Keynote Speaker

Improvements of Exemplar-based Image Inpainting

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Abstract

Many contributions have been proposed to the inpainting problem in images, i.e., recovering regions corresponding to lost parts or partially occluded objects in images. The main application of inpainting concerns image edition to remove objects in photo editing or movie postproduction. Exemplar-based methods have proven their efficiency for the reconstruction of missing parts in a digital image. Indeed, textures as well as local geometry are often very well restored by such methods. Despite these advances, it is not uncommon to get visible artifacts in the parts of the images that have been resynthesized. Mostly, these artifacts take the form of discontinuities between synthesized patches that have been copied and pasted in nearby regions, but from very different source locations. In this talk, I will present some improvements we have proposed to enhance the visual results produced by exemplar-based inpainting techniques. First we proposed to improve the reference state-of-the-art algorithm of Criminisi et al by proposing both a tensor-based data term for a better selection of pixel candidates to fill in, and a fast patch lookup strategy to ensure a better global coherence of the reconstruction. Then, to cope with the problem block-effect artifacts, we propose a tensor-guided spatial blending that strongly reduces the typical block-effect artifacts, while preserving the sharpness of synthesized structures and textures. Finally we consider the adaptation of our inpainting algorithm to video inpainting and depth-guided image inpainting.