Real-Time Adaptive Image Compression: Supplementary Material


(a) Encode times.
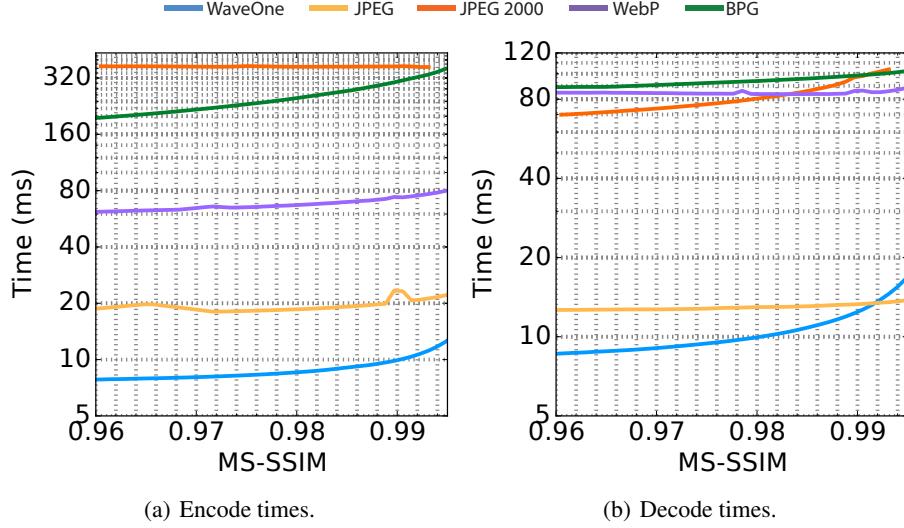
(b) Decode times.

Figure 1. Average times to encode and decode images from the RAISE-1k 512×768 dataset. Note our codec was run on GPU.
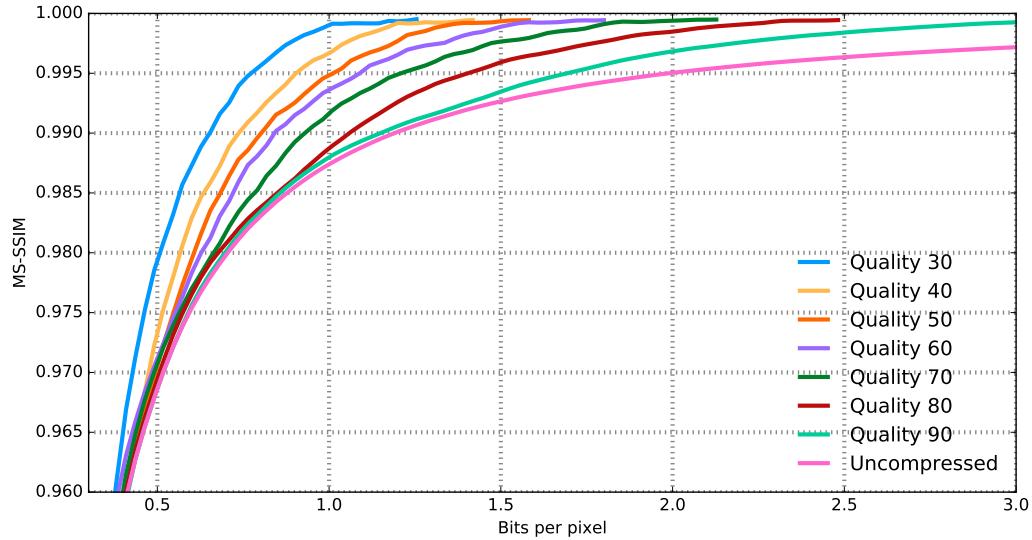

