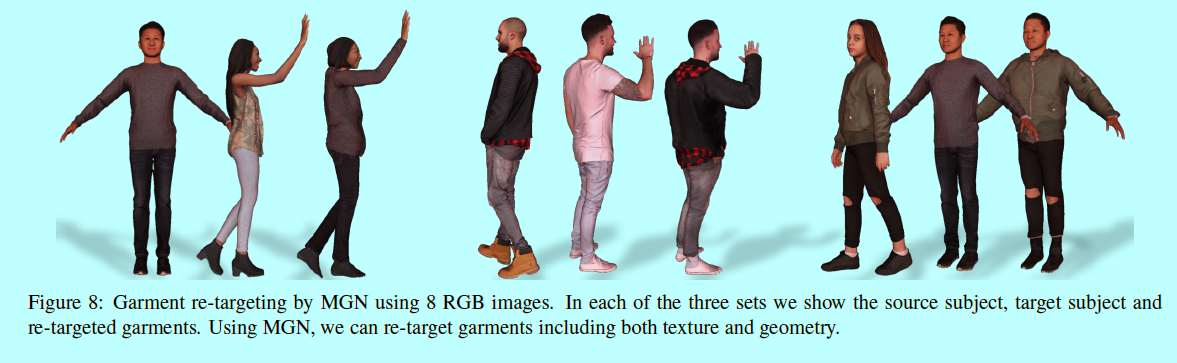
# 论文：Multi-Garment Net: Learning to Dress 3D People from Images



论文目的：根据1-8帧的视频，预测体型以及试衣。可以将衣服和体型适用于新的体型和姿势。MGN的目的在于，为任意形体任意姿势的人穿衣。

前人的工作：Although a few recent methods attempt reconstruction of people with clothing, they lack

realism and control. This limitation is in great part due to the fact that they use a single surface (mesh or voxels) to represent both clothing and body. Hence they can not capture the clothing separately from the subject in the image,let alone map it to a novel body shape.主要是单表面，没有区别身体和衣服。

数据集：有712个3D不同人在不同姿势下穿衣的数据集

总体步骤：

1.从3D数据库学习

2.从图片中重建

具体步骤：

1.分类，区别衣服和皮肤，先对模板进行处理， we first minimize the distance between template and the scan boundaries, while trying to preserve the Laplacian of the template surface.

2.然后基于PCA模型得到衣服

3.最后用SMPL重新给人体穿衣。

成果：

1. 新的方式：分离身体和衣服。
2. 从多个着衣真人中自动记录单个衣服模板。
3. 自顶向下的方法确保预测结果适配输入图片。
4. 展示应用以前不太可能从图片转变成3D衣服贴图和几何。
5. 公布包含SMPL在内的MGN。

两个方面：

1. capture of clothing and body shape
2. data-driven clothing models.

# 论文：Deep Exemplar-based Colorization

论文目的：Given a reference color image, our convolutional neural network directly maps a grayscale image to an output colorized image.给定一个参照颜色图片，通过卷积神经网络直接将灰度图片映射成一个涂色的图片。



额外功能：

1. 即使输入的参照图片和灰度图没有太多的关系，还是可以较好的上色。
2. 可以用于视频上色。

前人的工作：

These methods can colorize a new photo fully automatically without requiring any scribbles or reference. Unfortunately, none of these methods allow multi-modal colorization .By learning from the data, their models mainly use the dominant colors they have learned, hindering any kind of user controllability. Another drawback is that it must be trained on a very large reference image database containing all potential objects.

不需要草图和参照就可以自动涂色，但是不能多通道涂色，主要用所学的颜色涂色，需要学习太多数据。

步骤：

First, the Similarity sub-net is a pre-processing step which provides the input of the end-to-end colorization network. It measures the semantic similarity between the reference and the target using a VGG-19 network pre-trained on the gray-scale image object recognition task. It provides a more robust and reliable similarity metric to varying semantic image appearances than previous metrics based on low-level features.

Then, the Colorization sub-net provides a more general colorization solution for either similar or dissimilar patch/pixel pairs. 1) Chrominance loss, which encourages the network to selectively propagate the correct reference colors for relevant patch/pixel, satisfying chrominance consistency; 2) Perceptual loss, which enforces a close match between the result and the true color image of high-level feature representations.

贡献：

(1) The first deep learning approach for exemplar-based colorization, which allows controllability and is robust to reference selection.

(2) A novel end-to-end double-branch network architecture which jointly learns faithful local colorization to a meaningful reference and plausible color prediction when a reliable reference is unavailable.

(3) A reference image retrieval algorithm for reference recommendation, with which we can also attain a fully automatic colorization.

(4) A method capable of transferability to unnatural images, even though the network is trained purely on a natural image dataset.

(5) An extension to video colorization.