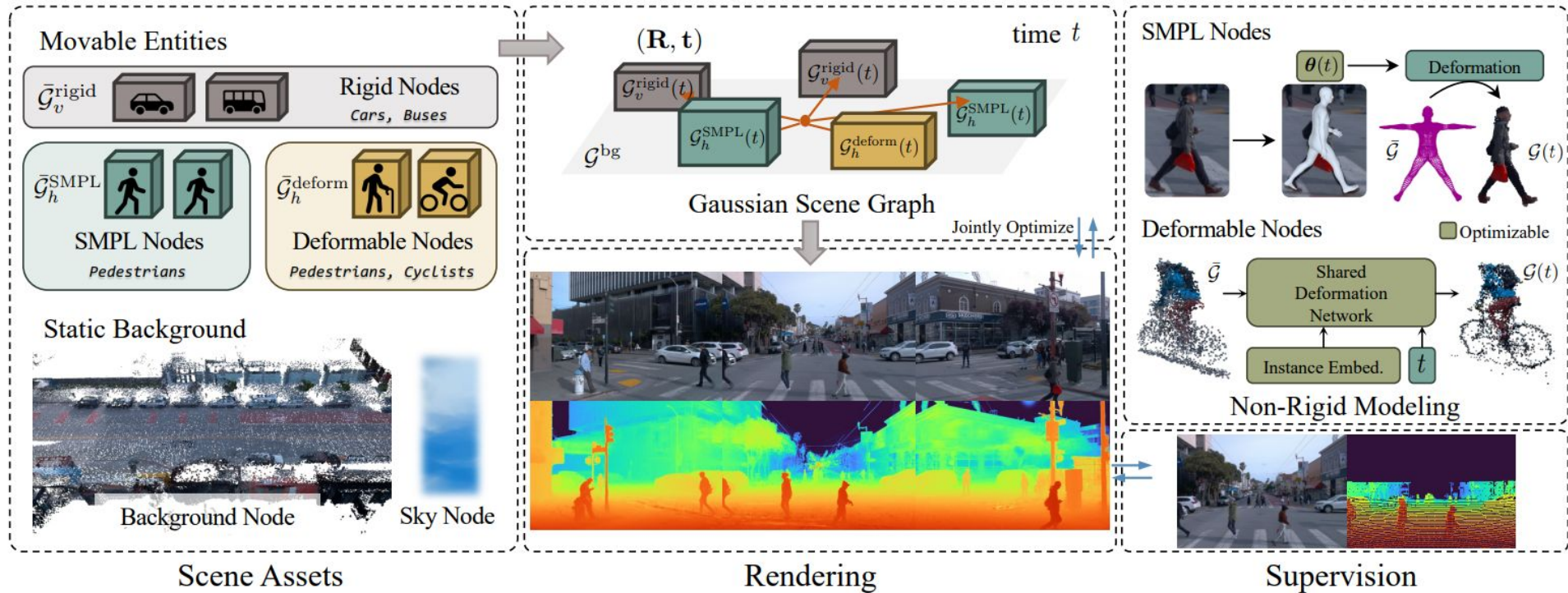
# 4D Gaussians



# 4D Gaussians

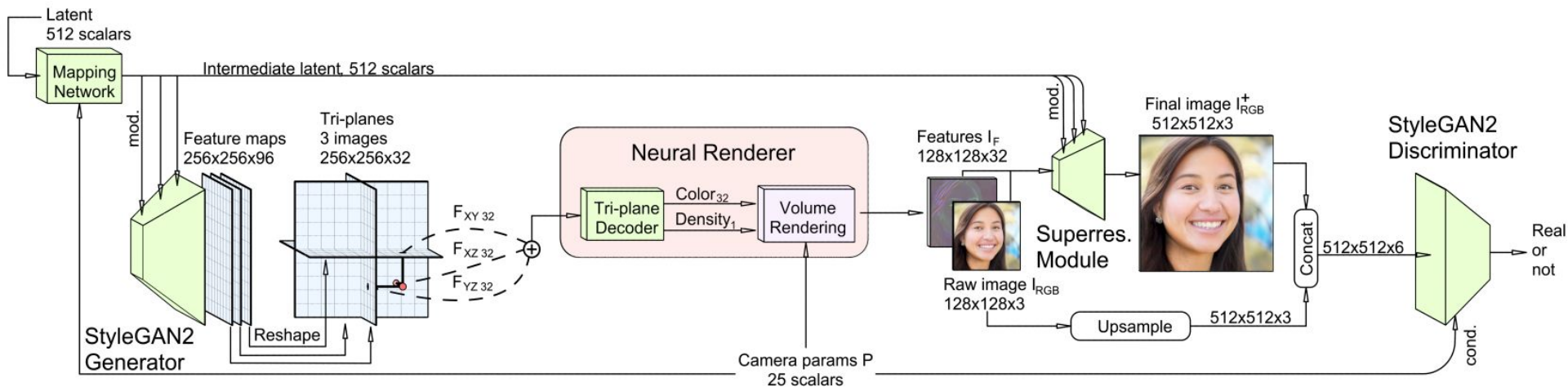
Videos at: <https://guanjunwu.github.io/4dgs/>

