

AMO Sampler: Enhancing Text Rendering with Overshooting

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TEXAS

The University of Texas at Austin



The Challenge: Accurate Text Generation is Hard

Prompt: The slogan "Take care in a civilized manner" hangs in the hospital



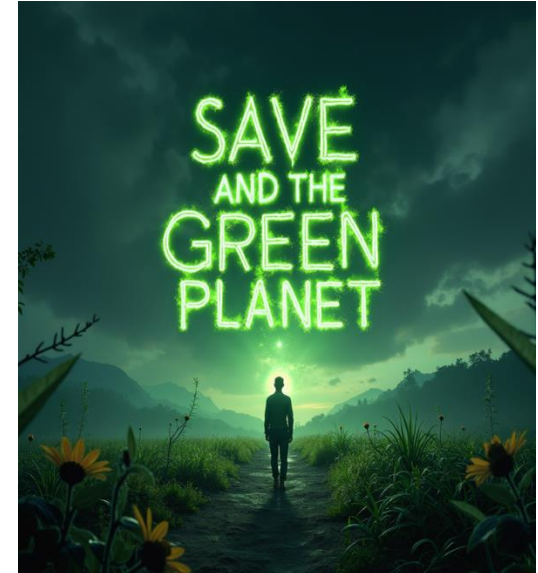
Prompt: A poster design with a title text of 'Tokyo Halloween Night'



Prompt: A movie poster named 'North by Northwest'

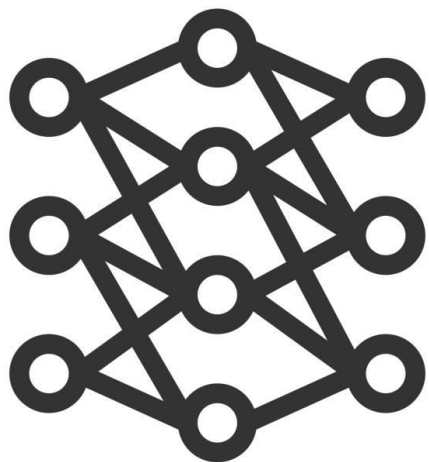


Prompt: A movie poster with text 'Save the Green Planet' on it



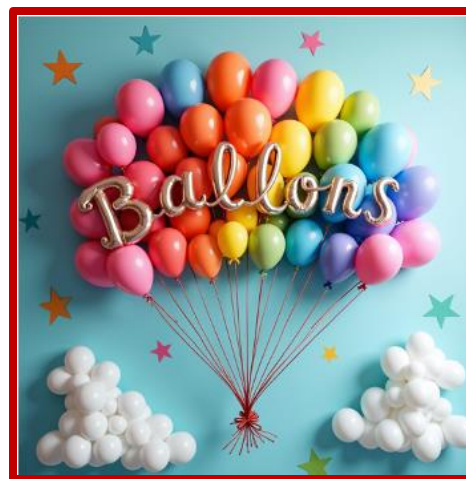
Our Solution: Attention Modulated Overshooting (AMO)

- ✓ Training-Free
- ✓ No Extra Computational Cost
- ✓ Works with Pretrained Models (Rectified Flow)



FLUX
Stable Diffusion 3
etc

Euler Sampler



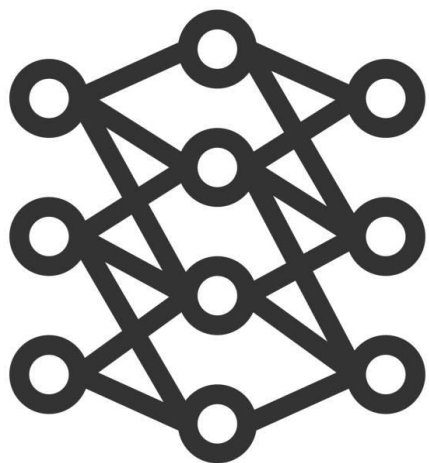
Text "balloons are flying" made from rainbow balloons, pastel background

