

# JPEG Compatible Media Content Processing

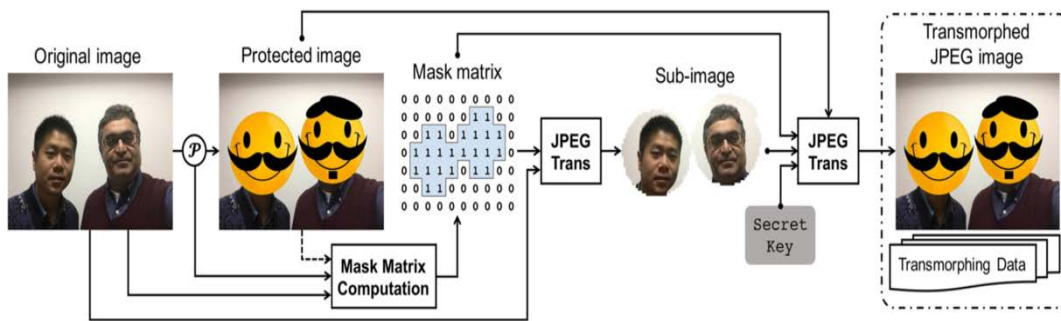


Figure1. Protection procedure of secure JPEG transmorphing

Ref. Nr  
 6.1521

Keywords  
 JPEG, image compression, trans morphing, privacy, security, bit stream

Intellectual Property  
US9712845B2 granted

Publications  
"Image privacy protection with secure JPEG transmorphing" published in IET Signal Processing journal.

Date  
 11.07.2017

## Description

With the popularization of high-quality digital cameras, smart mobile devices with high resolution cameras, as well as user-friendly imaging and social networking applications, taking pictures, editing and then sharing, have become part of everyday life for many people. Picture related applications are very popular among researchers because of the privacy and sensitivity contents of the images. There are methods which apply encryption and permutation techniques on the original image to disclose the sensitive information that the transferring bitstream contains. However, these techniques result to unreadable images and highly distorted visual effects. The current invention is a JPEG transmorphing framework proposed to protect image visual privacy in a secure, reversible, highly flexible and personalized manner. The invention secretly preserves regional original image information, while encoding or transcoding the original image in visually manipulated forms such as masking, blurring, pixelation, inpainting and warping. The protected (transmorphed) JPEG image is generated by applying mask matrix generation, sub-image construction and transmorphing data insertion procedures thus obtaining the JPEG transmorphed(protected) image.

The transmorphed image has the same syntax as standard JPEG and is therefore backwards compatible with JPEG. The original image is obtained by reversing the transmorphing operations.

## Advantages

The most distinctive characteristic of the present invention is the arbitrary regional image manipulation, which provides a significant flexibility and usability to the users to choose their preferred ways of protection any sensitive image regions while still being able to reverse the protected image into original image of near lossless quality. The performance of the JPEG transmorphing has outperformed other JPEG-based compression techniques in regard to the quality of reconstructed image and the storage overhead.

Additionally, the invention has been proven to be applicable in terms of privacy protection capability and pleasantness metrics in result of the subjective experiments carried out via online crowdsourcing.

## Applications

- Social media image sharing
- JPEG image compression and reconstruction
- Image privacy protection