

tf.contrib.estimator.multi_head

```
multi_head(  
    heads,  
    head_weights=None  
)
```

Defined in [tensorflow/contrib/estimator/python/estimator/multi_head.py](#).

Creates a `_Head` for multi-objective learning.

This class merges the output of multiple `_Head` objects. Specifically: *For training, sums losses of each head, calls `train_op_fn` with this final loss.* For eval, merges metrics by adding `head.name` suffix to the keys in eval metrics, such as `precision/head1`, `precision/head2`. * For prediction, merges predictions and updates keys in prediction dict to a 2-tuple, `(head.name, prediction_key)`. Merges `export_outputs` such that by default the first head is served.

Usage:

```
# In `input_fn` specify labels as a dict keyed by head name:  
def input_fn():  
    features = ...  
    labels1 = ...  
    labels2 = ...  
    return features, {'head1': labels1, 'head2': labels2}  
  
# In `model_fn`, specify logits as a dict keyed by head name:  
def model_fn(features, labels, mode):  
    # Create simple heads and specify head name.  
    head1 = multi_class_head(n_classes=3, name='head1')  
    head2 = binary_classification_head(name='head2')  
    # Create multi-head from two simple heads.  
    head = multi_head([head1, head2])  
    # Create logits for each head, and combine them into a dict.  
    logits1, logits2 = logit_fn()  
    logits = {'head1': logits1, 'head2': logits2}  
    # Return the merged EstimatorSpec  
    return head.create_estimator_spec(..., logits=logits, ...)  
  
# Create an estimator with this model_fn.  
estimator = tf.estimator.Estimator(model_fn=model_fn)  
estimator.train(input_fn=input_fn, steps=100)
```

Args:

- `heads`: List or tuple of `_Head` instances. All heads must have `name` specified. The first head in the list is the default used at serving time.
- `head_weights`: Optional list of weights, same length as `heads`. Used when merging losses to calculate the weighted sum of losses from each head. If `None`, all losses are weighted equally.

Returns:

A instance of `_Head` that merges multiple heads.

Raises:

- `ValueError`: If `heads` is empty.
- `ValueError`: If any of the `heads` does not have `name` specified.
- `ValueError`: If `heads` and `head_weights` have different size.

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