✗
Wrong
Rendered Text



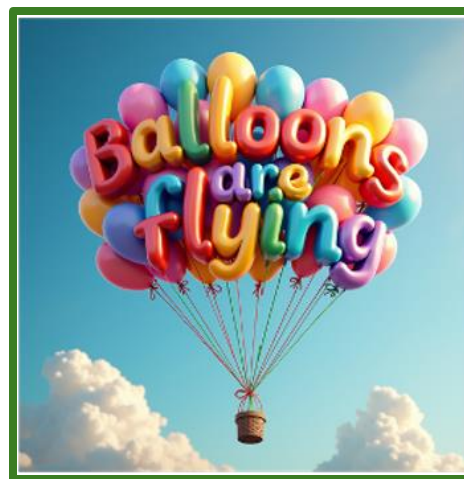
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AMO Sampler



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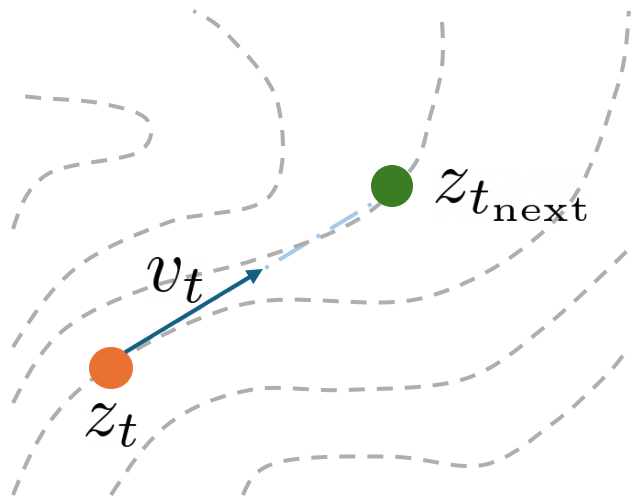


Correct
Rendered Text



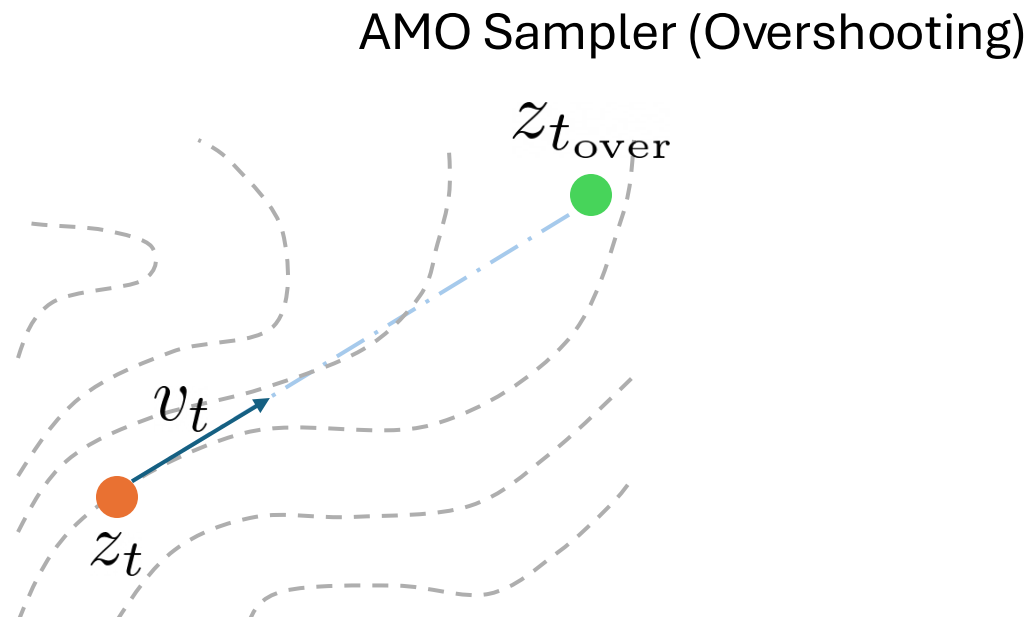
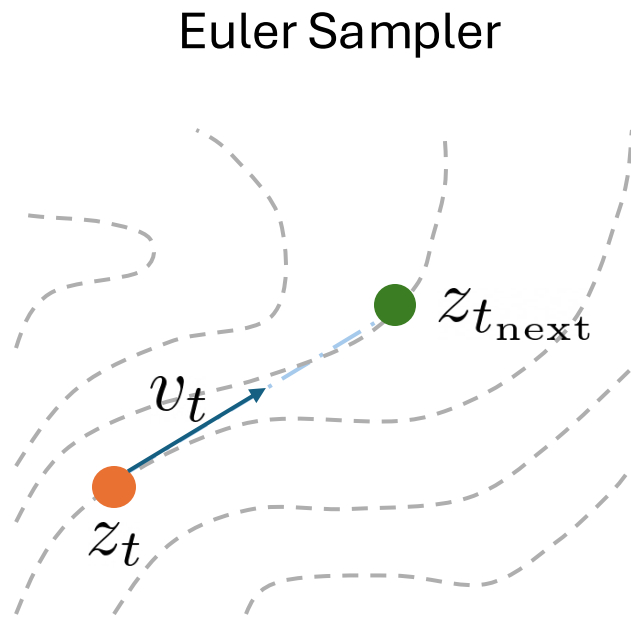
How AMO Works (1): Overshooting & Noise Compensation

