Digital image enhancement using skin-color segmentation and smoothness

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Removing noise, sharpening blurred areas, increasing resolution, and smoothing areas of similar tone are all useful in improving the quality of a digital photo. Writing in the *International Journal of Computational Vision and Robotics*, a team from China discusses their novel approach to image enhancement using skin-color segmentation and smoothness.

Haitao Sang, Bo Chen and Shifeng Chen of the College of Information Engineering at Lingnan Normal University in Zhanjiang and Li Yan of the College of Science at Guangdong University of Petrochemical Technology in Maoming explain how their enhancement algorithm is based on skin texture preservation and works with a mask so that hair detail is preserved during the smoothing and denoising. The mask is created using Gaussian fitting that detects and then feathers the edges of the skin areas in the photo.

Their tests show the algorithm to work more effectively than other approaches. It has a strong adaptive capacity and significantly improves portraits without creating artifacts in the image that would make it obvious changes had been made artificially.

In the world of photographic art, magazine publishing, advertising, and in the literature of many other areas, photographic quality is often key to a successful presentation and so tools to improve photographic quality during production are keenly sought by designers of such materials. This is especially the case where a unique photo is available only in a low-quality format. The ultimate aim would be to use machine learning to do the drudge work to improve the quality in an automated fashion and so

free up time and resources for the designer to apply their creativity.

More information: Haitao Sang et al, Image enhancement based on skin-colour segmentation and smoothness, *International Journal of Computational Vision and Robotics* (2021). DOI: 10.1504/IJCVR.2021.10036485

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