



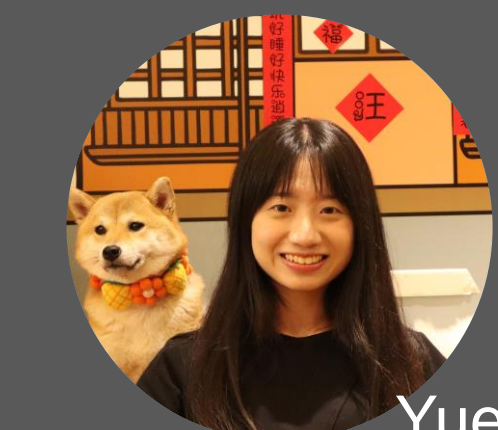
Xi'an Jiaotong University



Ant Group



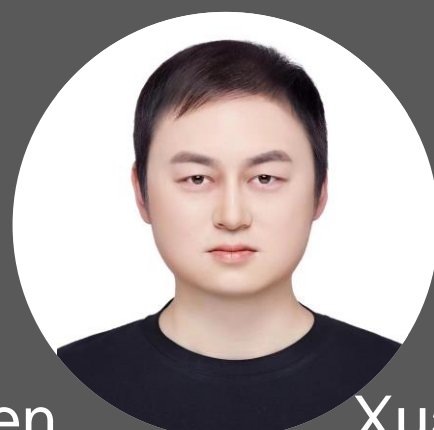
Tencent AI Lab



Yue Chen



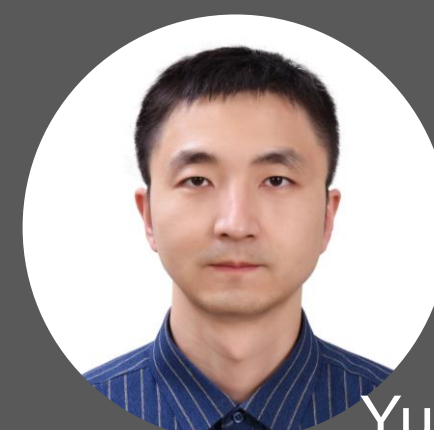
Xingyu Chen



Xuan Wang



Qi Zhang



Yu Guo



Ying Shan



Fei Wang

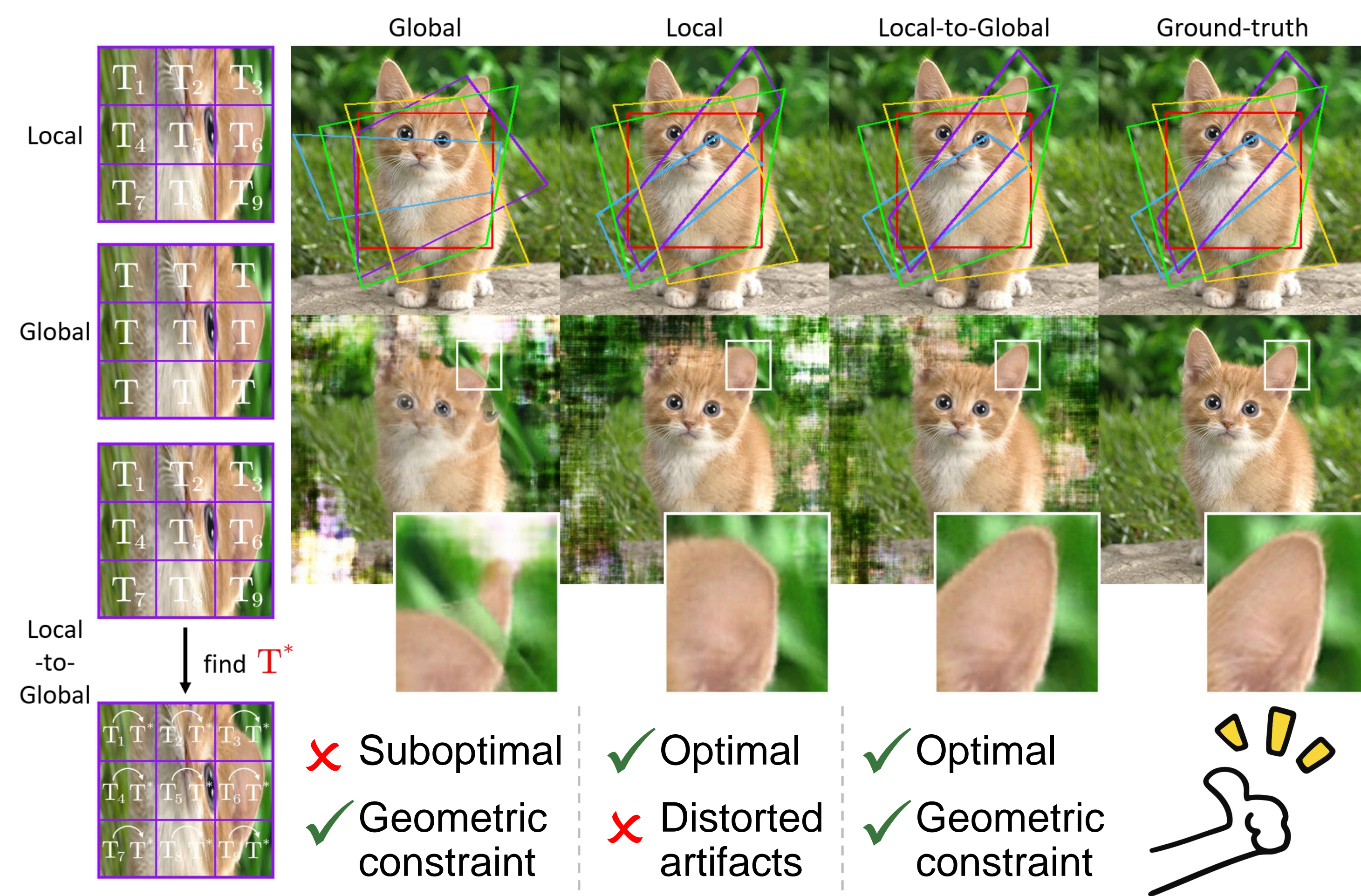
## Local-to-Global Registration for Bundle-Adjusting Neural Radiance Fields

