

InstantSplamp: Fast and Generalizable Stenography Framework for Generative Gaussian Splatting

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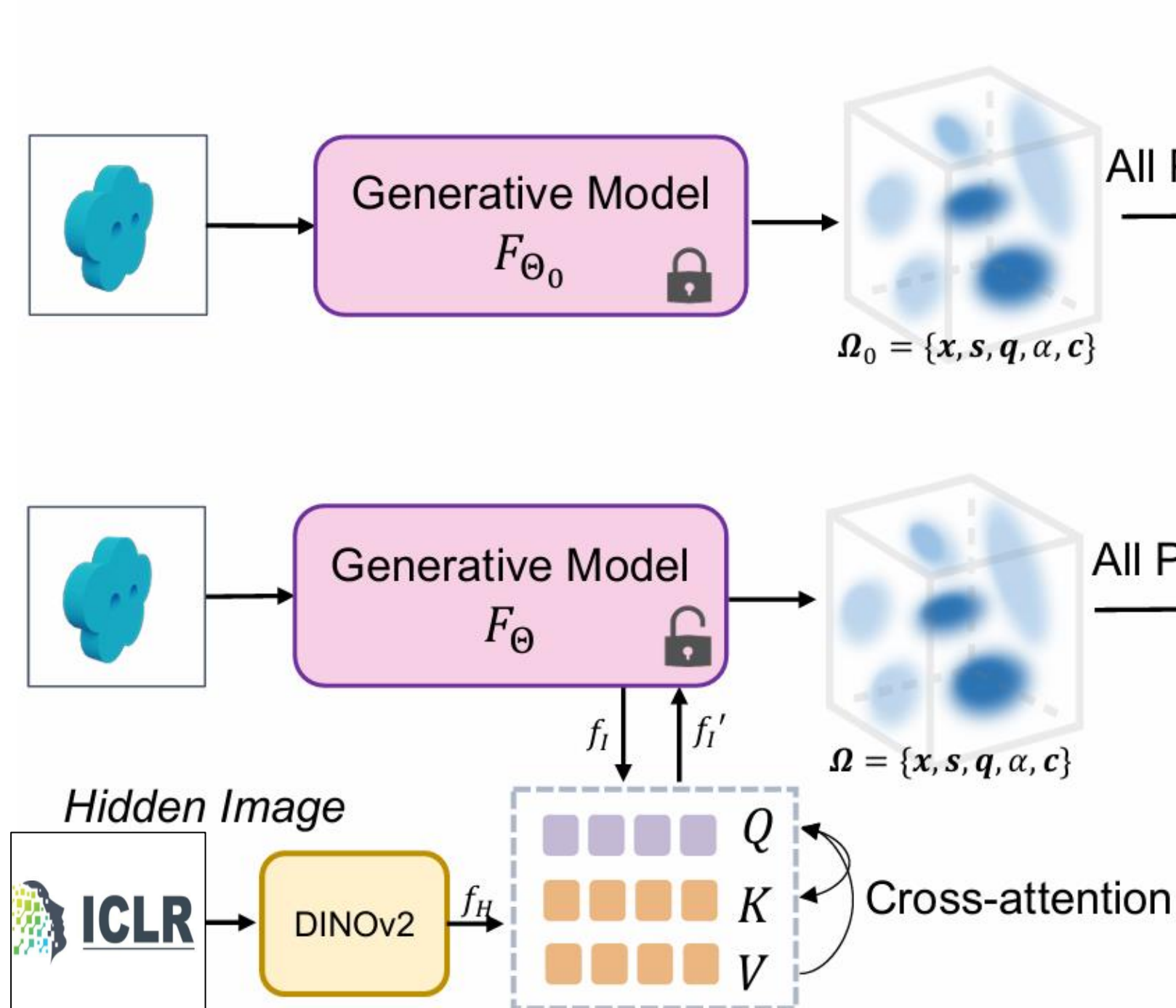
Motivation

- (a) Traditional 3D generation requires separate steps for object generation and watermarking, leading to significant time overhead.
- (b) Our method, InstantSplamp, unifies 3D generation and watermarking into a single process, maintaining the generation time and reducing watermarking overhead to near-zero, significantly improving efficiency.

