STYLE TRANSFER

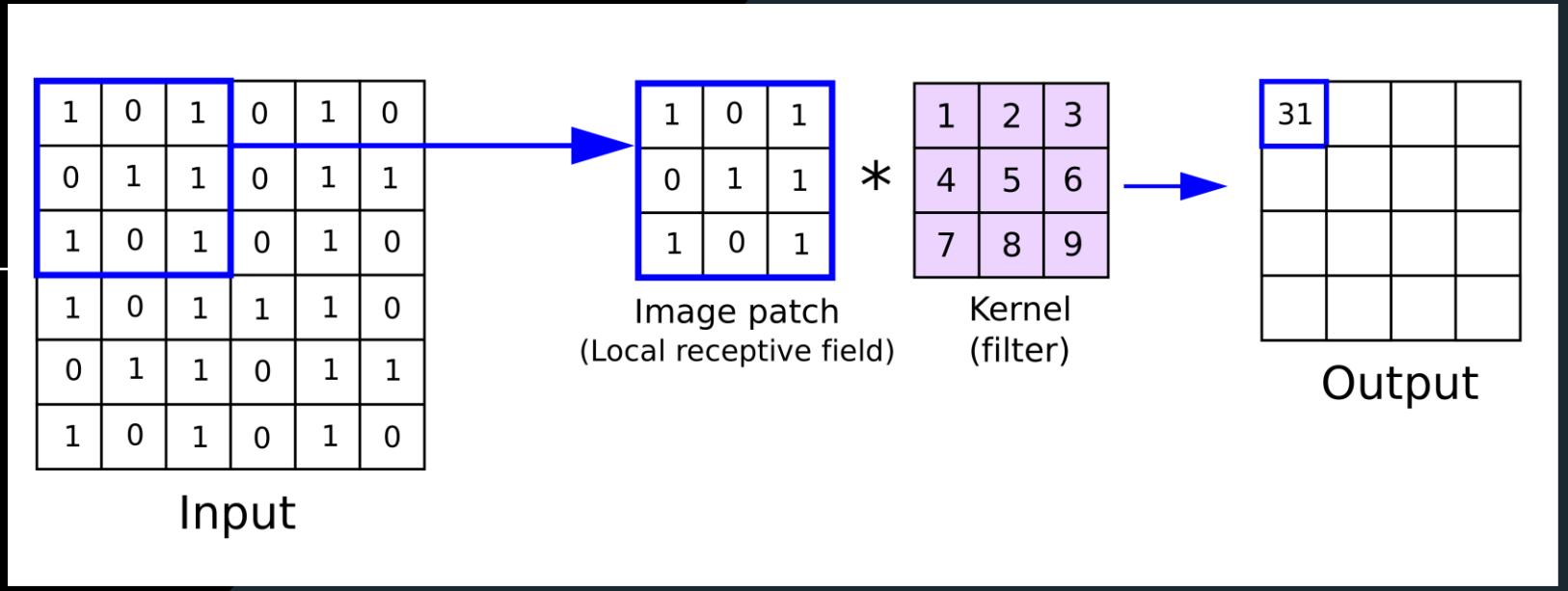
Aleksandra Lewandowska

OUTLINE

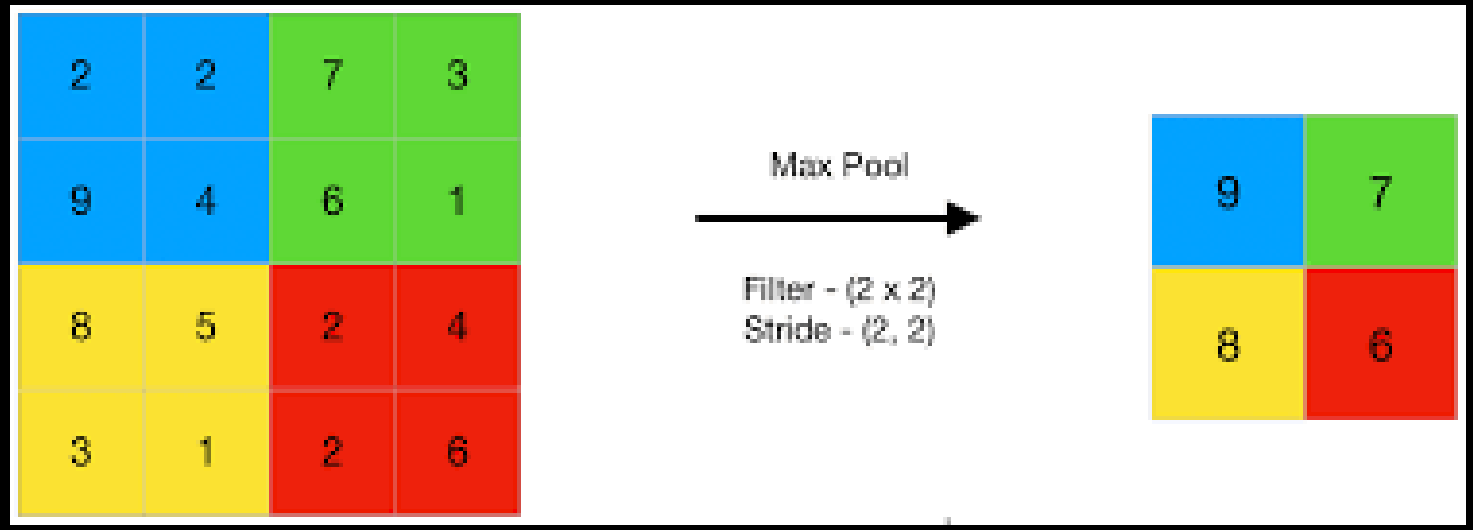
1. What is style transfer?
2. Let's start with convolutions
3. What about pooling? Really?
4. Content Loss function
5. Style Loss function
6. The results of my own
7. Thanks and sorry

WHAT IS STYLE TRANSFER

CONVOLUTIONS FIRST



What about pooling



After image processing
Content Loss

```
class ContentLoss(nn.Module):

    def __init__(self, target,):
        super(ContentLoss, self).__init__()
        # we 'detach' the target content from the tree used
        # to dynamically compute the gradient: this is a stated value,
        # not a variable. Otherwise the forward method of the criterion
        # will throw an error.
        self.target = target.detach()

    def forward(self, input):
        self.loss = F.mse_loss(input, self.target)
        return input
```

And The One Style Loss

```python