# OmniRe



# III - Usage of NeRFs and Gaussian Splatting

# EG3D

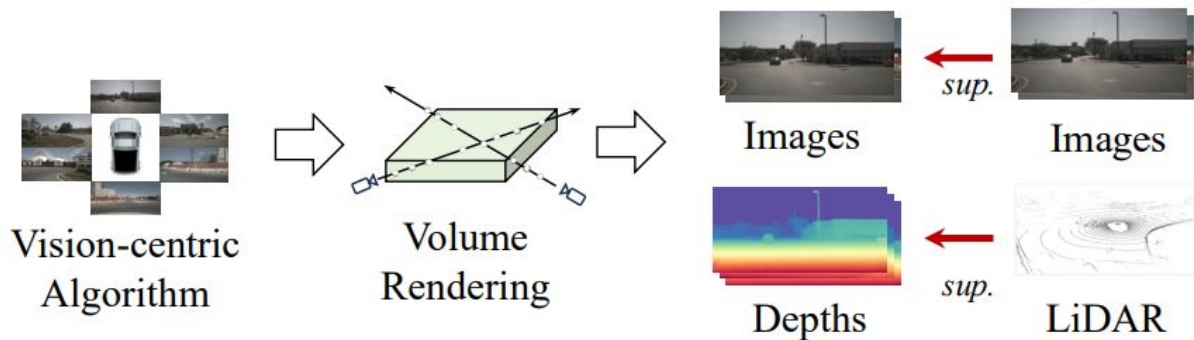


# EG3D

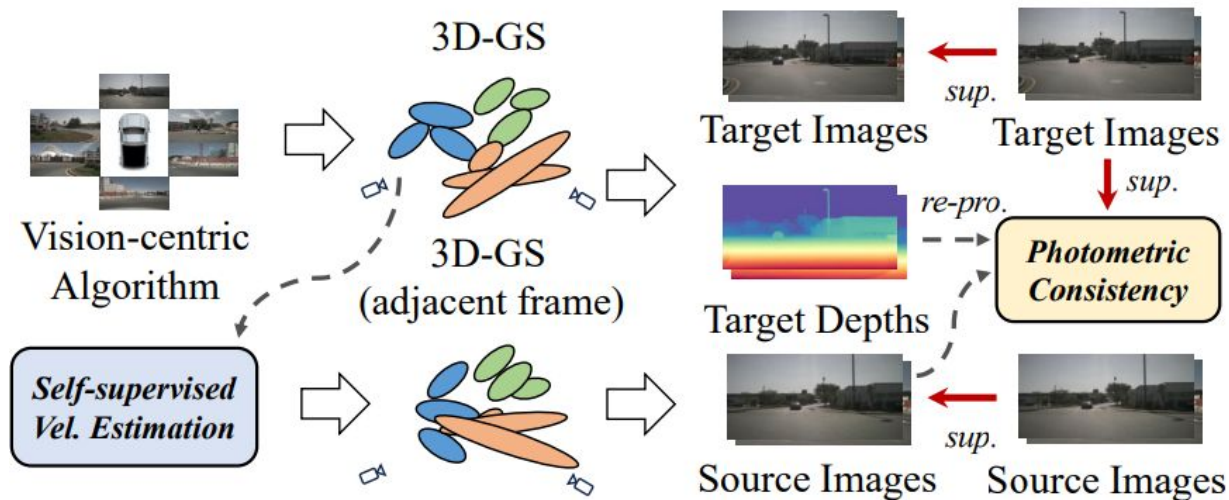
Videos at: <https://nvlabs.github.io/eg3d/>

