Yuan: Yielding Unblemished Aesthetics through A Unified Network for Visual Imperfections Removal in Generated Images

AAAI-25 / IAAI-25 / EAAI-25
FEBRUARY 25 – MARCH 4, 2025 | PHILADELPHIA, USA

Code

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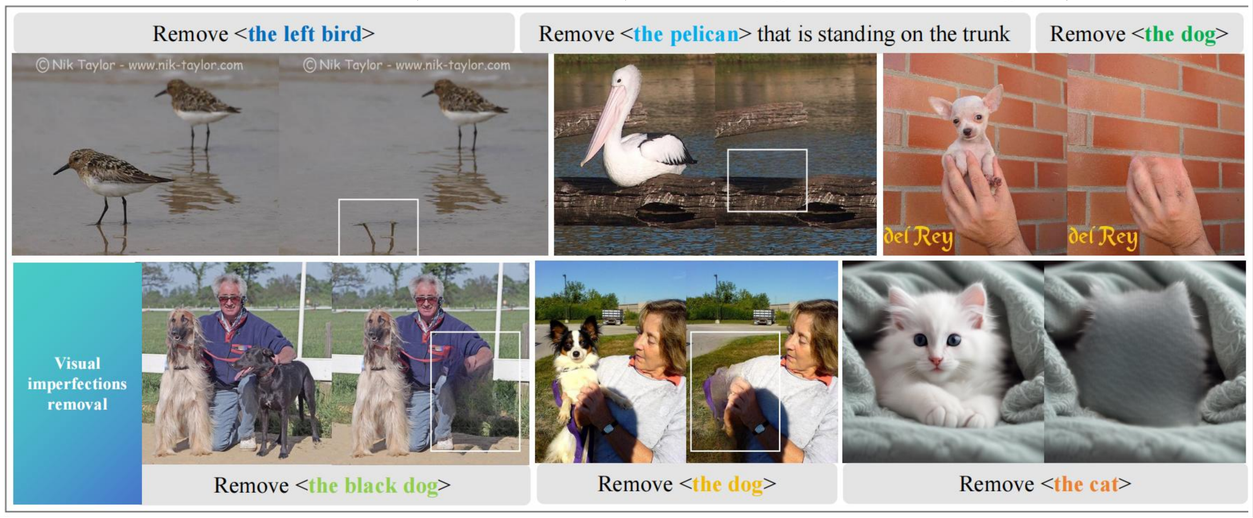
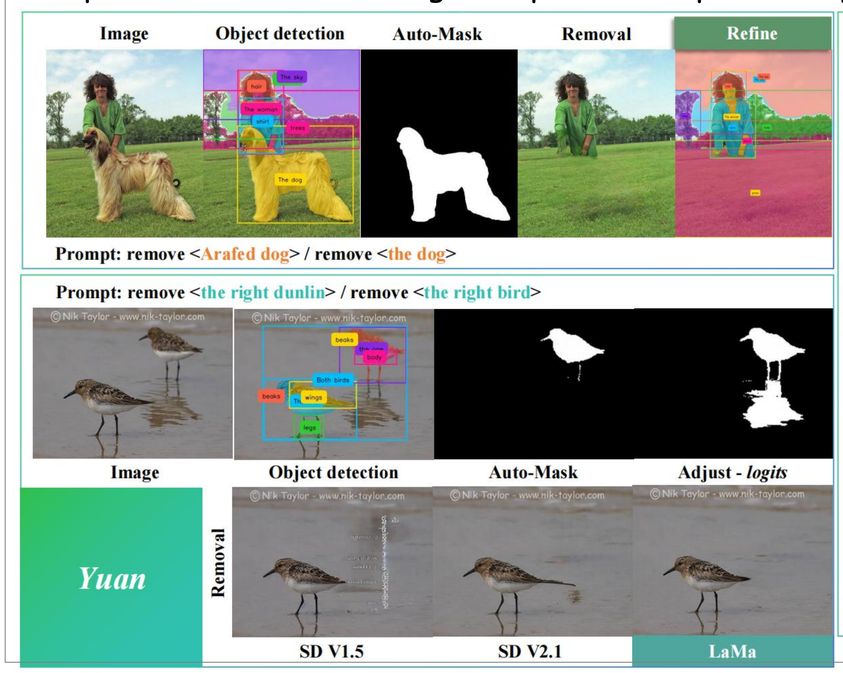
Motivation

