

tf.contrib.bayesflow.csiszar_divergence.amari_alpha

```
amari_alpha(
    logu,
    alpha=1.0,
    self_normalized=False,
    name=None
)
```

Defined in [tensorflow/contrib/bayesflow/python/ops/csiszar_divergence_impl.py](#).

The Amari-alpha Csiszar-function in log-space.

A Csiszar-function is a member of,

$$F = \{ f: \mathbb{R}_+ \text{ to } \mathbb{R} : f \text{ convex} \}.$$

When `self_normalized = True`, the Amari-alpha Csiszar-function is:

$$f(u) = \begin{cases} -\log(u) + (u - 1), & \alpha = 0 \\ u \log(u) - (u - 1), & \alpha = 1 \\ [(u^{\alpha} - 1) - \alpha(u - 1)] / (\alpha(\alpha - 1)), & \text{otherwise} \end{cases}$$

When `self_normalized = False` the $(u - 1)$ terms are omitted.

Warning: when `alpha != 0` and/or `self_normalized = True` this function makes non-log-space calculations and may therefore be numerically unstable for $|\log u| \gg 0$.

For more information, see: A. Cichocki and S. Amari. "Families of Alpha-Beta-and GammaDivergences: Flexible and Robust Measures of Similarities." Entropy, vol. 12, no. 6, pp. 1532-1568, 2010.

Args:

- `logu`: `float`-like `Tensor` representing `log(u)` from above.
- `alpha`: `float`-like Python scalar. (See Mathematical Details for meaning.)
- `self_normalized`: Python `bool` indicating whether `f'(u=1)=0`. When `f'(u=1)=0` the implied Csiszar f-Divergence remains non-negative even when `p, q` are unnormalized measures.
- `name`: Python `str` name prefixed to Ops created by this function.

Returns:

- `amari_alpha_of_u`: `float`-like `Tensor` of the Csiszar-function evaluated at `u = exp(logu)`.

Raises:

- `TypeError`: if `alpha` is `None` or a `Tensor`.
- `TypeError`: if `self_normalized` is `None` or a `Tensor`.

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Last updated November 2, 2017.

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