Euler Sampler



How AMO Works (1): Overshooting & Noise Compensation

- Core idea: Overshoot \longrightarrow Add Noise \longrightarrow Correct Path

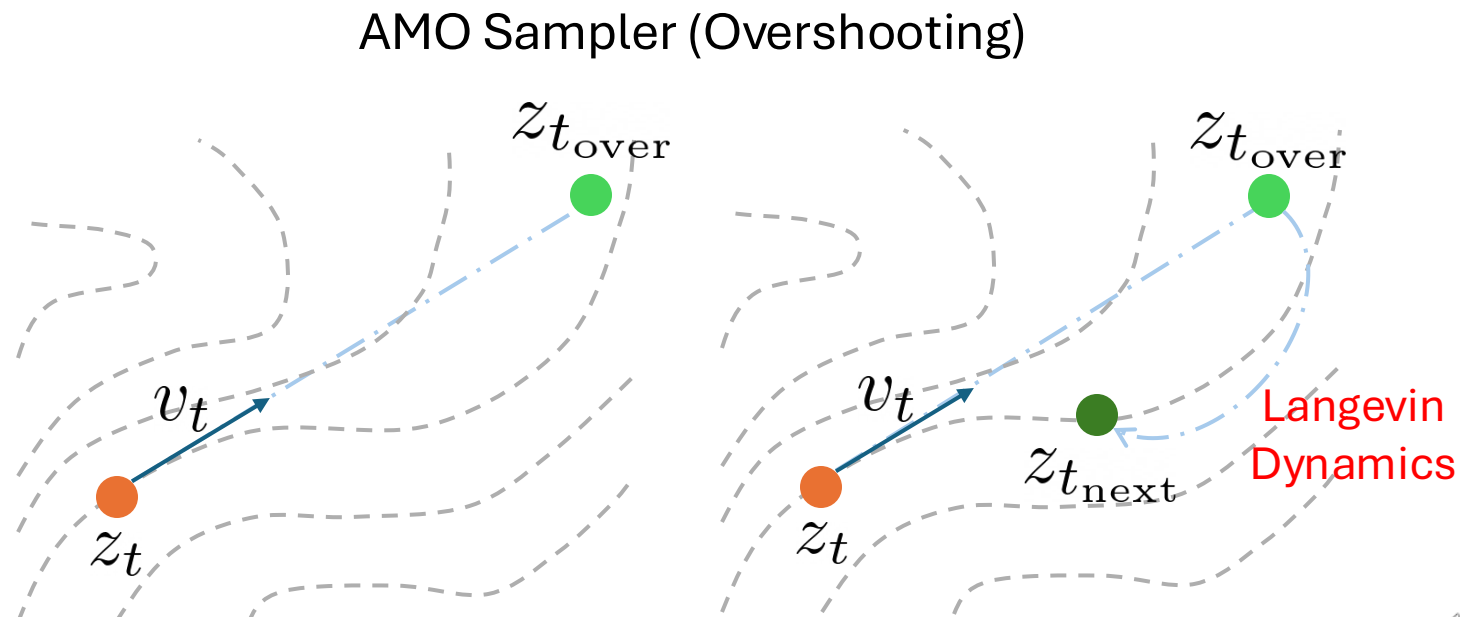
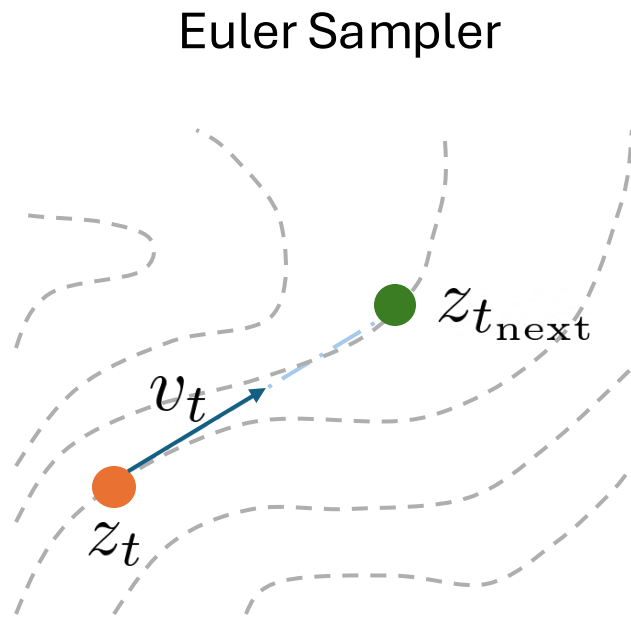


