

# IMAGE INPAINTING, REPLICATED?

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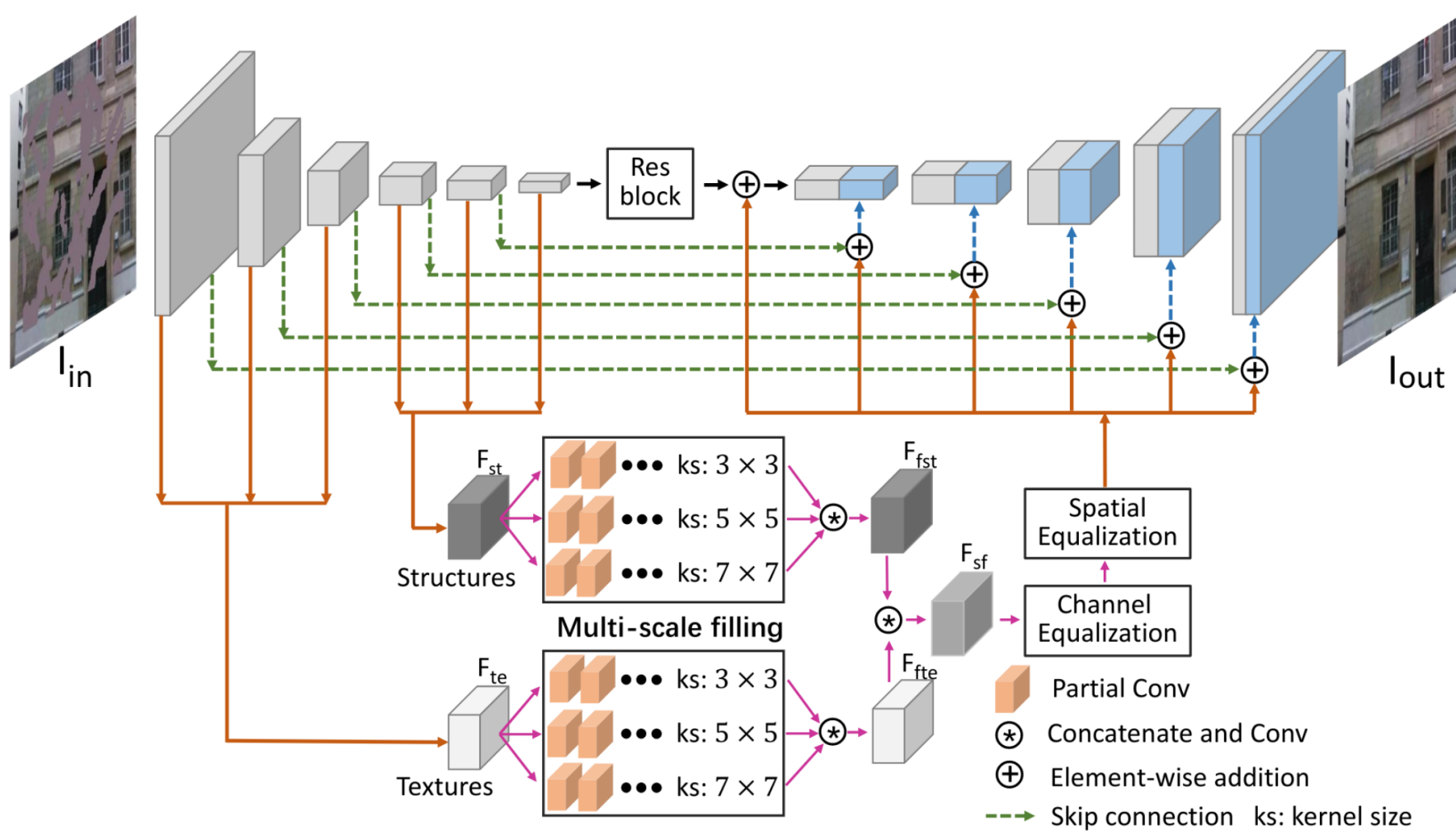
## The paper

