Abstract

This paper presents a detailed investigation and comparative analysis of the two well-known classes of Super Resolution (SR) i.e. Reconstruction Based Super Resolution (RBSR) and the Example Based Super Resolution (EBSR), taking into account the seven variables: Resolution Factor, Aliasing, Stills, Motion, Compression, Noise and Detection scenario. The EBSR uses high and low frequency relationship and the RBSR is based on the frames sequence information. The EBSR and RBSR are tested on number of images to investigate which of the two classes of SR algorithms are best suited for preserving structural similarity to the original image and for visual analysis of the SR image. Experimental results show that over-all SSIM index for the EBSR is higher than RBSR and thus preserves the image quality better compared to the RBSR. In an evaluation of EBSR and RBSR for feature based detection scenario, it is observed that face detection in the EBSR resultant image has the same performance compared to that of the Viola-Jones approach [21] without SR; therefore, we do not gain any improvement in EBSR. In the case of RBSR, due to the registration errors, the over-all face detection performance after SR by the Viola-Jones algorithm is reduced by 3%. As such, it is an extension
of the author’s conference work [12].

References

17. T. Q. Pham, L. J. van Vliet, and K. Schutte 2006, “Resolution enhancement of


Index Terms

Computer Science

System Architecture

Keywords

EBSR, RBSR, SR, RSR, SSIM Index,