

tf.svd

Contents

Aliases:

Aliases:

- `tf.linalg.svd`
- `tf.svd`

```
svd(  
    tensor,  
    full_matrices=False,  
    compute_uv=True,  
    name=None  
)
```

Defined in `tensorflow/python/ops/linalg_ops.py`.

See the guide: [Math > Matrix Math Functions](#)

Computes the singular value decompositions of one or more matrices.

Computes the SVD of each inner matrix in `tensor` such that `tensor[..., :, :] = u[..., :, :] * diag(s[..., :, :]) * transpose(v[..., :, :])`

```
# a is a tensor.  
# s is a tensor of singular values.  
# u is a tensor of left singular vectors.  
# v is a tensor of right singular vectors.  
s, u, v = svd(a)  
s = svd(a, compute_uv=False)
```

Args:

- `tensor`: `Tensor` of shape `[..., M, N]`. Let `P` be the minimum of `M` and `N`.
- `full_matrices`: If true, compute full-sized `u` and `v`. If false (the default), compute only the leading `P` singular vectors. Ignored if `compute_uv` is `False`.
- `compute_uv`: If `True` then left and right singular vectors will be computed and returned in `u` and `v`, respectively. Otherwise, only the singular values will be computed, which can be significantly faster.
- `name`: string, optional name of the operation.

Returns:

- `s`: Singular values. Shape is `[..., P]`. The values are sorted in reverse order of magnitude, so `s[..., 0]` is the largest value, `s[..., 1]` is the second largest, etc.
- `u`: Left singular vectors. If `full_matrices` is `False` (default) then shape is `[..., M, P]`; if `full_matrices` is `True` then shape is `[..., M, M]`. Not returned if `compute_uv` is `False`.

- `v` : Right singular vectors. If `full_matrices` is `False` (default) then shape is `[..., N, P]`. If `full_matrices` is `True` then shape is `[..., N, N]`. Not returned if `compute_uv` is `False`.

numpy compatibility

Mostly equivalent to `numpy.linalg.svd`, except that the order of output arguments here is `s`, `u`, `v` when `compute_uv` is `True`, as opposed to `u`, `s`, `v` for `numpy.linalg.svd`.

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