### Rethinking Image Inpainting via a Mutual Encoder-Decoder with Feature Equalizations

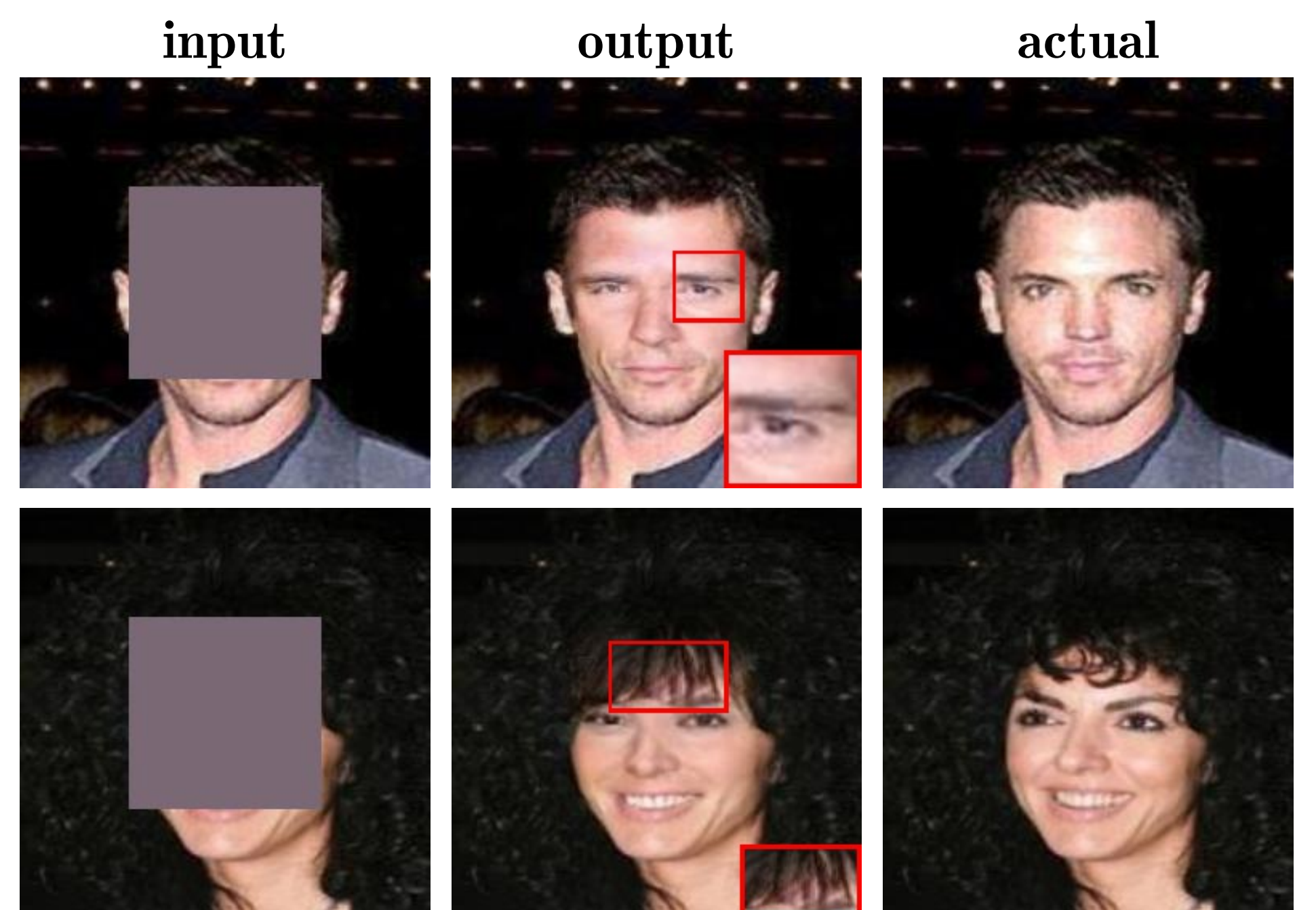
by Hongyu Liu, Bin Jiang, Yibing Song, Wei Huang, and Chao Yang

Perform hole-filling, also known as inpainting, via a single encoder-decoder CNN, in contrast to other networks that use two encoder-decoder pairs back-to-back. Structures and textures are reconstructed by extracting feature maps from the encoder stage, performing partial convolutions on the mask region, and equalizing features before adding the outputs to the skip connection inputs of the decoder.