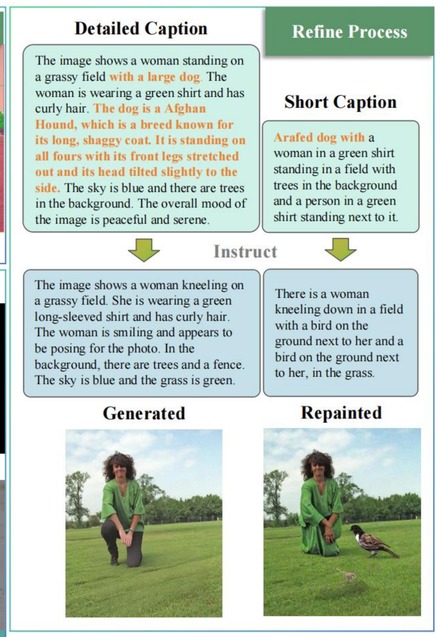
- Generative models often produce visually flawed images.
- **Yuan** addresses these by automatically detecting and correcting imperfections.



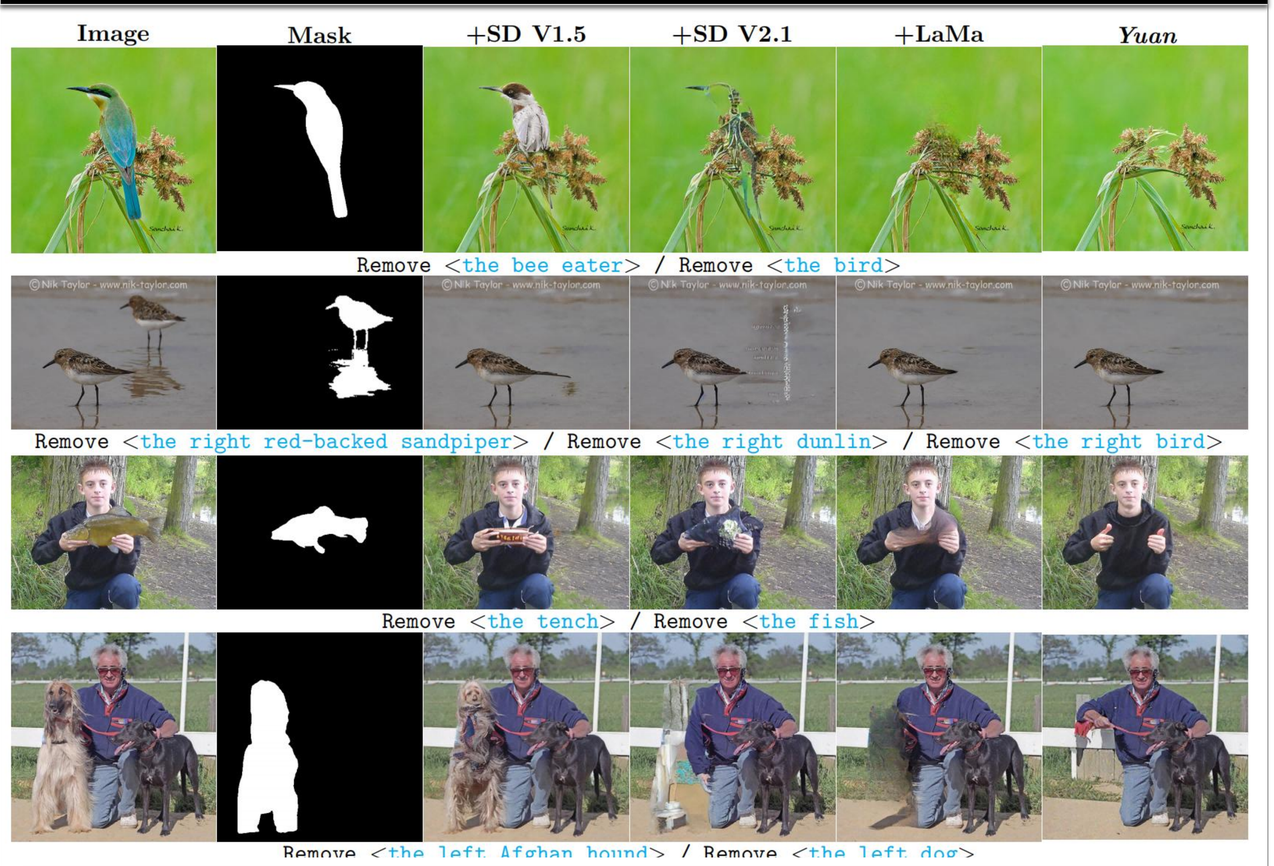
Framework

1. Automatic mask generation using Grounded SAM.
2. Context-aware inpainting with LaMa.
3. Optional refinement using Prompt-to-Prompt techniques.

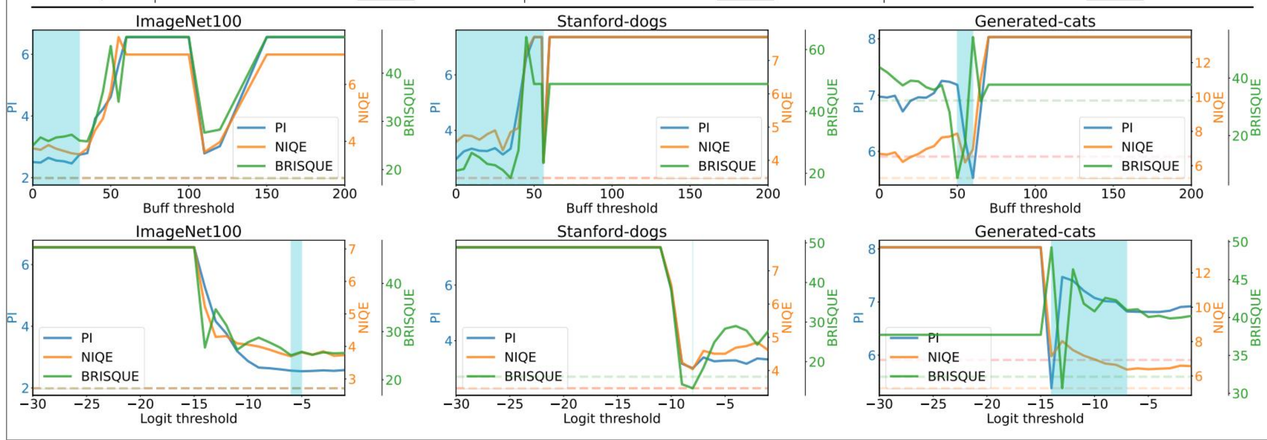




Results



Metrics	ImageNet100				Stanford-dogs				Generated-cats			
	Image	+SD	+LaMa	*Yuan*	Image	+SD	+LaMa	*Yuan*	Image	+SD	+LaMa	*Yuan*
NIQE↓	*3.7425*	5.2829	3.0905	**3.0890**	*3.3380*	4.6187	4.0785	**3.4691**	*5.2829*	6.2217	**5.0716**	5.2465
BRISQUE↓	*26.6525*	32.1852	**24.7853**	25.6086	*9.6086*	25.1237	22.0275	**16.2062**	*32.1852*	**37.4372**	45.6096	39.4333
PI↓	*2.5558*	5.9084	2.0921	**2.0124**	*2.2204*	3.2685	2.6190	**2.2841**	*5.9084*	6.7089	5.5097	**5.4679**



Experimental Setup

Datasets: ImageNet100, Stanford Dogs, Generated Cats.
Environment: NVIDIA GeForce RTX 4090 GPU.

Contributions

1. Automated imperfection detection.
2. Seamless and contextually coherent inpainting.
3. Extensive validation across datasets.

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Limitations & Future Work

Complex anatomical features are difficult to handle. Unintended content generation during refinement.

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