ARBITRARY RATIO IMAGE RESIZING IN THE DCT DOMAIN

ABSTRACT

A method and system for arbitrary resizing of a compressed image in the discrete cosine transform (DCT) domain. First and second scaling parameters P and Q are determined in accordance with the block numbers L and M and the scaling ratio L/M or M/L. A non-uniform, or uneven, sampling in the DCT domain is then applied to coefficients of successive blocks in the compressed image in accordance with the scaling parameters. In an embodiment, P blocks are sampled and transformed from a given block length to |P| according to a |P|-point IDCT, while Q blocks are sampled and transformed from a given block length to |Q| according to a |Q|-point IDCT. The non-uniformly sampled and transformed pixel domain samples are then regrouped into a predetermined block size and transformed back to generate the DCT coefficient of the compressed image. The proposed method significantly reduces the computational complexity compared with other DCT domain arbitrary ratio image resizing approach. It also facilitates the practical implementations since only the fast implementations of IDCT with length N ($1<N<9$) and DCT with length 8 are required.

Fig. 8