tf.nn.dilation2d

```
dilation2d(
    input,
    filter,
    strides,
    rates,
    padding,
    name=None
)
```

Defined in `tensorflow/python/ops/gen_nn_ops.py`.

See the guide: Neural Network > Morphological filtering

Computes the grayscale dilation of 4-D `input` and 3-D `filter` tensors.

The `input` tensor has shape `[batch, in_height, in_width, depth]` and the `filter` tensor has shape `[filter_height, filter_width, depth]`, i.e., each input channel is processed independently of the others with its own structuring function. The `output` tensor has shape `[batch, out_height, out_width, depth]`. The spatial dimensions of the output tensor depend on the `padding` algorithm. We currently only support the default "NHWC" `data_format`.

In detail, the grayscale morphological 2-D dilation is the max-sum correlation (for consistency with `conv2d`, we use unmirrored filters):

```
output[b, y, x, c] =
   max_{dy, dx} input[b,
                      strides[1] * y + rates[1] * dy,
                      strides[2] * x + rates[2] * dx,
                      c] +
                filter[dy, dx, c]
```

Max-pooling is a special case when the filter has size equal to the pooling kernel size and contains all zeros.

Note on duality: The dilation of `input` by the `filter` is equal to the negation of the erosion of `-input` by the reflected `filter`.

Args:

- `input`: A `Tensor`. Must be one of the following types: `float32`, `float64`, `int32`, `int64`, `uint8`, `int16`, `int8`, `uint16`, `half`. 4-D with shape `[batch, in_height, in_width, depth]`.
- `filter`: A `Tensor`. Must have the same type as `input`. 3-D with shape `[filter_height, filter_width, depth]`.
- `strides`: A list of `ints` that has length `>= 4`. The stride of the sliding window for each dimension of the input tensor. Must be: `[1, stride_height, stride_width, 1]`.
- `rates`: A list of `ints` that has length `>= 4`. The input stride for atrous morphological dilation. Must be: `[1, rate_height, rate_width, 1]`.
- `padding`: A `string` from: `"SAME", "VALID"`. The type of padding algorithm to use.
- `name`: A name for the operation (optional).

Returns:

A `Tensor`. Has the same type as `input`. 4-D with shape `[batch, out_height, out_width, depth]`.

Last updated November 2, 2017.