

## tf.contrib.kfac.fisher\_factors.InverseProvidingFactor

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## Class **InverseProvidingFactor**

Inherits From: [FisherFactor](#)Defined in [tensorflow/contrib/kfac/python/ops/fisher\\_factors.py](#).Base class for FisherFactors that maintain inverses, powers, etc of `_cov`.Assumes that the `_cov` property is a square PSD matrix.Subclasses must implement the `_compute_new_cov` method, and the `_var_scope` and `_cov_shape` properties.

## Methods

**`__init__`**

```
__init__()
```

**`get_cov`**

```
get_cov()
```

**`get_eigendecomp`**

```
get_eigendecomp()
```

**`get_inverse`**

```
get_inverse(damping)
```

**`get_matpower`**

```
get_matpower(  
    exp,  
    damping  
)
```

## **instantiate\_covariance**

```
instantiate_covariance()
```

Instantiates the covariance Variable as the instance member `_cov`.

## **make\_covariance\_update\_op**

```
make_covariance_update_op(ema_decay)
```

Constructs and returns the covariance update Op.

Args:

- `ema_decay` : The exponential moving average decay (float or Tensor).

Returns:

An Op for updating the covariance Variable referenced by `_cov`.

## **make\_inverse\_update\_ops**

```
make_inverse_update_ops()
```

Create and return update ops corresponding to registered computations.

## **register\_damped\_inverse**

```
register_damped_inverse(damping)
```

Registers a damped inverse needed by a FisherBlock.

Args:

- `damping` : The damping value (float or Tensor) for this factor.

## **register\_eigendecomp**

```
register_eigendecomp()
```

Registers that an eigendecomposition is needed by a FisherBlock.

## **register\_matpower**

```
register_matpower(  
    exp,  
    damping  
)
```

Registers a matrix power needed by a FisherBlock.

#### Args:

- `exp`: The exponent (float or Tensor) to raise the matrix to.
- `damping`: The damping value (float or Tensor).

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