Figure 2. We used JPEG to compress the Kodak dataset at various quality levels. For each, we then use JPEG to recompress the images, and plot the resultant rate-distortion curve. It is evident that the more an image has been previously compressed with JPEG, the better JPEG is able to then recompress it.
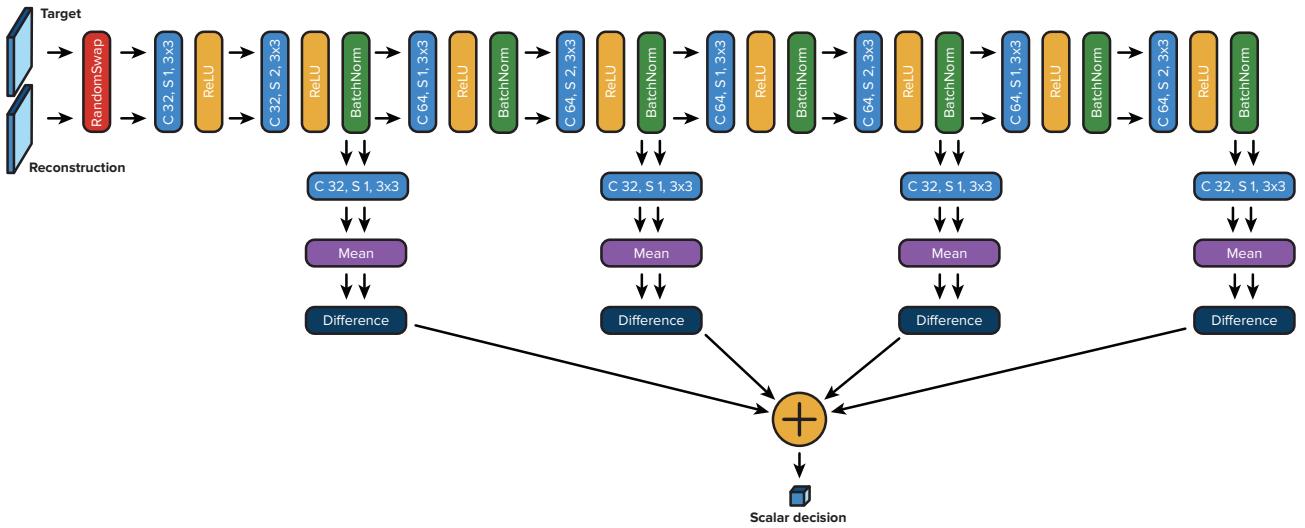
Figure 3. The architecture of the discriminator used in our adversarial training procedure. The first module randomly swaps between the targets and the reconstructions. The goal of the discriminator is to infer which of the two inputs is then the real target, and which is its reconstruction. We accumulate scalar outputs along branches constructed along the processing pipeline, branched out at different depths. We average these to attain the final value provided to the objective sigmoid function. This multiscale architecture allows aggregating information across different scales. In Section 4 of the main text we discuss the motivation for these architectural choices in more detail.

JPEG	**JPEG 2000**	**WebP**	**Ours**

0.0909 BPP	0.0847 BPP	0.1021 BPP	0.0840 BPP
0.1921 BPP	0.1859 BPP	0.1861 BPP	0.1851 BPP
0.4064 BPP	0.4002 BPP	0.4016 BPP	0.3963 BPP
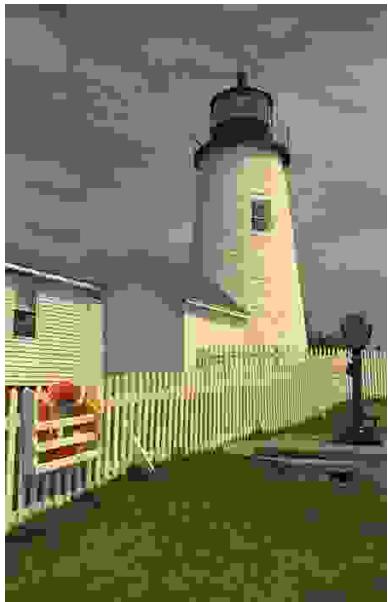
JPEG	JPEG 2000	WebP	Ours
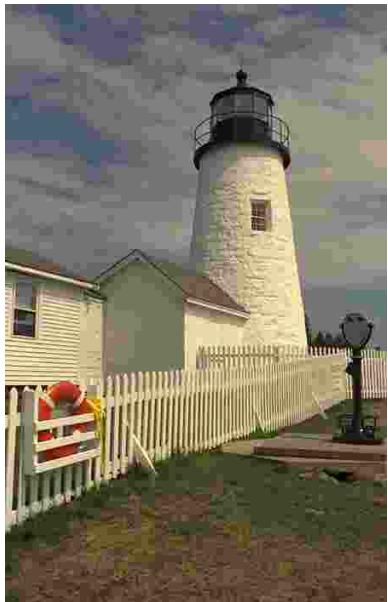
0.0949 BPP	0.0941 BPP	0.1452 BPP	0.0928 BPP
0.1970 BPP	0.1953 BPP	0.1956 BPP	0.1939 BPP
0.4196 BPP	0.4069 BPP	0.4117 BPP	0.4035 BPP
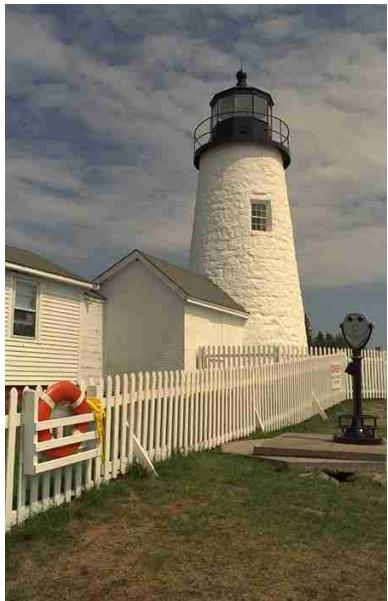
| JPEG	JPEG 2000	WebP	Ours
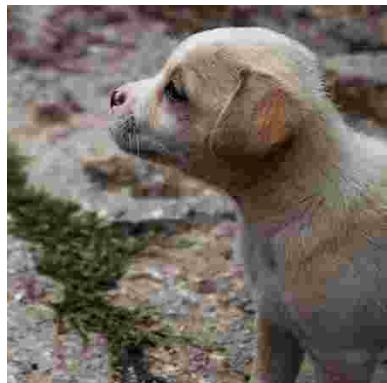
0.1008 BPP   0.0953 BPP   0.1392 BPP   0.0949 BPP