# Pretraining

## Pretrain for semantic occupancy prediction from images.



(a) UniPAD: volume rendering with explicit depth supervision

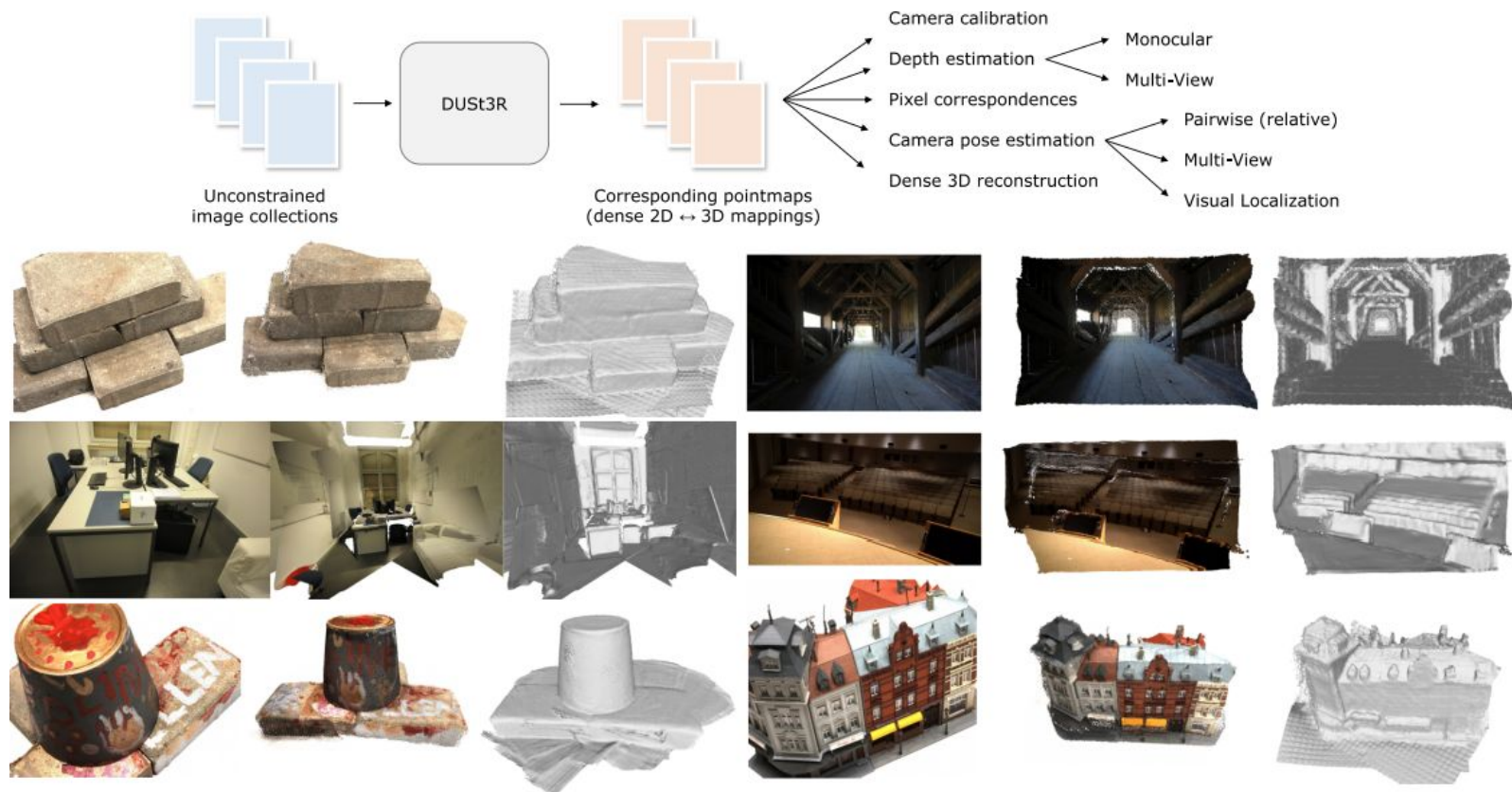


(b) *VisionPAD: 3D-GS with solely vision-centric supervision*

