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| **Changes in style transfer using U-Net** |

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**Abstract**

In this paper we intend to experiment with Justin Johnson’s model by replacing the image transformation network with a U-Net and comparing its results to Justin Johnson’s model itself.

**1 Introduction**

We are introducing a change into Justin Johnson by changing its image transformation network to a U-Net. Vu-Net was successful in pose transformation by using U-Net which inspired us to use it in our project.

**1.1 Justin Johnson**

Justin Johnson’s style transfer model is based on Gaty’s et al [refrence] which uses and optimizes the perceptual loss function for higher level features from pre-trained neural networks as opposed to per-pixel loss between output and the input images. In contrast Johnson’s model is more optimized as it uses an image transformation network for a specific style but it cannot make a style transfer using random style images with just one network.

Advantages and disadvantages:

**1.2 U-Net**

A U-Net is a fully convolutional neural network used for segmentation in medical imaging consisting of 3 components: the contracting, the bottleneck and the expanding path.

Advantages and disadvantages:

**2 Experiments**

**2.1 Implementing a U-net instead of Image transformation network**

**3 Results**

**3.1 Without using a U-net**

**3.2 Using a U-net**.

**2 Comparisons**

**References**

References follow the acknowledgments. Use unnumbered third level heading for the references. Any choice of citation style is acceptable as long as you are consistent. It is permissible to reduce the font size to ‘small’ (9-point) when listing the references. **Remember that this year you can use a ninth page as long as it contains *only* cited references.**

[1] Alexander, J.A. & Mozer, M.C. (1995) Template-based algorithms for connectionist rule extraction. In G. Tesauro, D. S. Touretzky and T.K. Leen (eds.), *Advances in Neural Information Processing Systems 7*, pp. 609-616. Cambridge, MA: MIT Press.

[2] Bower, J.M. & Beeman, D. (1995) *The Book of GENESIS: Exploring Realistic Neural Models with the GEneral NEural SImulation System*. New York: TELOS/Springer-Verlag.

[3] Hasselmo, M.E., Schnell, E. & Barkai, E. (1995) Dynamics of learning and recall at excitatory recurrent synapses and cholinergic modulation in rat hiippocampal region CA3. *Journal of Neuroscience* **15**(7):5249-5262.