0.2083 BPP   0.1939 BPP   0.1973 BPP   0.1921 BPP

0.3734 BPP   0.3690 BPP   0.3672 BPP   0.3643 BPP

JPEG	**JPEG 2000**	**WebP**	**Ours**

0.1101 BPP   0.0947 BPP   0.1510 BPP   0.0941 BPP

0.2071 BPP   0.2014 BPP   0.1989 BPP   0.1940 BPP

0.4055 BPP   0.4002 BPP   0.4087 BPP   0.3971 BPP
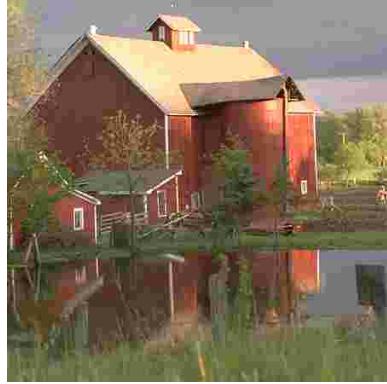
JPEG	JPEG 2000	WebP	Ours
0.1123 BPP	0.0994 BPP	0.1263 BPP	0.0989 BPP
0.2210 BPP	0.2183 BPP	0.2198 BPP	0.2125 BPP
0.4671 BPP	0.4638 BPP	0.4674 BPP	0.4581 BPP
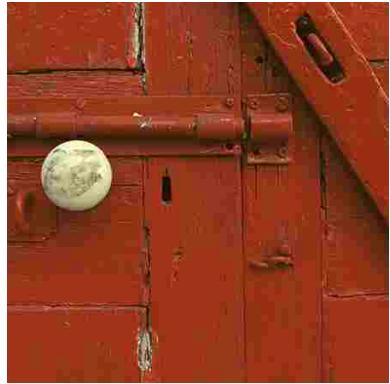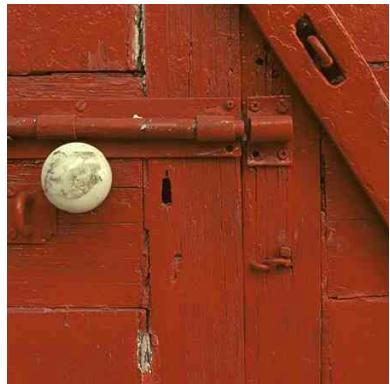
JPEG	JPEG 2000	WebP	**Ours**
0.0881 BPP	0.0846 BPP	0.0841 BPP	0.0828 BPP
0.1923 BPP	0.1889 BPP	0.1952 BPP	0.1885 BPP
0.4012 BPP	0.4002 BPP	0.4047 BPP	0.3996 BPP