## The model



## Their output



## Replication woes

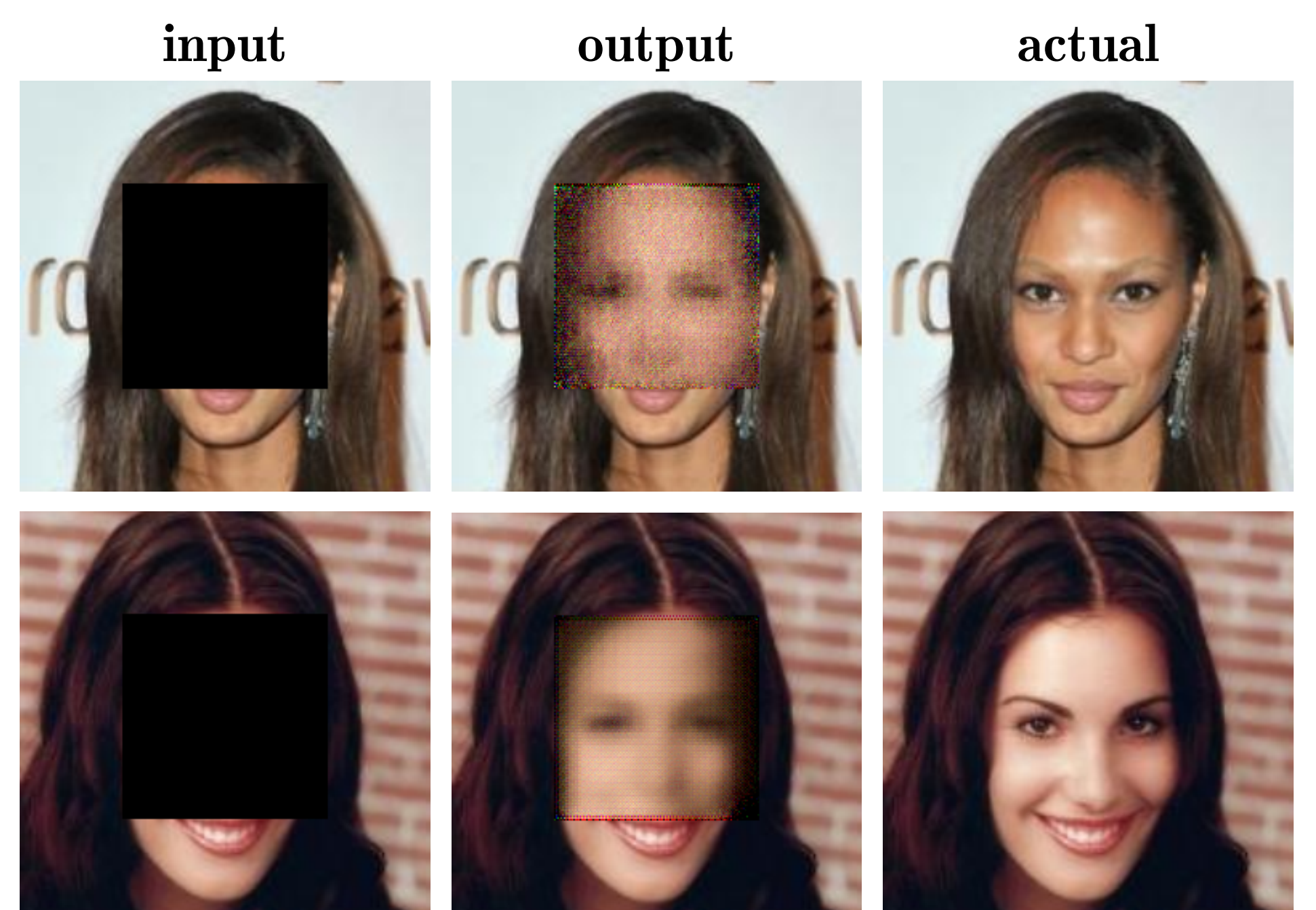
It is very difficult to replicate a paper that does not contain:

- a correct topology
- hyperparameter values
- kernel sizes
- activation or regularisation methods
- rescaling methods for shape-incompatible features
- data augmentation methods
- how adversarial loss was implemented

We often had to resort to inferring these details from related papers and their implementations, or even guessing.

Our final implementation has some components disabled as they would interfere with the training process. Attempting to fix these components would often lead to deviations from the paper's descriptions and we would end up with our own design instead.

## Our output



## Conclusion

Replicating the paper as-is is extremely difficult. It contains critical errors and lacks several details required to reproduce the output shown in the paper. We were able to train the network to yield coarse results. Given enough time, effort and computing power, a replication should be possible, especially if the author's code can be used to fill the gaps of the paper.