1. ODE Overshooting



How AMO Works (1): Overshooting & Noise Compensation

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1. ODE Overshooting

2. Noise Compensation



How AMO Works (2): Attention Modulation

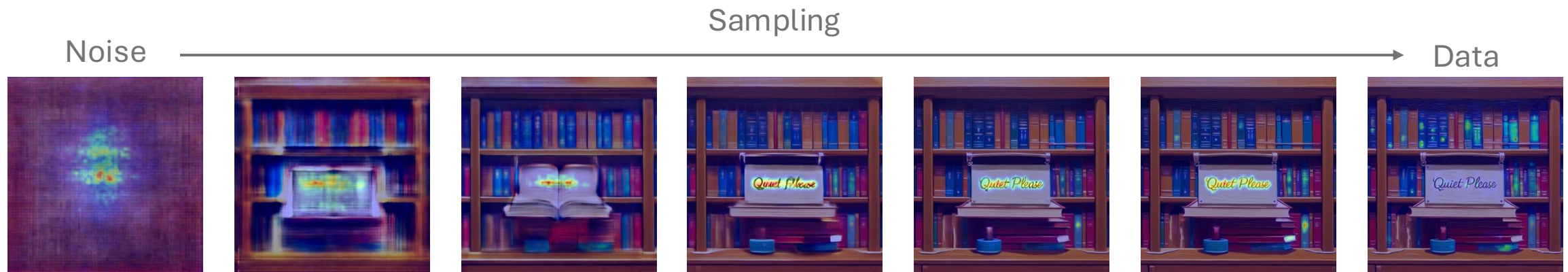


Prompt: The slogan "Hygiene is Everyone's Responsibility" is written in the hospital



How AMO Works (2): Attention Modulation

- **Core Idea:** Focus correction on TEXT regions.
- **Problem Solved:** Prevents over-smoothing, preserves image quality.



Prompt: A detailed painting of a library with a sign 'Quiet Please' hanging on a bookshelf.



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- **Core Idea:** Focus correction on TEXT regions.
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Euler Sampler



Ours (w/o Att.)



Ours (w/ Att.)



