

tf.contrib.opt.VariableClippingOptimizer

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Class `VariableClippingOptimizer`

Inherits From: `Optimizer`

Defined in `tensorflow/contrib/opt/python/training/variable_clipping_optimizer.py`.

Wrapper optimizer that clips the norm of specified variables after update.

This optimizer delegates all aspects of gradient calculation and application to an underlying optimizer. After applying gradients, this optimizer then clips the variable to have a maximum L2 norm along specified dimensions. NB: this is quite different from clipping the norm of the gradients.

Multiple instances of `VariableClippingOptimizer` may be chained to specify different max norms for different subsets of variables.

This is more efficient at serving-time than using normalization during embedding lookup, at the expense of more expensive training and fewer guarantees about the norms.

Methods

`__init__`

```
__init__(
    opt,
    vars_to_clip_dims,
    max_norm,
    use_locking=False,
    colocate_clip_ops_with_vars=False,
    name='VariableClipping'
)
```

Construct a new clip-norm optimizer.

Args:

- `opt`: The actual optimizer that will be used to compute and apply the gradients. Must be one of the `Optimizer` classes.
- `vars_to_clip_dims`: A dict with keys as Variables and values as lists of dimensions along which to compute the L2-norm. See `tf.clip_by_norm` for more details.

- `max_norm`: The L2-norm to clip to, for all variables specified.
- `use_locking`: If `True` use locks for clip update operations.
- `colocate_clip_ops_with_vars`: If `True`, try colocating the clip norm ops with the corresponding variable.
- `name`: Optional name prefix for the operations created when applying gradients. Defaults to "VariableClipping".

apply_gradients

```
apply_gradients(
    grads_and_vars,
    global_step=None,
    name=None
)
```

compute_gradients

```
compute_gradients(
    *args,
    **kwargs
)
```

get_name

```
get_name()
```

get_slot

```
get_slot(
    *args,
    **kwargs
)
```

get_slot_names

```
get_slot_names(
    *args,
    **kwargs
)
```

minimize

```
minimize(
    loss,
    global_step=None,
    var_list=None,
    gate_gradients=GATE_OP,
    aggregation_method=None,
    colocate_gradients_with_ops=False,
    name=None,
    grad_loss=None
)
```

Add operations to minimize `loss` by updating `var_list`.

This method simply combines calls `compute_gradients()` and `apply_gradients()`. If you want to process the gradient before applying them call `compute_gradients()` and `apply_gradients()` explicitly instead of using this function.

Args:

- `loss`: A `Tensor` containing the value to minimize.
- `global_step`: Optional `Variable` to increment by one after the variables have been updated.
- `var_list`: Optional list or tuple of `Variable` objects to update to minimize `loss`. Defaults to the list of variables collected in the graph under the key `GraphKeys.TRAINABLE_VARIABLES`.
- `gate_gradients`: How to gate the computation of gradients. Can be `GATE_NONE`, `GATE_OP`, or `GATE_GRAPH`.
- `aggregation_method`: Specifies the method used to combine gradient terms. Valid values are defined in the class `AggregationMethod`.
- `colocate_gradients_with_ops`: If True, try colocating gradients with the corresponding op.
- `name`: Optional name for the returned operation.
- `grad_loss`: Optional. A `Tensor` holding the gradient computed for `loss`.

Returns:

An Operation that updates the variables in `var_list`. If `global_step` was not `None`, that operation also increments `global_step`.

Raises:

- `ValueError`: If some of the variables are not `Variable` objects.

Class Members

GATE_GRAPH

GATE_NONE

GATE_OP

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