tf.contrib.gan.eval.frechet_classifier_distance

> **Contents**
> Aliases:

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- `tf.contrib.gan.eval.classifier_metrics.frechet_classifier_distance`

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```
frechet_classifier_distance(
    real_images,
    generated_images,
    classifier_fn,
    num_batches=1
)
```

Defined in `tensorflow/contrib/gan/python/eval/python/classifier_metrics_impl.py`.

Classifier distance for evaluating a generative model.

This is based on the Frechet Inception distance, but for an arbitrary classifier.

This technique is described in detail in https://arxiv.org/abs/1706.08500. Given two Gaussian distribution with means m and m_w and covariance matrices C and C_w, this function calcuates

$|m - m_w|^2 + Tr(C + C_w - 2(C * C_w)^{(1/2)})$

which captures how different the distributions of real images and generated images (or more accurately, their visual features) are. Note that unlike the Inception score, this is a true distance and utilizes information about real world images.

Note that when computed using sample means and sample covariance matrices, Frechet distance is biased. It is more biased for small sample sizes. (e.g. even if the two distributions are the same, for a small sample size, the expected Frechet distance is large). It is important to use the same sample size to compute frechet classifier distance when comparing two generative models.

Args:

- `real_images` : Real images to use to compute Frechet Inception distance.
- `generated_images` : Generated images to use to compute Frechet Inception distance.
- `classifier_fn` : A function that takes images and produces activations based on a classifier.
- `num_batches` : Number of batches to split images in to in order to efficiently run them through the classifier network.

Returns:

The Frechet Inception distance. A floating-point scalar.

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