JUNE 18-22, 2023

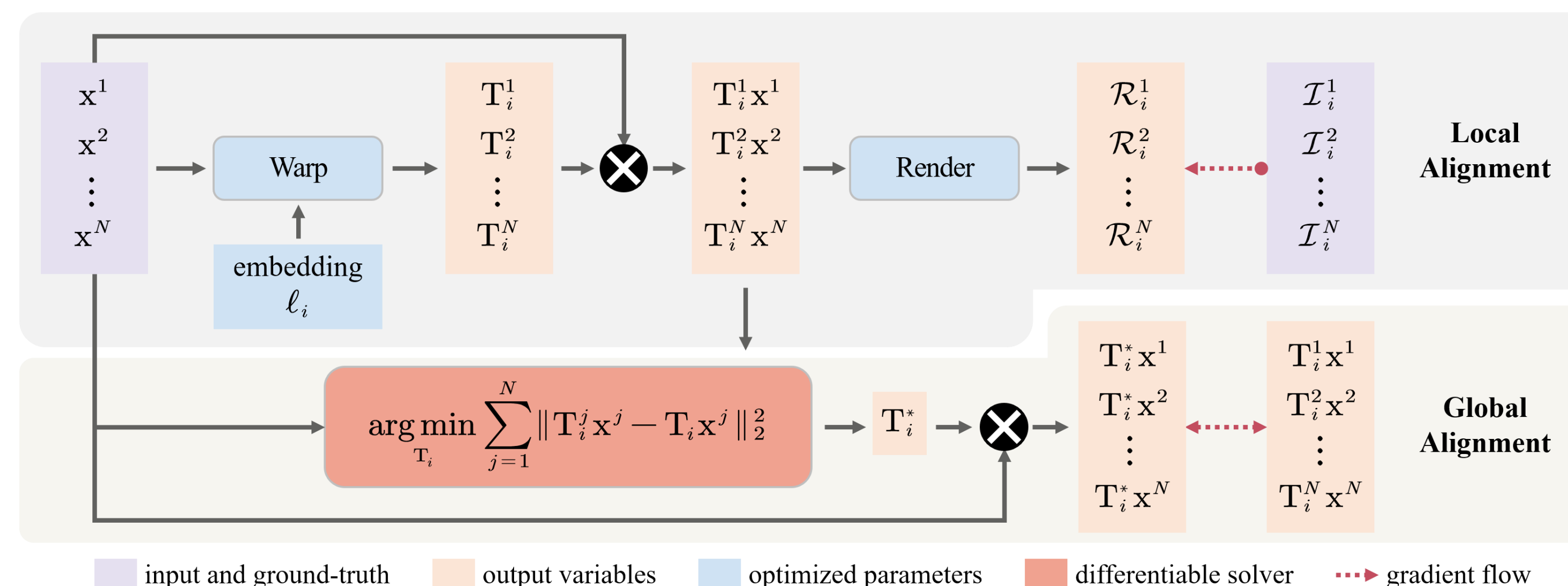
CVPR



## Motivation



## Our Method

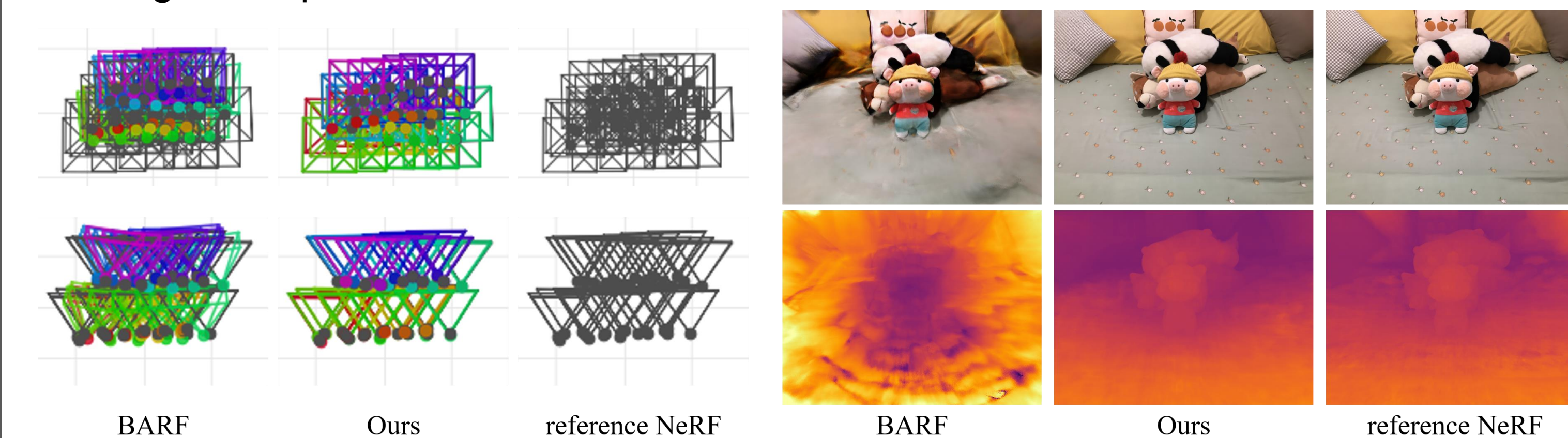


We propose L2G-NeRF, a Local-to-Global registration method:

