Unboxed: Geometrically and Temporally Consistent Video Outpainting

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Motivation

» **Video Outpainting** has broad applications: immersive VR experience, legacy content retargeting, etc.

» Existing methods struggle with **temporal consistency** and **arbitrary field of view** outpainting.

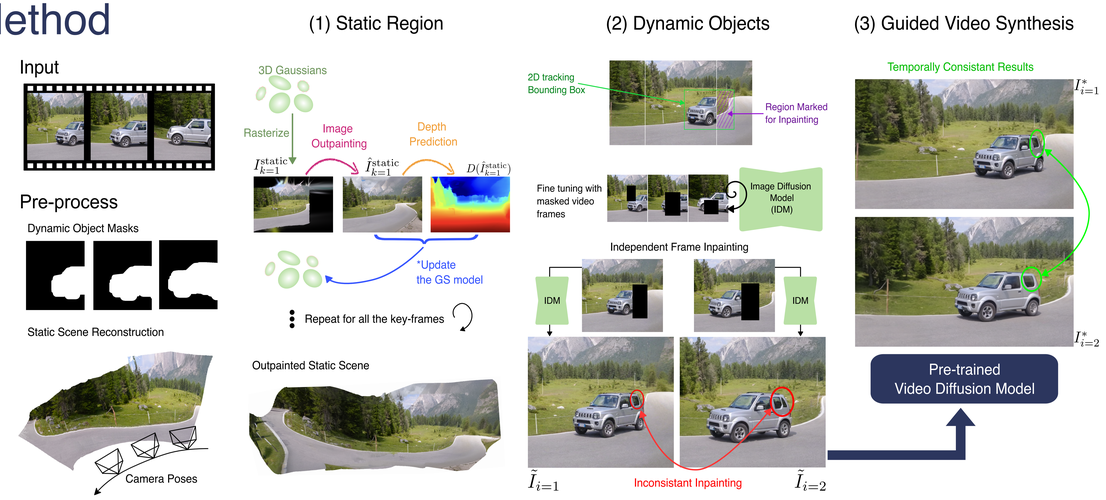
Contributions

» A novel video outpaining method that combines 3D representaion with video diffusion model.

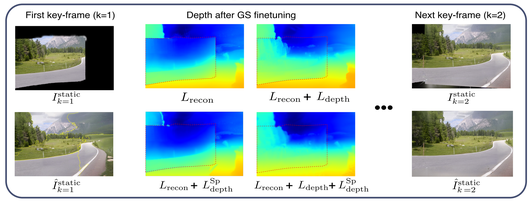
» Seamless expansion for static content & video diffusion model as temporal filter for dynamic part inpainting.

» State-of-the-art results for video outpainting.

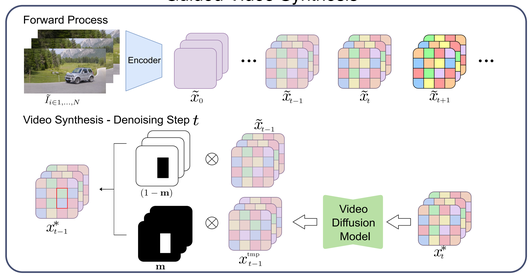
Method



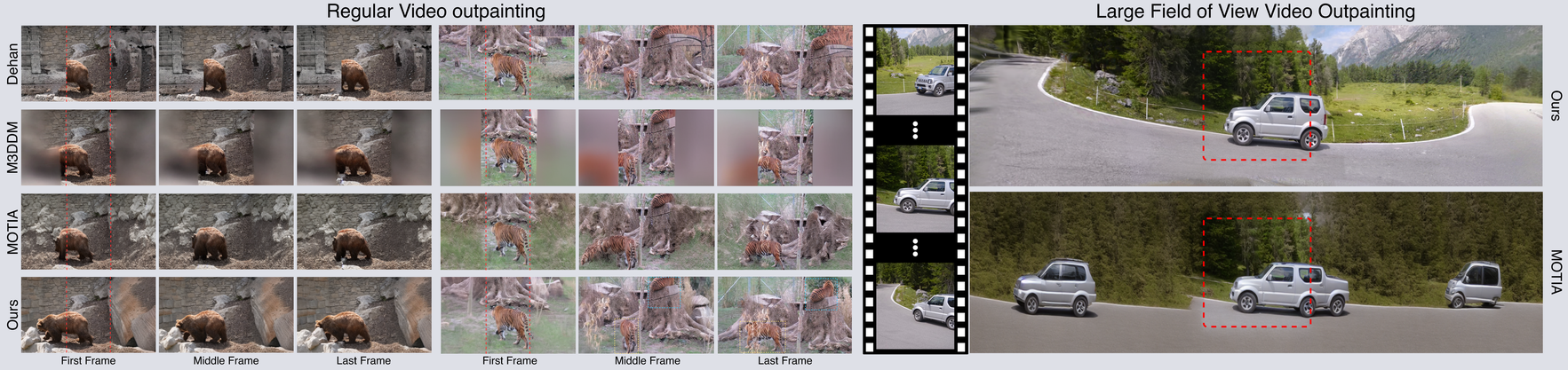
Updating the GS model



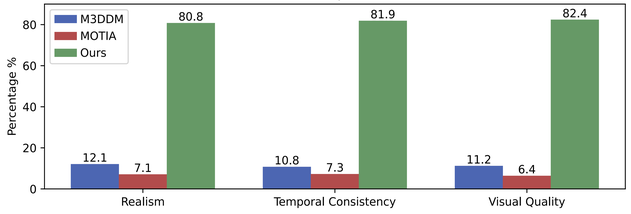
Guided Video Synthesis



Qualitative Results



Quantitative Results

	DAVIS					YouTube-VOS				
	PSNR↑	SSIM↑	LPIPS↓	FVD↓	E_{warp}↓	PSNR↑	SSIM↑	LPIPS↓	FVD↓	E_{warp}↓
Dehan	17.96	0.627	0.233	363.1	0.030	18.34	0.761	0.287	353.6	0.043
M3DDM	20.26	0.708	0.204	300.0	0.017	18.33	0.725	0.424	283.1	0.024
MOTIA (model)	18.25	0.699	0.282	294.8	0.021	18.54	0.790	0.250	156.4	0.027
MOTIA (paper)	20.36	0.758	**0.160**	286.3	-	-	-	-	-	-
Ours	**22.62**	**0.806**	0.200	**232.5**	**0.015**	**19.88**	**0.832**	**0.236**	**114.2**	**0.016**

User Study Results