Computer Vison Final Project

Image-based Virtual Try-on Network with human parsing

Team 3

0751231 曾揚 , 309505018 郭俊廷
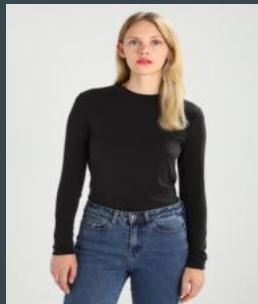
Outline

Introduction

Image Virtual Try-on task :

Virtual try-on of fashion image is to fit an image of a clothing item (garment) onto an image of human body.

Introduction

Dilemma of Parsed-based model :

    Image quality is bounded by the high-quality human parsing. Slightly wrong segmentation would lead to highly-unrealistic try-onimages.

Implementation procedure

VITON Dataset

train_color,   train_edge,   train_img
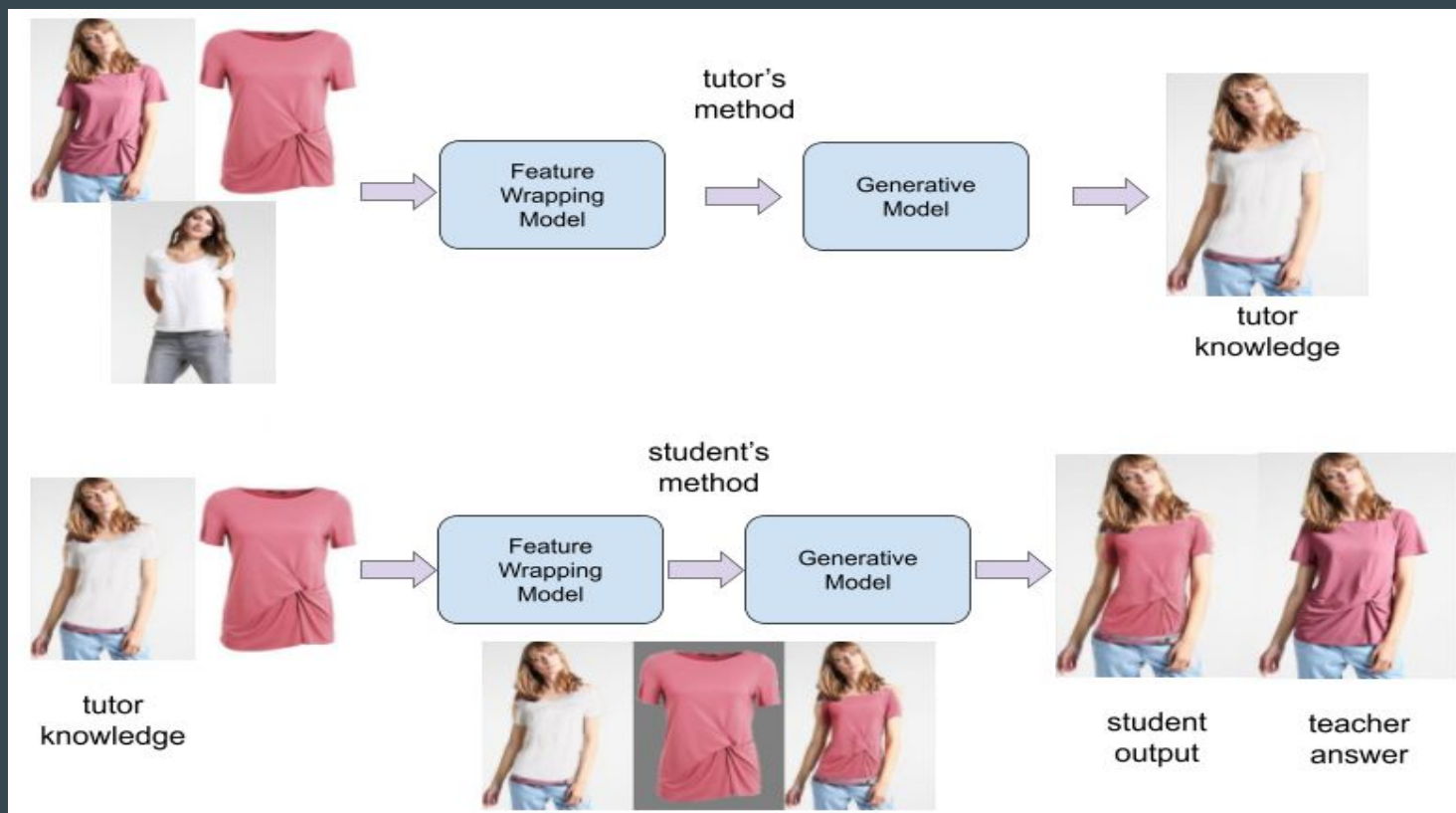
(256,193,3)