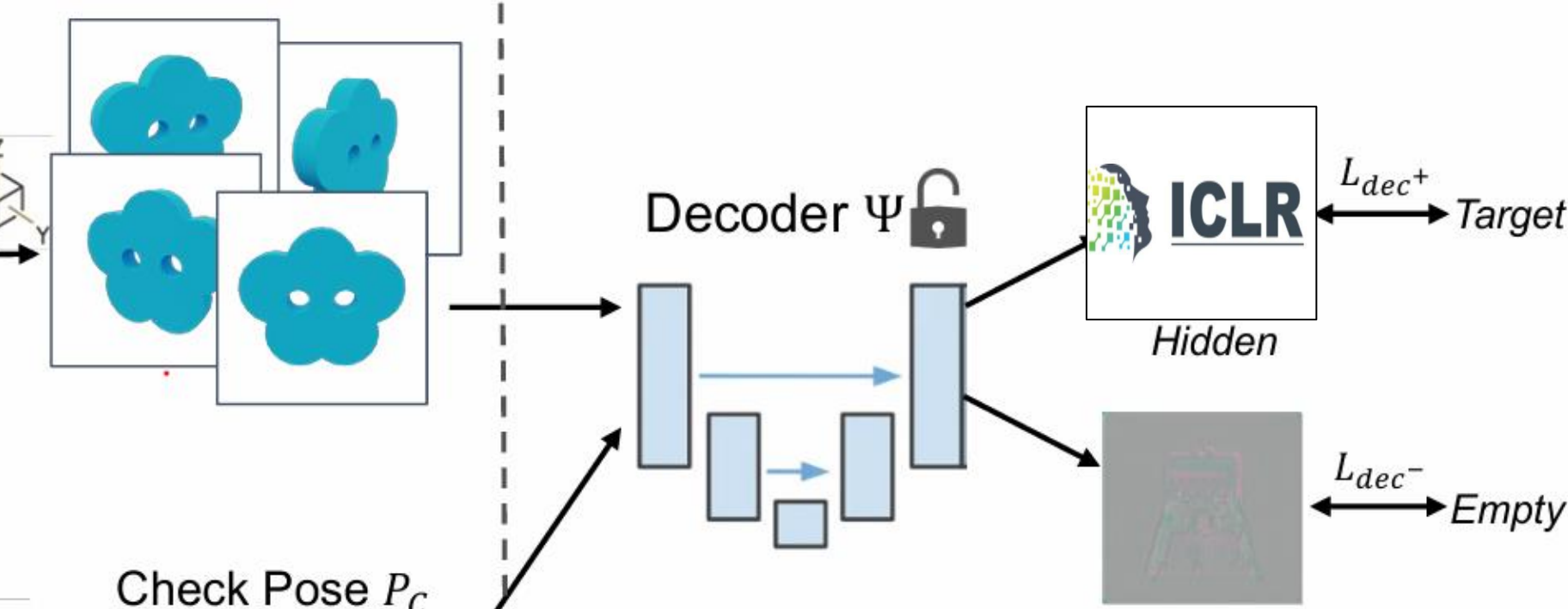
Framework

- * During (a) Hidden Information Embedding, InstantSplamp incorporates the DINOv2 features of the hidden information into the intermediate feature of Gaussian generation via cross-attention.
- * In (b) Hidden Information Recovery, a U-Net-based decoder is employed to retrieve the hidden information from the rendered image under the checking pose.
- * Through the optimization process, (c) Adaptive Gradient Harmonization is used to maintain a balance between the rendering and hidden recovery.

