Face and photograph augmentation are a form of expression, communication and entertainment. Applying a mask on one’s face is surprising and fun and may also be considered artistic. This poster presents a technique to make any photographed or animated face into a mask and an automated algorithm to apply masks on top of faces. To complete the resulting image, it is possible to apply gradual blur and vignetting and change the color temperature of the photograph. Nine masks were created for this project, which are also available for a live demonstration.

Related work

Face morphing was demonstrated more than 20 years ago, most notably in Michael Jackson’s black and white music video. More recently, companies such as Google and Baidu have created tools for automated photograph and video augmentation. These are mainly used for live chat by continuously applying a mask on one’s face. Automation was enabled in recent years owing to advanced machine learning algorithms which allow exact detection of dense facial landmarks. It is reasonable to assume that these products use similar steps to the ones demonstrated in this project, which are:

1. Facial landmark detection (and/or tracking)
2. Warping of a mask to fit the face
3. Blending of the mask with the original image

Results

In general, the algorithm works very well and very quickly. However, it fails when the facial landmarks are detected incorrectly on the target image. This happens when the head is at a large angle and when the main features of the face are obscured. In addition, the resulting image may have artifacts when warping is very uneven. Bellow are examples of the nine masks that were created for the project:

Acknowledgements

A big thank you to Michal Uřičář for making Clandmark an open source project. Additionally, I would like to thank Prof. Gordon Wetzstein and the EE368 course staff.

References