

Photonom

An interactive photo editing tool for Android

by The Senior Factory



Facial Expression Modification

The user can change the expression of a person to be happier or sadder where there are 5 levels for each expression.

Stylegan [Puzer/stylegan-encoder, GitHub] (NVIDIA)

-> Tensorflow implementation

- Face detection
- Face extraction and alignment
- Latent representation generation
- Expression modification



Quality Evaluation

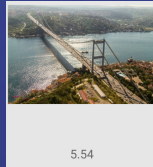
The user can get a score out of 10 for the quality of photo(s).

NIMA [idealo/image-quality-assessment, GitHub] (Google)

-> Tensorflow 2 implementation

Aesthetic based

Transfer learning with ImageNet pre-trained CNNs for fine-tuning



Theme Transfer

The user can transfer the theme of a target photo to the photo they want to modify.

Fast Photo Style [NVIDIA/FastPhotoStyle, GitHub]

-> PyTorch implementation

- Stylization
- Smoothing



Object Removal

The user can remove objects from their photo by painting on them using a brush with different size.

Image inpainting [MathiasGruber/PConv-Keras, GitHub] (NVIDIA)

-> Keras implementation

- Mask creation according to user's drawing
- Predicting the empty parts with the model that includes Partial Convolutional Layer



Image Stitching

Panorama



With both of the options, multiple images can be combined together by utilizing the overlapping areas.

Image Stitching: The user can stitch a photo to the photo they want to modify with this tool.

Panorama: With this option, the user can obtain a panorama from multiple photos.

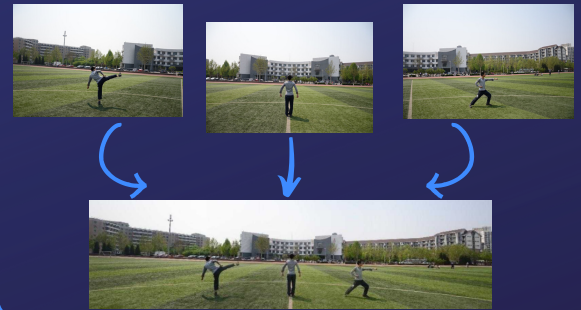
OpenPano [ppwwyyxx/OpenPano, GitHub]

-> C++ implementation

Features: SIFT

Transformation: RANSAC

Optimization: focal estimation, bundle adjustment...



Haze Removal

The user can remove the effects of the rain or haze from their photo.

GCANet [cddlyf/GCANet, GitHub]

-> PyTorch implementation

An end-to-end gated context aggregation network-GCANet



Rain Removal



Future Work - Head Pose Modification

3DDFA [cleardusk/3DDFA, GitHub]

-> PyTorch implementation

