

tf.cholesky_solve

Contents

Aliases:

Aliases:

- `tf.cholesky_solve`
- `tf.linalg.cholesky_solve`

```
cholesky_solve(  
    chol,  
    rhs,  
    name=None  
)
```

Defined in [tensorflow/python/ops/linalg_ops.py](#).

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

Solves systems of linear eqns $A X = RHS$, given Cholesky factorizations.

```
# Solve 10 separate 2x2 linear systems:  
A = ... # shape 10 x 2 x 2  
RHS = ... # shape 10 x 2 x 1  
chol = tf.cholesky(A) # shape 10 x 2 x 2  
X = tf.cholesky_solve(chol, RHS) # shape 10 x 2 x 1  
# tf.matmul(A, X) ~ RHS  
X[3, :, 0] # Solution to the linear system A[3, :, :] x = RHS[3, :, 0]  
  
# Solve five linear systems (K = 5) for every member of the length 10 batch.  
A = ... # shape 10 x 2 x 2  
RHS = ... # shape 10 x 2 x 5  
...  
X[3, :, 2] # Solution to the linear system A[3, :, :] x = RHS[3, :, 2]
```

Args:

- `chol`: A **Tensor**. Must be `float32` or `float64`, shape is `[..., M, M]`. Cholesky factorization of `A`, e.g. `chol = tf.cholesky(A)`. For that reason, only the lower triangular parts (including the diagonal) of the last two dimensions of `chol` are used. The strictly upper part is assumed to be zero and not accessed.
- `rhs`: A **Tensor**, same type as `chol`, shape is `[..., M, K]`.
- `name`: A name to give this **Op**. Defaults to `cholesky_solve`.

Returns:

Solution to $A x = rhs$, shape `[..., M, K]`.

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