FAST AND LIGHTWEIGHT IMAGE SUPER-RESOLUTION BASED ON DENSE RESIDUALS TWO-CHANNEL NETWORK

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Introduction

We propose a fast and lightweight two-channel end-to-end network with fewer parameters and low computational complexity in this paper. The main contributions are as follows:

a) **Speed**: Our model not only has good reconstruction accuracy, but also provides fast processing speed.

b) **Computational complexity**: The proposed FLSR and FLSR-G model have lower computational complexity and higher reconstruction accuracy compared.

c) **Combination of dense and residual**: FLSR with dense and residual connection is chosen to weaken the gradient vanishing or exploding phenomenon, which shows excellent performance in SR task.

Our Algorithm

Experiments

a) **The shallow channel**: mainly restores the general outline of the image, while the deep channel mainly learns the high-frequency texture information.

b) **The deep channel**: combines the dense block and residual connection. The dense block increases data flow of network, while the residual connection reduces the number of parameters and speeds up the convergence of network.

c) **Enhanced network**: uses group convolution, which significantly reduces the parameters and computational complexity with slight performance loss.

References


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