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# Image Super-Resolution via a Densely Connected Recursive Network

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## Abstract

The single-image super-resolution techniques (SISR) have been significantly promoted by deep networks. However, the storage and computation complexities of deep models increase dramatically alongside with the reconstruction performance. This paper proposes a densely connected recursive network (DCRN) to trade off the performance and complexity. We introduce an enhanced dense unit by removing the batch normalization (BN) layers and employing the squeeze-and-excitation (SE) structure. A recursive architecture is also adopted to control the parameters of deep networks. Moreover, a de-convolution based residual learning method is proposed to accelerate the residual feature extraction process. The experimental results validate the efficiency of the proposed approach.

**Keywords:** Image Super-Resolution, Deep Learning, Enhanced Dense Unit, Recursive Structure, Residual Learning

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## 1. Introduction

Single image super-resolution (SISR) refers to the process of recovering high-resolution (HR) images from low-resolution (LR) inputs. With the increasing

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