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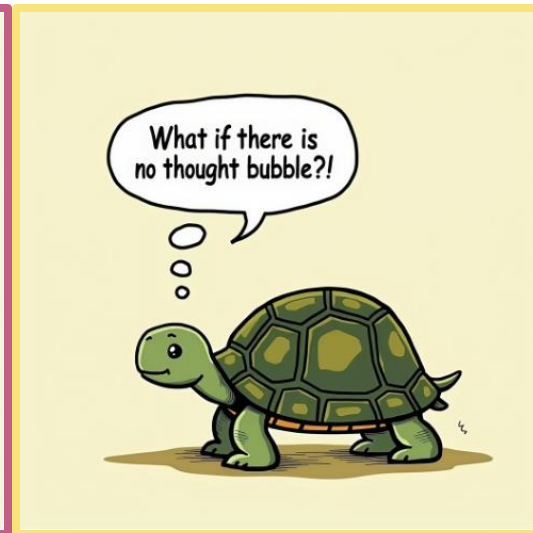
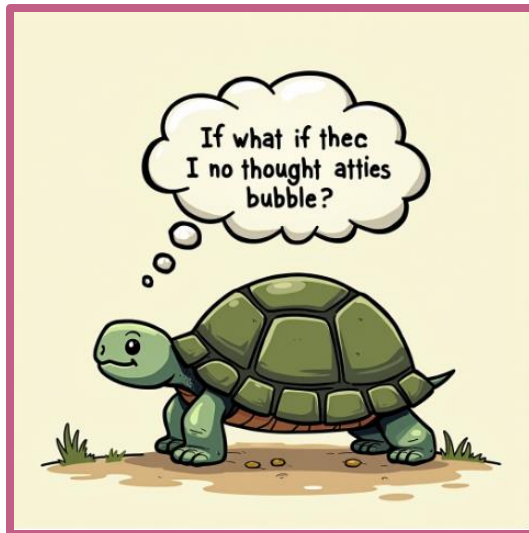


Conclusion: AMO for Reliable Text in Images

- **Summary:** Training-Free, Efficient, Effective

■ Euler Sampler

■ Ours



Prompt: A cartoon of a turtle with a thought bubble on its head and the words "what if there is no thought bubble"



Prompt: "Fall is here" written in autumn leaves floating on a lake.



Conclusion: AMO for Reliable Text in Images

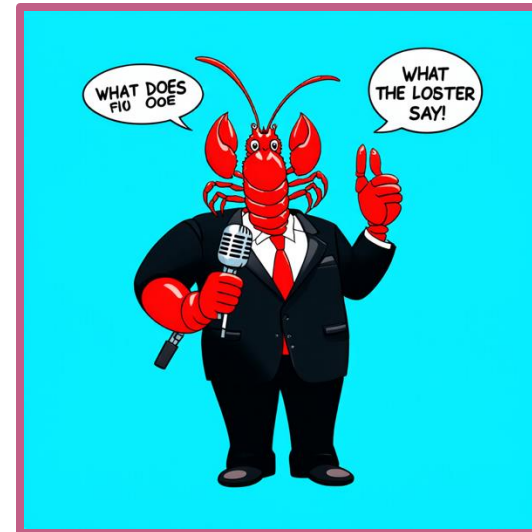
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Prompt: There is a "Do Not Disturb" sign in the hotel