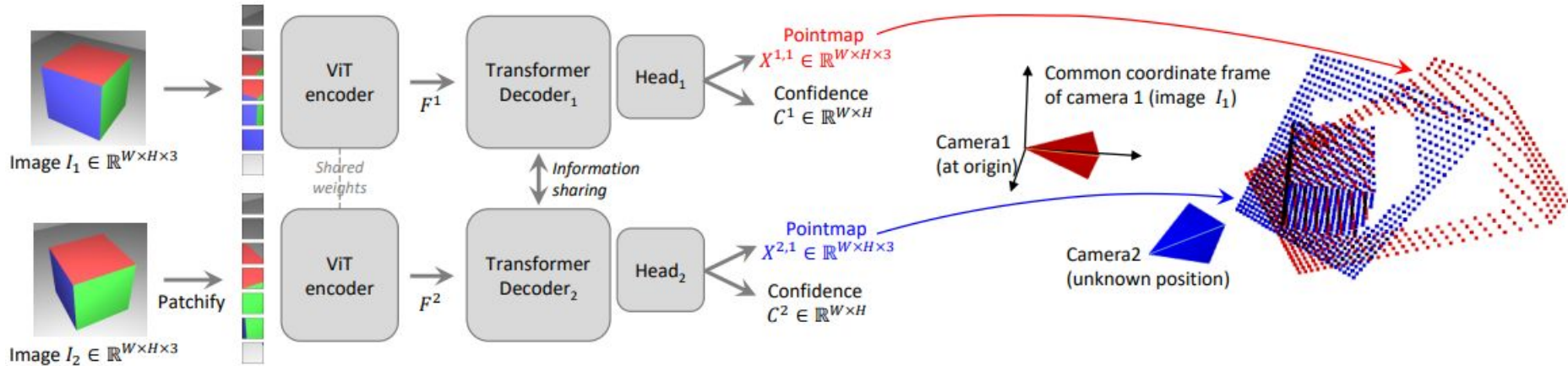


# III - Geometric Vision

# Dust3r

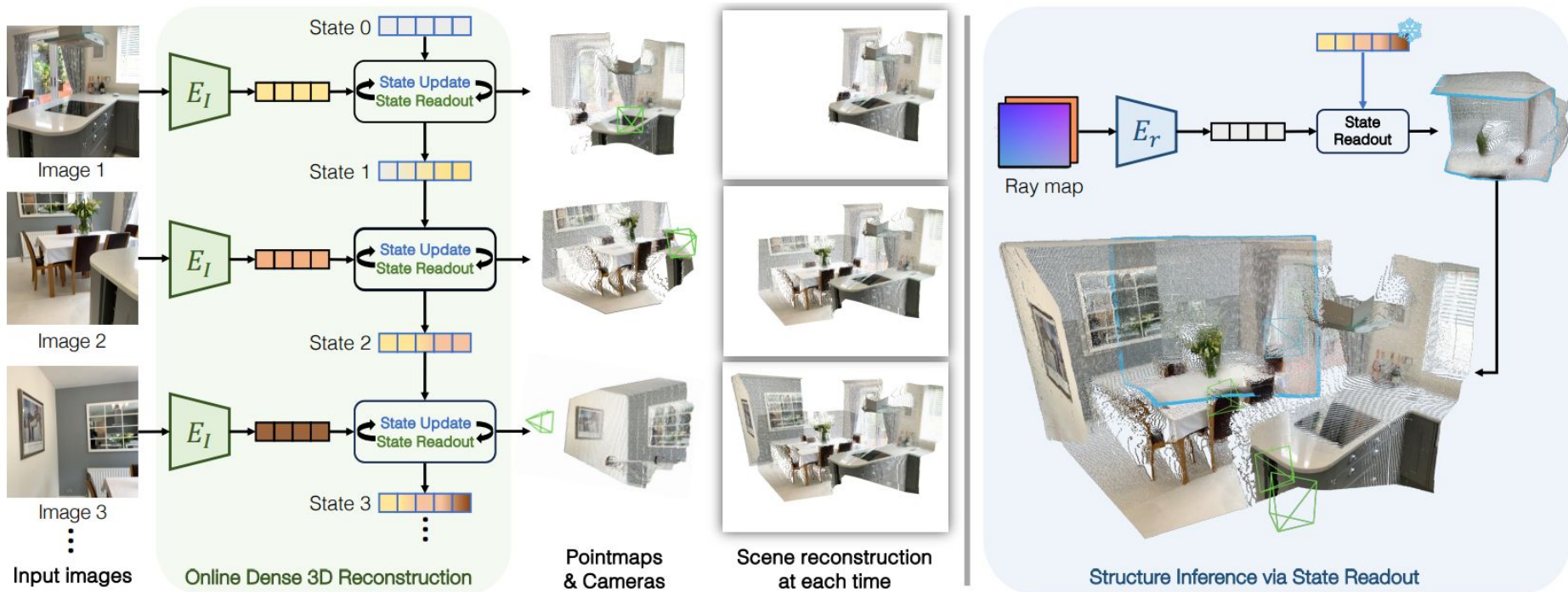


# Dust3r



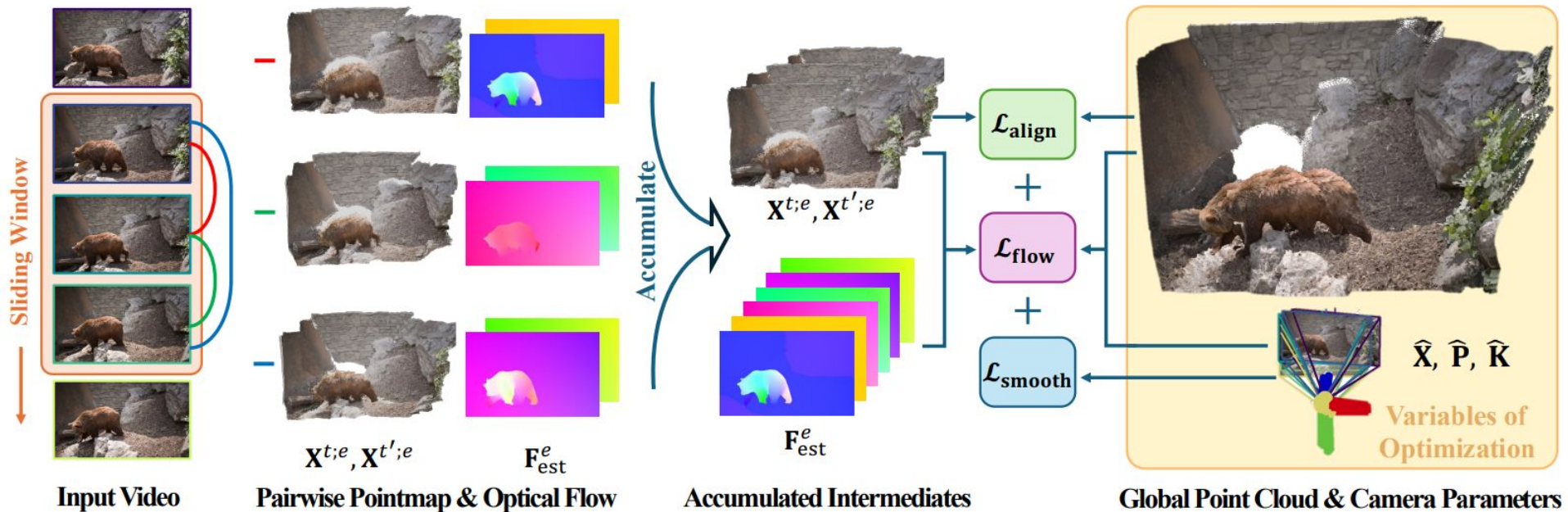
<https://europe.naverlabs.com/research/publications/dust3r-geometric-3d-vision-made-easy/>

# Cut3r



<https://cut3r.github.io/>

# Monst3r



<https://monst3r-project.github.io/>

# Conclusion

# Conclusion

Thank you for your attention !