
Implementing Noise2Noise for Dynamic Scenes

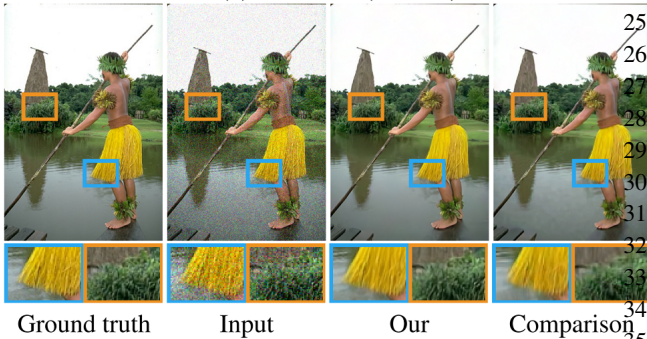
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Abstract

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1. Dataset

(a) Gaussian ($\sigma = 25$)



There's the dataset.

1.1. Codes

```
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5 # http://creativecommons.org/licenses/by-nc-sa/4.0/
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7
8 import tensorflow as tf
9
10 def parse_tfrecord_tf(record):
11     features = tf.parse_single_example(record)
12     'shape': tf.FixedLenFeature([3], tf.int32)
13     'data': tf.FixedLenFeature([], tf.float32)
14     data = tf.decode_raw(features['data'], tf.float32)
15     return tf.reshape(data, features['shape'])
16
17 # [c, h, w] -> [h, w, c]
```

```
18 def chw_to_hwc(x):
19     return tf.transpose(x, perm=[1, 2, 0])
20
21 # [h, w, c] -> [c, h, w]
22 def hwc_to_chw(x):
23     return tf.transpose(x, perm=[2, 0, 1])
24
25 def resize_small_image(x):
26     shape = tf.shape(x)
27     return tf.cond(
28         tf.logical_or(
29             tf.less(shape[2], 256),
30             tf.less(shape[1], 256)
31         ),
32         true_fn=lambda: hwc_to_chw(tf.image.resize_images(x, [shape[1], shape[2]])),
33         false_fn=lambda: tf.cast(x, tf.float32)
34     )
35
36 def random_crop_noised_clean(x, add_noise):
37     cropped = tf.random_crop(resize_small_image(x), [256, 256, 3])
38     return (add_noise(cropped), add_noise(cropped))
39
40 def create_dataset(train_tfrecords, minibatch_size, num_threads):
41     print('Setting up dataset source from', train_tfrecords)
42     buffer_mb = 256
43     num_threads = 2
44     dset = tf.data.TFRecordDataset(train_tfrecords)
45     dset = dset.repeat()
46     buf_size = 1000
47     dset = dset.prefetch(buf_size)
48     dset = dset.map(parse_tfrecord_tf, num_parallel_calls=tf.num_parallel_calls())
49     dset = dset.shuffle(buffer_size=buf_size)
50     dset = dset.map(lambda x: random_crop_noised_clean(x, True))
51     dset = dset.batch(minibatch_size)
52     it = dset.make_one_shot_iterator()
53     return it
```

2. check point 2 baseline

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