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## FasterCache

- FASTERCACHE: TRAINING-FREE VIDEO DIFFUSION MODEL ACCELERATION WITH HIGH QUALITY
- <https://arxiv.org/abs/2410.19355>
- ICLR 2025

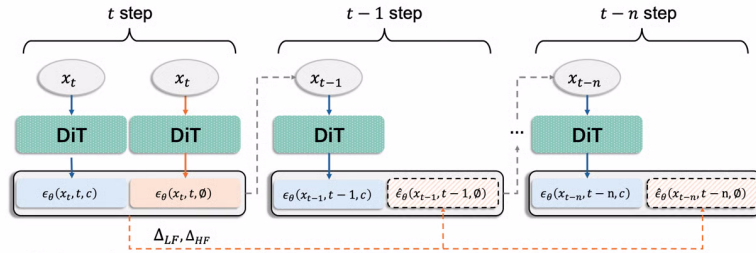
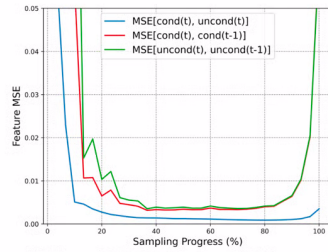
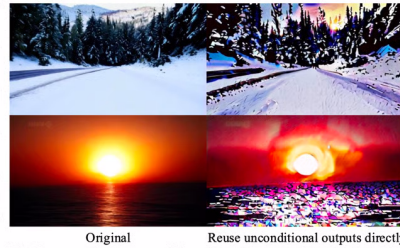


Figure 8: Overview of the CFG-Cache. CFG-Cache accelerates the computation of the unconditional output (in the dashed orange box) by caching the high- and low-frequency biases between the conditional and unconditional outputs, and dynamically enhancing them during reuse.

CFG-uncondition cond-uncond  
U



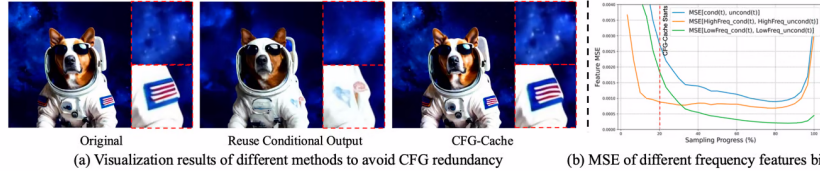
(a) Feature MSE Curve between CFG Outputs



(b) Direct reuse of unconditional outputs degrades visual quality

Figure 6: (a) The MSE between conditional and unconditional outputs at the same timestep as well as across adjacent timesteps. (b) Directly reusing unconditional outputs from previous timesteps will lead to a significantly degraded visual quality.

cond-uncond CFG-Cache cond-uncond



(a) Visualization results of different methods to avoid CFG redundancy

(b) MSE of different frequency features bias

Figure 7: (a) Simply reusing the conditional output from the same time step results in the poor generation of intricate details. (b) Trend curves of high and low-frequency biases between conditional and unconditional outputs change as sampling progresses.

cond-uncond

$$\Delta_{LF} = \mathcal{FFT}(\epsilon_{\theta}(\mathbf{x}_t, t, \emptyset))_{low} - \mathcal{FFT}(\epsilon_{\theta}(\mathbf{x}_t, t, \mathbf{c}))_{low}, \quad (6)$$

$$\Delta_{HF} = \mathcal{FFT}(\epsilon_{\theta}(\mathbf{x}_t, t, \emptyset))_{high} - \mathcal{FFT}(\epsilon_{\theta}(\mathbf{x}_t, t, \mathbf{c}))_{high}. \quad (7)$$

$$\hat{\epsilon}_{\theta}(\mathbf{x}_{t-i}, t-i, \emptyset) = \mathcal{IFFT}(\mathcal{F}_{low}, \mathcal{F}_{high}), \quad (8)$$

$$\mathcal{F}_{low} = \Delta_{LF} * w_1 + \mathcal{FFT}(\epsilon_{\theta}(\mathbf{x}_{t-i}, t-i, \mathbf{c}))_{low}, \quad (9)$$

$$\mathcal{F}_{high} = \Delta_{HF} * w_2 + \mathcal{FFT}(\epsilon_{\theta}(\mathbf{x}_{t-i}, t-i, \mathbf{c}))_{high}. \quad (10)$$

- <https://github.com/Vchitect/FasterCache>

Newer

Older

2025-11-05  
AdaCache

2025-10-29  
PAB

