Image Animation with Keypoint Mask

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Abstract

TODO OR important transgaga structure realtime (Siarohin et al., 2020)

1. Introduction

TODO Or

Our paper focuses on the motion transfer problem: given a source image S and a driving video D, the goal is to syntesize a video with the identity of S, and the motion from D. Some notable works (Siarohin et al., 2020), (Wiles et al., 2018), (Siarohin et al., 2019).

Our method does not rely on GANs - see Section 2.

Related Work: Our work doesn't rely directly on a strong motion prior, but uses a structure mask which was extracted from a keypoint detector of a motion based model, such as (Siarohin et al., 2020). The concept of using drawn keypoints as a geometry represantation (structural mask) was already used in the context of image-to-image translation, in works such as TransGaGa (Wu et al., 2019). The concept of using a structural mask in the context of image animation is demonstrated in (Shalev & Wolf, 2020). However, the current work differs by basing the mask off a motion related module, which saves us the hassle of perturbing the input hoping to achieve an identy-less mask. By doing so, we improve their results, and purposes an additional "circles" only mask which can be used in the context of relative motion transfer during animation, as in (Siarohin et al., 2020), which isn't possible with a mask.

2. Methodology

Methods methods methods

3. Experiments

TODO Yanir/Dov
TODO like fomm/yoav TODO video reconstructioncomparison like yoav/fomm

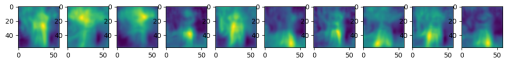

Figure 1. K channels of the keypoint detector network used in (Siarohin et al., 2020), before the softmax activation. Our main motion prior in this project.

Table 1. Accuracy TODO Dov

DATA SET	NAIVE	FLEXIBLE	BETTER?
BREAST	95.9± 0.2	96.7± 0.2	√
CLEVELAND	83.3± 0.6	80.0± 0.6	×
GLASS2	61.9± 1.4	83.8± 0.7	√
CREDIT	74.8± 0.5	78.3± 0.6	
HORSE	73.3± 0.9	69.7± 1.0	×
TODO YANIR/DOV			
META	67.1± 0.6	76.5± 0.5	√
PIMA	75.1± 0.6	73.9± 0.5	
VEHICLE	44.9± 0.6	61.5± 0.4	√

3.1. Datasets

TODO

3.2. Comparison with Previous Works

We can see: TODO Dov

Software and Data

Detailed in our repository: https://github.com/or-toledano/animation-with-keypoint-mask

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References

Shalev, Y. and Wolf, L. Image animation with perturbed masks, 2020.

Siarohin, A., Lathuilière, S., Tulyakov, S., Ricci, E., and Sebe, N. Animating arbitrary objects via deep motion transfer, 2019.

Siarohin, A., Lathuilière, S., Tulyakov, S., Ricci, E., and Sebe, N. First order motion model for image animation, 2020.

Wiles, O., Koepke, A. S., and Zisserman, A. X2face: A network for controlling face generation by using images, audio, and pose codes, 2018.

Wu, W., Cao, K., Li, C., Qian, C., and Loy, C. C. Transgaga: Geometry-aware unsupervised image-to-image translation, 2019.