def gram_matrix(input):
    a, b, c, d = input.size()  # a=batch size(=1)
    # b=number of feature maps
    # (c,d)=dimensions of a f. map (N=c*d)

    features = input.view(a * b, c * d)  # resise F_XL into \hat F_XL

    G = torch.mm(features, features.t())  # compute the gram product

    # we 'normalize' the values of the gram matrix
    # by dividing by the number of element in each feature maps.
    return G.div(a * b * c * d)
```

Gram matrix ???

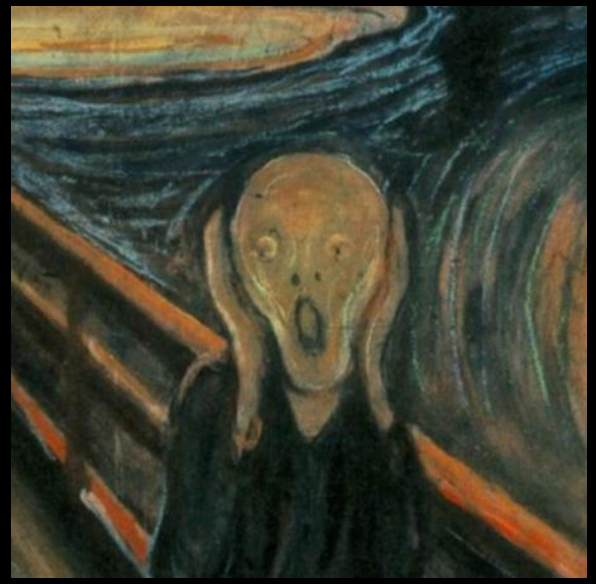
```python
class StyleLoss(nn.Module):

    def __init__(self, target_feature):
        super(StyleLoss, self).__init__()
        self.target = gram_matrix(target_feature).detach()

    def forward(self, input):
        G = gram_matrix(input)
        self.loss = F.mse_loss(G, self.target)
        return input
```

Import model and ---> RESULTS

Source Image



Style Image

Result Image
Style has been successfully applied

Thanks and sorry