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TensorFlow API r1.4

tf.contrib.metrics.streaming\_sensitivity\_at\_specificity

```
streaming_sensitivity_at_specificity(
    predictions,
    labels,
    specificity,
    weights=None,
    num_thresholds=200,
    metrics_collections=None,
    updates_collections=None,
    name=None
)
```

Defined in tensorflow/contrib/metrics/python/ops/metric\_ops.py.

See the guide: Metrics (contrib) > Metric Ops

Computes the sensitivity at a given specificity.

The streaming\_sensitivity\_at\_specificity function creates four local variables, true\_positives, true\_negatives, false\_positives and false\_negatives that are used to compute the sensitivity at the given specificity value. The threshold for the given specificity value is computed and used to evaluate the corresponding sensitivity.

For estimation of the metric over a stream of data, the function creates an <code>update\_op</code> operation that updates these variables and returns the <code>sensitivity</code>. <code>update\_op</code> increments the <code>true\_positives</code>, <code>true\_negatives</code>, <code>false\_positives</code> and <code>false\_negatives</code> counts with the weight of each case found in the <code>predictions</code> and <code>labels</code>.

If weights is None, weights default to 1. Use weights of 0 to mask values.

For additional information about specificity and sensitivity, see the following: https://en.wikipedia.org/wiki/Sensitivity\_and\_specificity

## Args:

- predictions: A floating point Tensor of arbitrary shape and whose values are in the range [0, 1].
- labels: A bool Tensor whose shape matches predictions.
- specificity: A scalar value in range [0, 1].
- weights: Tensor whose rank is either 0, or the same rank as labels, and must be broadcastable to labels (i.e., all dimensions must be either 1, or the same as the corresponding labels dimension).
- num\_thresholds: The number of thresholds to use for matching the given specificity.
- metrics\_collections: An optional list of collections that sensitivity should be added to.
- updates\_collections : An optional list of collections that update\_op should be added to.
- name: An optional variable\_scope name.

## Returns:

- sensitivity: A scalar Tensor representing the sensitivity at the given specificity value.
- update\_op: An operation that increments the true\_positives, true\_negatives, false\_positives and

false\_negatives variables appropriately and whose value matches sensitivity.

## Raises:

ValueError: If predictions and labels have mismatched shapes, if weights is not None and its shape doesn't
match predictions, or if specificity is not between 0 and 1, or if either metrics\_collections or
updates\_collections are not a list or tuple.

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