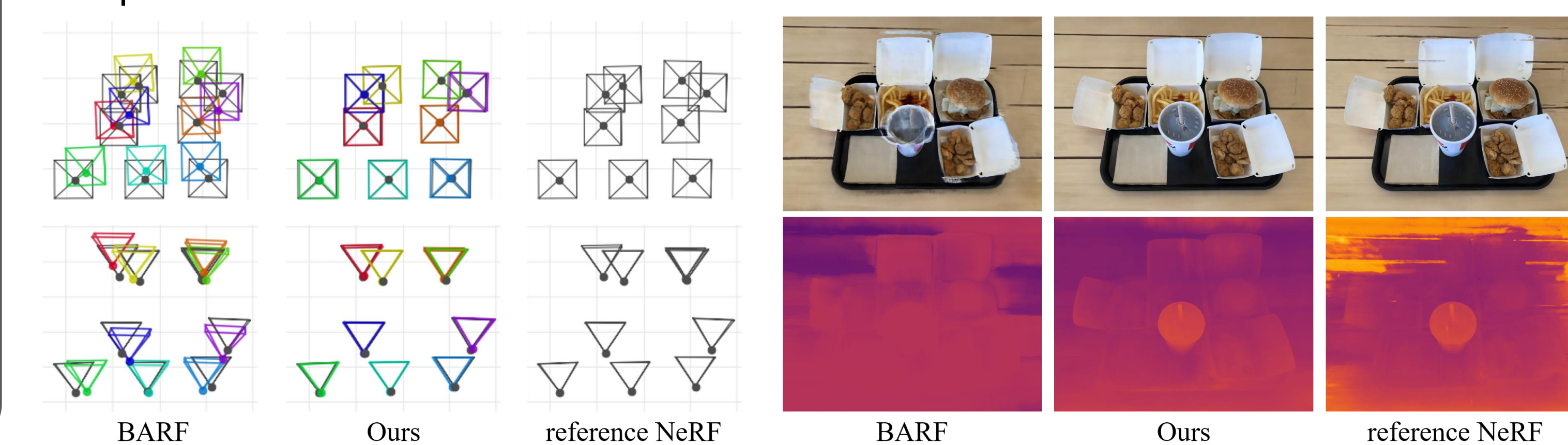
- **Local Alignment:** A warp neural field constructs pixel-wise transformations and transforms query coordinates into a global coordinate system. Then the color can be rendered to minimize photometric errors.
- **Global Alignment:** A differentiable parameter estimator produces frame-wise transformations condition on pixel-wise correspondences. The query coordinates are then transformed to apply a global geometric constraint.