Implementation procedure

Knowledge distillation : "teacher-tutor-student"

Implementation procedure

Model : Flow-based Feature Warping Model (FWM)

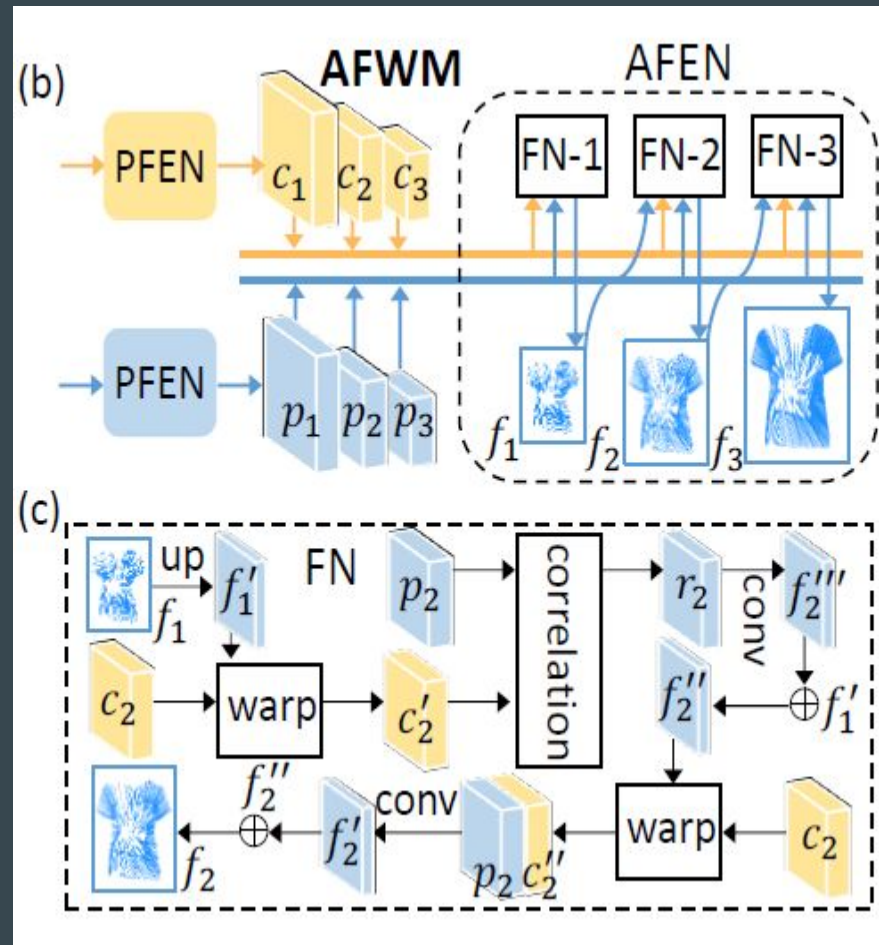 Featurer encoder :

  "Resblock" and "pyramid"

 Refine Pyramid :

  "Adaptive smoothing"

 AFlowNet :

  "pixel-by-pixel matching"