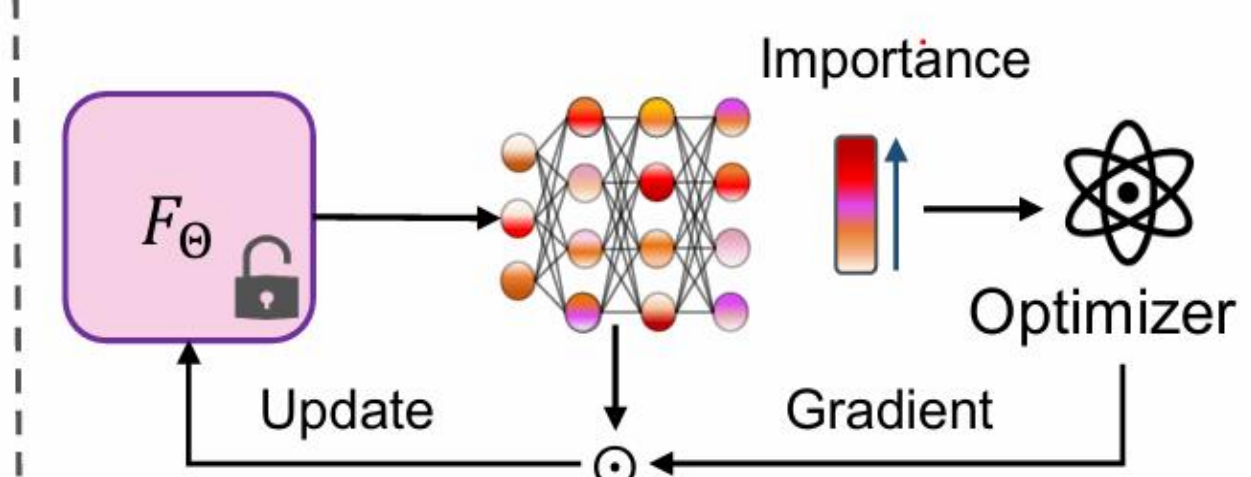
(a) Hidden Information Embedding



(b) Hidden Information Recovery

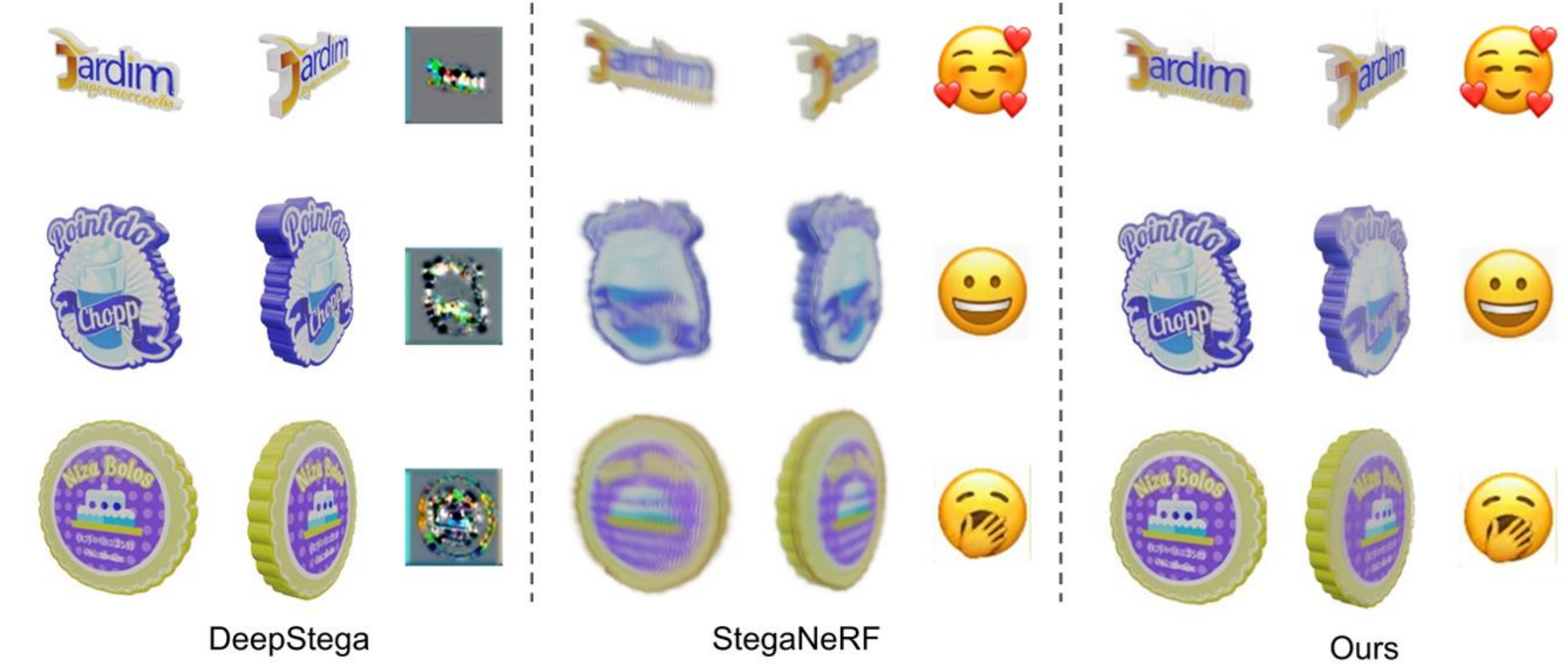


(c) Adaptive Gradient Harmonization

