WAVELET DOMAIN IMAGE RESOLUTION ENHANCEMENT USING CYCLE SPINNING AND EDGE MODELLING (TueAmOR2)

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Abstract :

In this paper we present a wavelet domain image resolution enhancement algorithm. An initial high−resolution approximation to the original image is obtained by means of zero−padding in the wavelet domain. This is further processed using the cycle−spinning methodology which reduces ringing. A critical element of the algorithm is the adoption of a simplified edge profile suitable for the description of edge degradations such as blurring due to loss of resolution. Linear regression using a minimal training set of high−resolution originals, is finally employed to rectify the degraded edges. Our results show that the proposed method outperforms conventional image interpolation approaches, both in objective and subjective terms, while it also compares favourably with state−of−the−art methods operating in the wavelet domain.

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