Implementation procedure

Model: Generative Model

Res-UNet, base module of U-Net

ResidualBlocks

1. Convolutionalization
把full connection layer換成neural network, 目的是為了使不同大小的圖片都可以輸入, 而不必被限制

2. Upsampling
因為maxpooling會使圖片降維, 則必須重新拉回到原圖大小。
(1) Shift-and-stich(2) Bilinear interpolation (3) Backwards convolution

3. Skip architecture
Neural Network 末端的特徵圖雖細緻但無法綜覽全圖, 而前端的特徵圖雖然範圍大但特徵較粗糙
因此將兩者結合起來。以此概念設計一個 DAG, 將進到下一層的convolution時保留本層的特徵並做預測, 再和之後做convolution時得到的feature map相拼
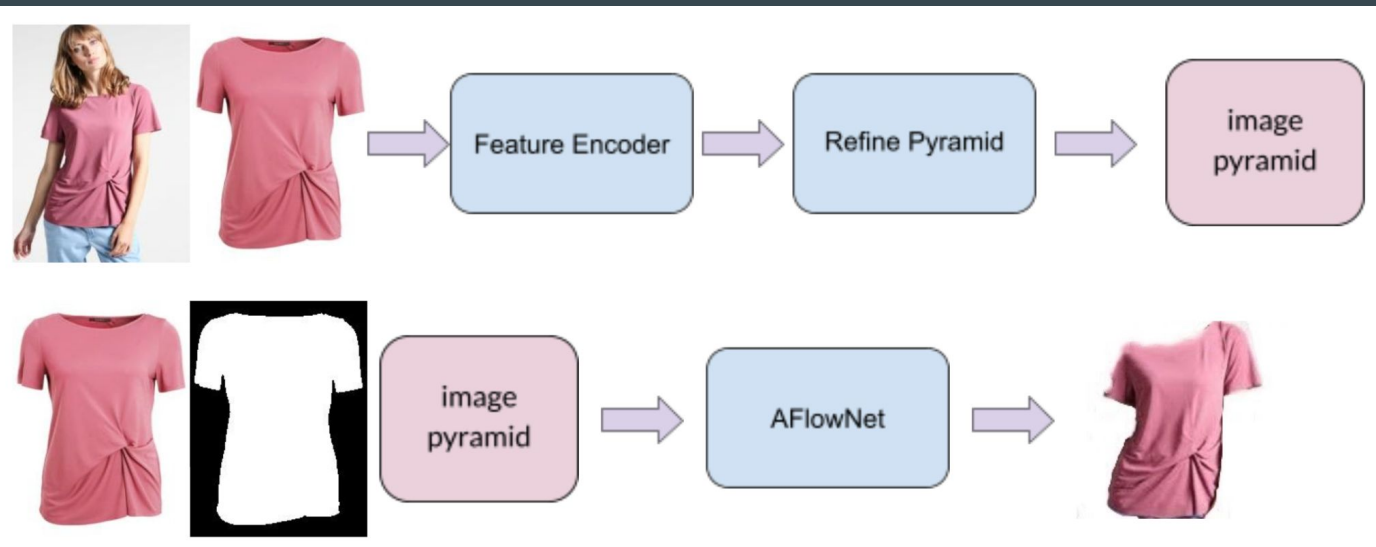
Olaf Ronneberger, Philipp Fischer, Thomas Brox, U-Net: Convolutional Networks for Biomedical Image Segmentation, CVPR 2015