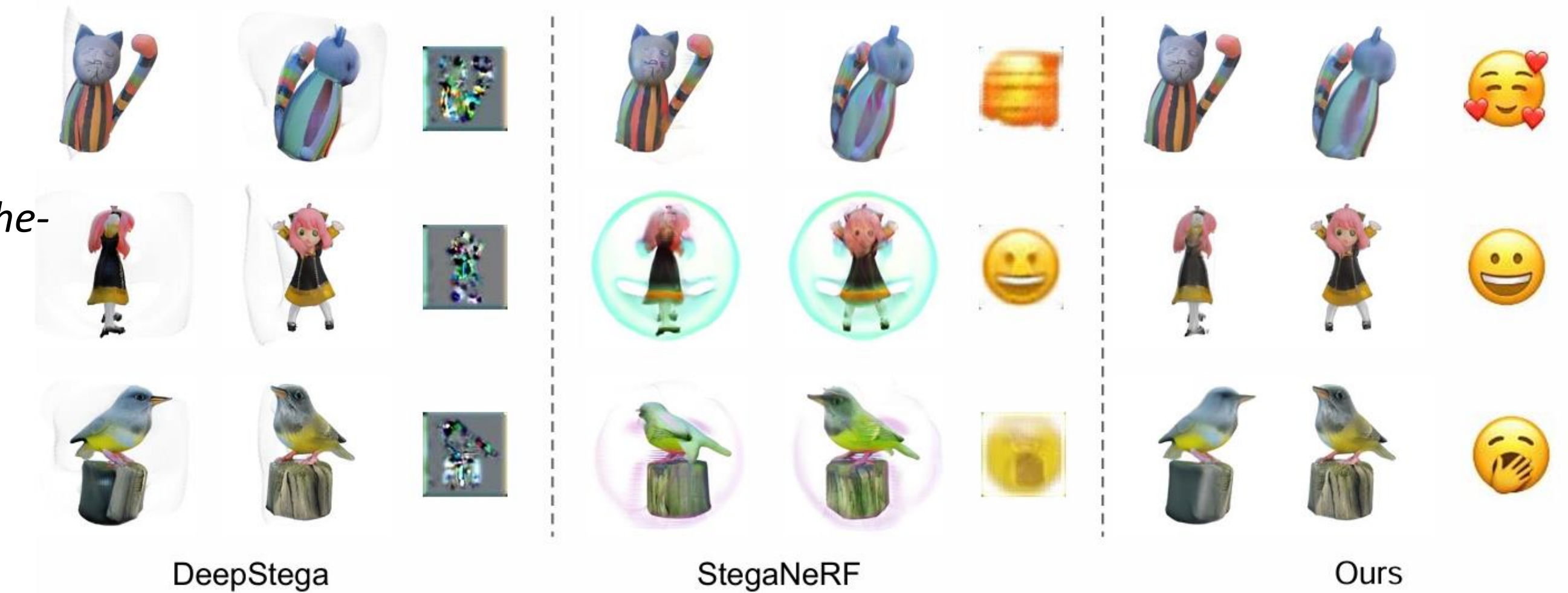


Experimental Results

Results of Watermarking In-domain Objects



Results of Watermarking In-the-wild Objects



Results of Embedding Multimodal Watermarkers

