CS 512 Computer Vision

Project Proposal

Project title Face Swapping: Replacing Faces in Photographs and in Video

Members Akhil Suryadevara

Phattaraphol Suesorsit

Main Papers 1) Face Swapping: Automatically Replacing Faces in Photographs

Dmitri Bitouk Neeraj Kumar Samreen Dhillon_ Peter Belhumeur Shree K. Nayar
Columbia University

2) Video Face Replacement
kevin Dale1 Kalyan Sunkavalli1 Micah K. Johnson2 Daniel Vlasic3 Wojciech Matusik2;4 Hanspeter Pfister1
1Harvard University 2MIT CSAIL 3Lantos Technologies 4Disney Research Zurich

Problem statement

We would like to keep a computer generated image on a user's view of the real world. This is called Augmented Reality. There are many types of generating image on a user's view. One of the challenging task is to implement the face swapping in pictures as well as in the live video.

In detail, face swapping is used to swap the faces of the two images given and/or swap the face processed live in a camera with the filter selected.

we as a group of two people would like to implement this challenging task

Approach:

For Picture Swapping:

We would like to develop a system that automatically replaces faces in an input image with ones selected from a large collection of face images, obtained by applying face detection to publicly available photographs on the internet. Our System for face replacement can be used for de-identification, personalized face replacement, and creating an appealing group photograph from a set of "burst" mode images.

For Video Swapping:

Our method for face replacement requires only single-camera video of the source (a) and target (b) subject, which allows for simple
acquisition and reuse of existing footage. We track both performances with a multilinear morphable model then spatially and temporally align
the source face to the target subject (c). We then compute an optimal seam for gradient domain compositing that minimizes bleeding and
flickering in the final result (d).

Throughout the model we would like to use OpenCV3, Python and some other softwares(depending on the need) to implement the face swapping model using photographs and live video.

Data

We would like to use pictures of people made public and which can be downloaded from google images and use some people to volunteer for the demo and for the quality assurance check of our project.

References

www1.cs.columbia.edu/CAVE/publications/pdfs/Bitouk_SIGGRAPH08.pdfwww.ee

cs.harvard.edu/~kalyans/research/facereplace/VideoFaceReplace_SIGA11.pdf