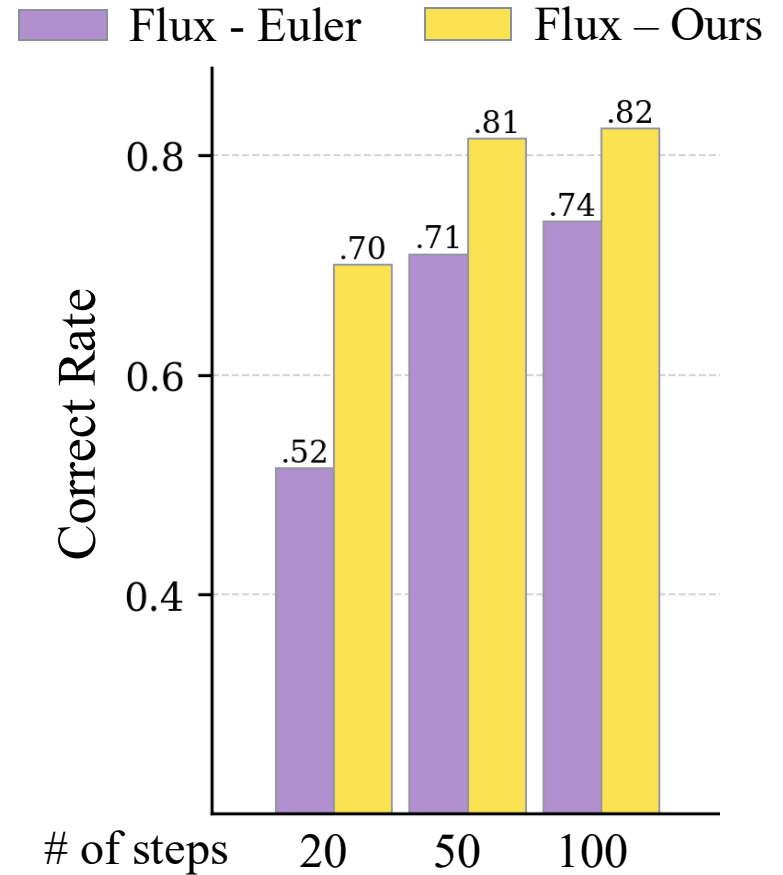


Prompt: A lobster in a suit and tie holding a microphone with the words "What does the lobster say"



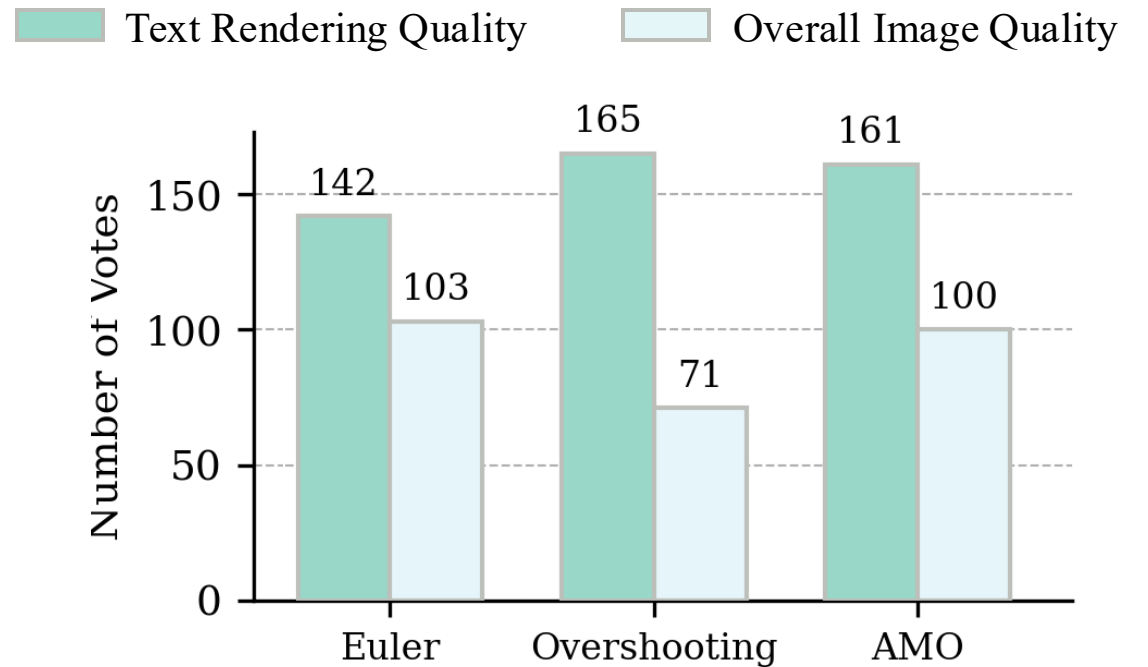
Results: Significant Improvement

- Text accuracy boost: **+32.3%** (SD3), **+35.9%** (Flux)
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- Improved performance over all inference steps
- Maintains overall image quality



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- **Summary:** Training-Free, Efficient, Effective

Paper Link

<https://arxiv.org/abs/2411.19415>



Code Link

<https://github.com/hxixixh/amo-release>

