High-Fidelity Generative Image Compression

Appendix B: Visual Results

https://hific.github.io

Overview

In this PDF, we show images from all datasets. For each image, we show the full reconstruction by one of our models, next to the original. On the top left of this image, we show the dataset and image ID. Additionally, we pick one or two crops for each image, where we compare the original to the following methods:

- 1. HiFiCMi (Ours)
- 2. HiFiCLo (Ours)
- 3. M&S Hyperprior at a bitrate greater than HiFiC^{Lo}
- 4. BPG at the $2\times$ the bitrate of $HiFiC^{Mi}$
- 5. BPG at the same bitrate as $HiFiC^{Mi}$
- 6. BPG at the same bitrate as $HiFiC^{Lo}$
- 7. JPEG at Q = 80.

We chose to add JPEG at Q=80 as a further reference, as this is a quality factor in common use.

Results

Throughout the examples, we can see that our GAN models shine at reconstructing plausible textures, yielding reconstructions that are very close to the original. We see that BPG at the same bitrate as $HiFiC^{Lo}$ (Ours) tends to exibit block artifacts, while $HiFiC^{Lo}$ looks very realistic. For most images, our $HiFiC^{Mi}$ model also looks significantly better than BPG at the same bitrate. When BPG uses $2 \times$ the rate as $HiFiC^{Mi}$, it starts to look similar to our reconstructions.

We also see two failure cases. The first is very small scale text, shown in CLIC2020/25bf4, which looks typeset in another script. The second is small scale faces, as in Kodak/14, where our $HiFiC^{Lo}$ model shows high-frequency noise.

More Comparisons and Raw Images

We note that the crops are embedded as PNGs in the PDF, but the large background images are embedded as JPEGs to prevent a huge file. However, we package full-sized PNGs for various methods into ZIPs. The ZIP files also contain a HTML file that can be used for easy side-by-side comparisons, as this is the best way to visualize differences.

The images are also available directly in the browser at:

```
https://hific.github.io/raw/index.html.
```

The ZIP files:

1. The following ZIP contains the 20 images from CLIC2020 used for the user study, compressed with each of the 9 methods used in the study.

```
https://hific.github.io/raw/userstudy Size: 610MB
```

 The following ZIP files contain all the images of the respective datasets, compressed with HiFiC^{Hi}, HiFiC^{Mi}, HiFiC^{Lo}.

```
https://hific.github.io/raw/kodak
```

Size: 61MB

https://hific.github.io/raw/clic2020

Size: 6.3GB

https://hific.github.io/raw/div2k

Size: 1.7GB







































