Figure 1. Top: Images generated by Guided Diffusion trained on ImageNet 256x256. Bottom: Refined images by applying our algorithm.

Figure 2. Top: Images generated by Guided Diffusion trained on ImageNet 128x128. Bottom: Refined images by applying our algorithm.
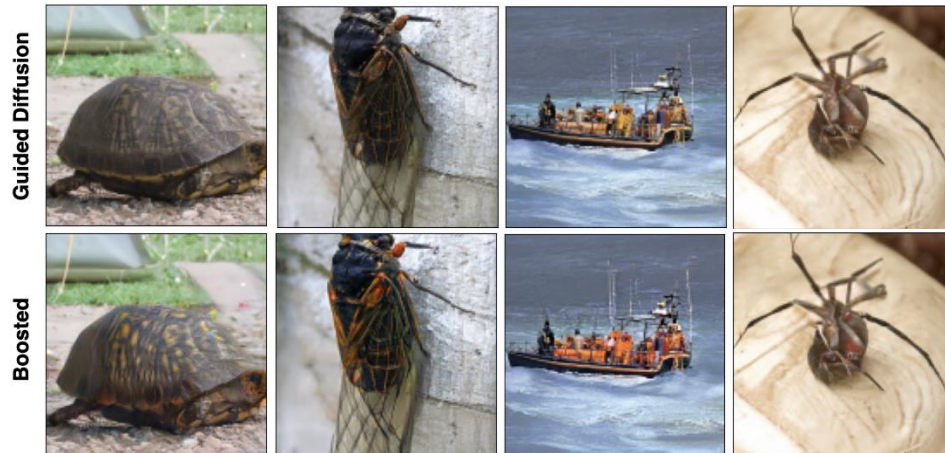

Table 1. FID and IS results of Consistency models and the results after boosting via our joint model using RN50 architecture, and Wide-RN 50-2 architecture.

Boosting Method	Inference Steps	FID ($\downarrow$)	IS ($\uparrow$)
Consistency Training	1	13.00	28.83
RN50 Joint Model		9.69	50.80
Wide-RN Joint Model		**8.83**	**55.67**
Consistency Training	2	11.12	27.28
RN50 Joint Model		8.51	39.40
Wide-RN Joint Model		**7.98**	**46.33**
Consistency Distillation	1	6.20	39.87
RN50 Joint Model		4.95	51.98
Wide-RN Joint Model		**4.84**	**58.73**
Consistency Distillation	2	4.69	42.28
RN50 Joint Model		3.84	51.12
Wide-RN Joint Model		**3.78**	**55.13**

Table 2. FID and IS results of Consistency models and the results after boosting via our joint model using PGD, and SGLD.

Boosting Method	Inference Steps	FID ($\downarrow$)	IS ($\uparrow$)
Consistency Training	1	13.00	28.83
Wide-RN+PGD		8.83	55.67
Wide-RN+SGLD		**8.71**	**59.76**
Consistency Training	2	11.12	27.28
Wide-RN+PGD		7.98	46.33
Wide-RN+SGLD		**7.64**	**46.83**
Consistency Distillation	1	6.20	39.87
Wide-RN+PGD		4.84	58.73
Wide-RN+SGLD		**4.65**	**59.00**
Consistency Distillation	2	4.69	42.28
Wide-RN+PGD		3.78	55.13
Wide-RN+SGLD		**3.58**	**56.46**

Table 3. Preliminary FID and IS results of different generative models at different resolutions and the results after boosting via our joint model.

Boosting Method	FID ($\downarrow$)	IS ($\uparrow$)	Precision ($\uparrow$)	Recall ($\uparrow$)
Adm 64x64	2.61	46.78	0.73	**0.63**
Wide-RN+SGLD	**2.08**	**58.41**	**0.75**	0.60
BigGAN 64x64	4.06	44.94	0.79	**0.48**
Wide-RN+SGLD	**3.67**	**62.79**	**0.81**	0.45
Iddpm 64x64	2.92	45.62	0.73	**0.62**
Wide-RN+SGLD	**2.25**	**62.26**	**0.76**	0.59
Adm-G 128x128	2.97	141.47	0.78	**0.59**
Wide-RN+SGLD	**2.34**	**271.95**	**0.80**	0.58
BigGAN 128x128	6.02	145.83	0.86	0.34
Wide-RN+SGLD	**5.68**	**236.88**	**0.86**	**0.34**
Adm-G 256x256	4.58	186.83	0.81	0.52
Wide-RN+SGLD	**3.17**	**301.06**	**0.83**	**0.53**
BigGAN 256x256	7.03	202.64	0.87	0.27
Wide-RN+SGLD	**6.16**	**275.25**	**0.88**	**0.28**