## Bundle-Adjusting NeRF (3D): Real-World Scenes

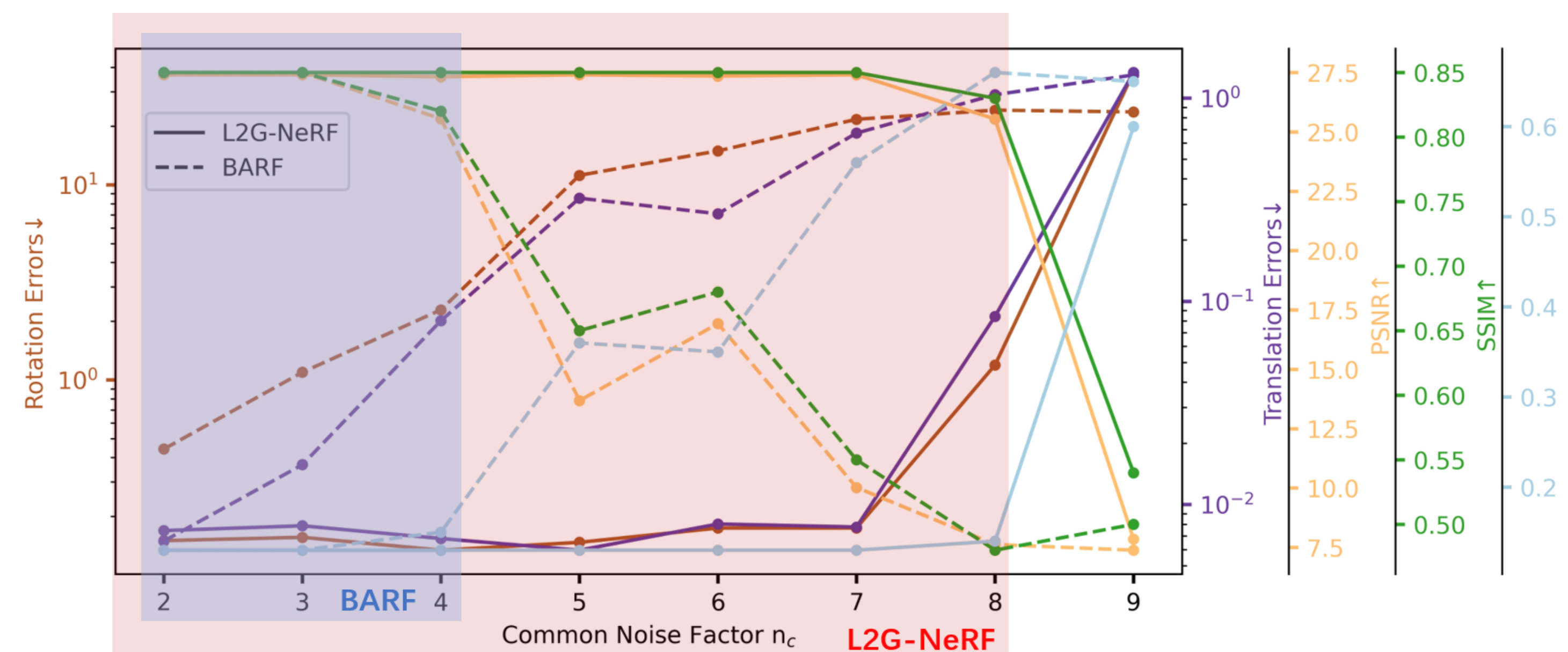
## ➤ Largest Displacements



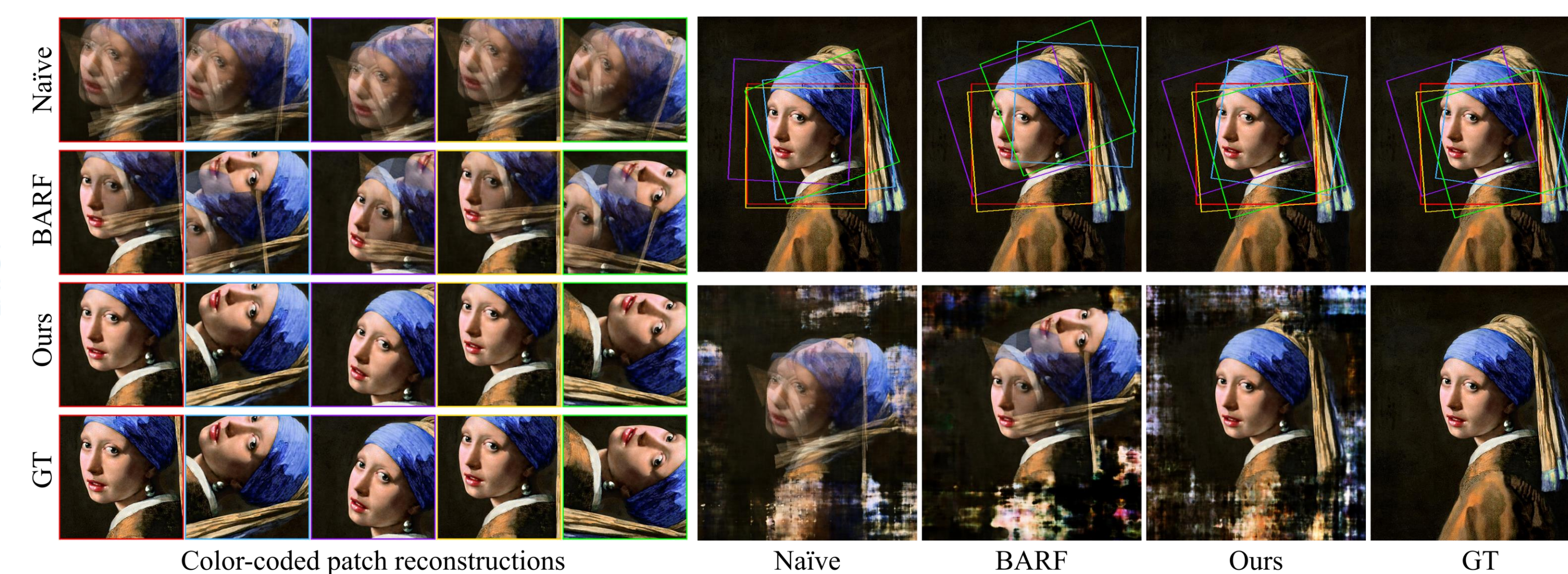
## ➤ Sparsest views



## Convergence



## Neural Image Alignment (2D)



## Bundle-Adjusting NeRF (3D): Synthetic Objects

