

tf.hessians

```
hessians(  
    ys,  
    xs,  
    name='hessians',  
    colocate_gradients_with_ops=False,  
    gate_gradients=False,  
    aggregation_method=None  
)
```

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

See the guide: [Training > Gradient Computation](#)

Constructs the Hessian of sum of **ys** with respect to **x** in **xs**.

hessians() adds ops to the graph to output the Hessian matrix of **ys** with respect to **xs**. It returns a list of **Tensor** of length **len(xs)** where each tensor is the Hessian of **sum(ys)**. This function currently only supports evaluating the Hessian with respect to (a list of) one-dimensional tensors.

The Hessian is a matrix of second-order partial derivatives of a scalar tensor (see https://en.wikipedia.org/wiki/Hessian_matrix for more details).

Args:

- **ys**: A **Tensor** or list of tensors to be differentiated.
- **xs**: A **Tensor** or list of tensors to be used for differentiation.
- **name**: Optional name to use for grouping all the gradient ops together. defaults to 'hessians'.
- **colocate_gradients_with_ops**: See **gradients()** documentation for details.
- **gate_gradients**: See **gradients()** documentation for details.
- **aggregation_method**: See **gradients()** documentation for details.

Returns:

A list of Hessian matrices of **sum(ys)** for each **x** in **xs**.

Raises:

- **LookupError**: if one of the operations between **xs** and **ys** does not have a registered gradient function.

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