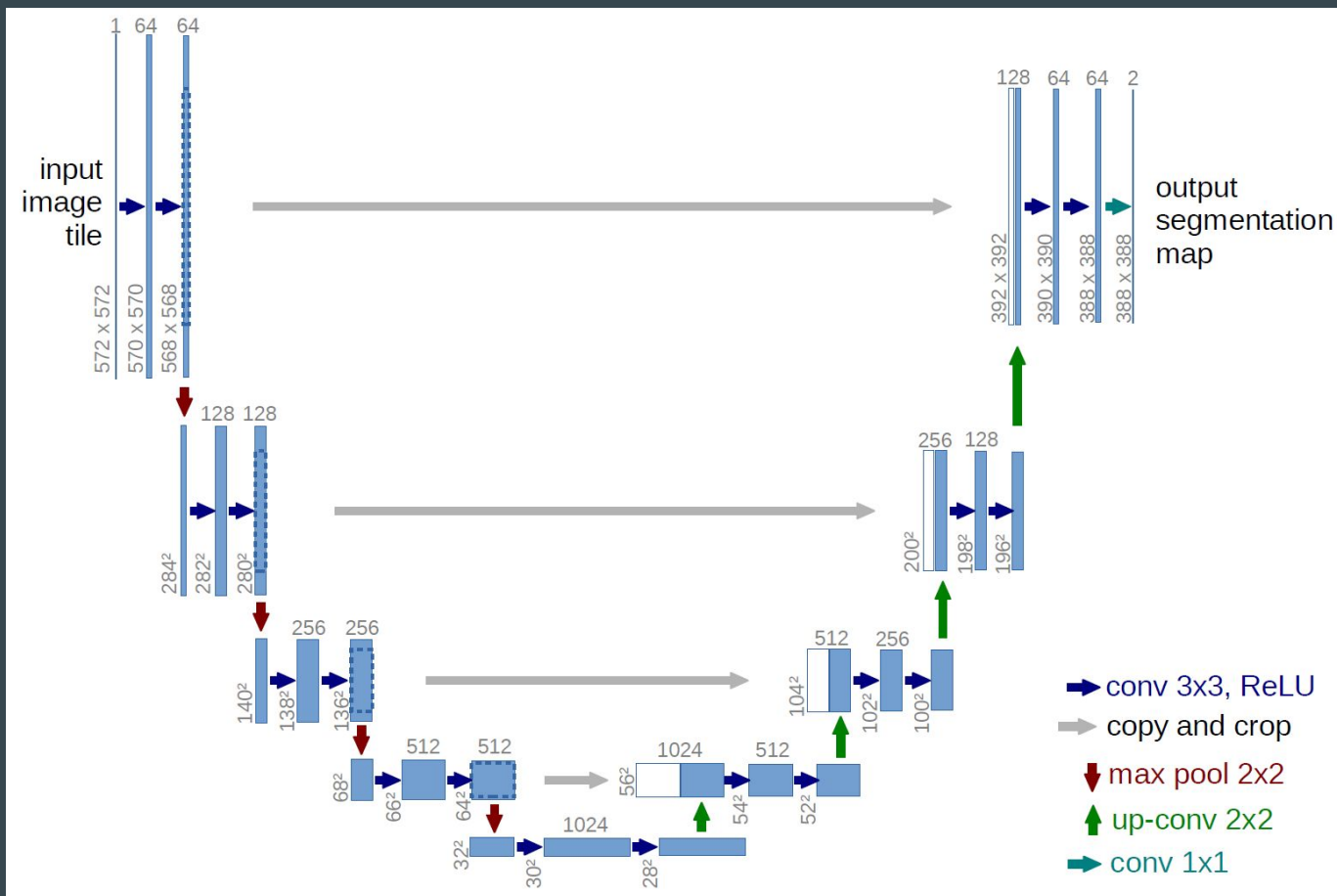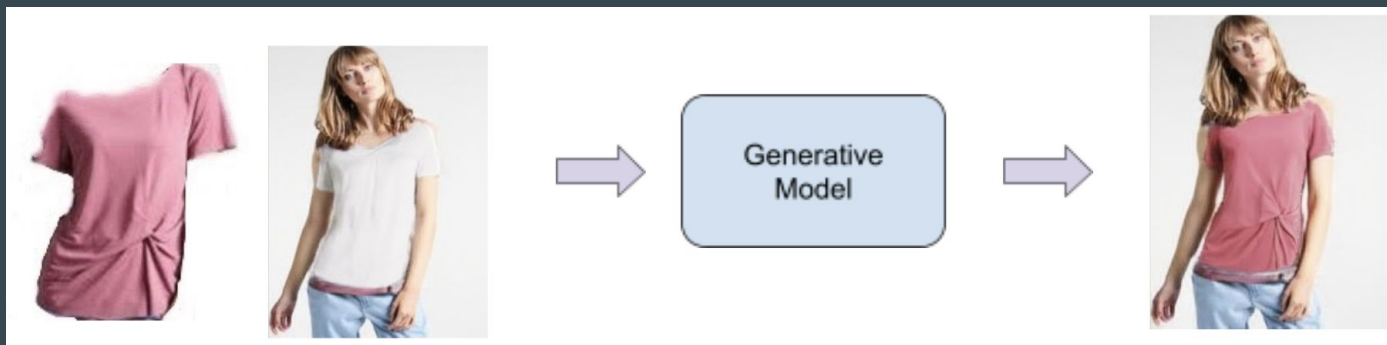
Olaf Ronneberger, U-Net: Convolutional Networks for Biomedical Image Segmentation, CVPR 2015

dense correspondences

Wrapping model

Generative model

Experimental result

Conclusion

In this work, we implemented an image-based virtual try-on model, by using a Flow-based Feature Wrapping Model and a Generative Model. By using "teacher-tutor-student", we further distill the appearance flows between the person image and the clothing image, to find accurate dense correspondence between them for high-quality image generation.