A GAN based Blind Inpainting Method for Masonry Wall Images

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Introduction

- We introduce a novel end-to-end blind inpainting algorithm for masonry wall images, performing:
 - the automatic detection of occluded or damaged wall regions.
 - virtual completion of these regions.
- we propose a three-stage deep neural network.
- For training and testing the network a new dataset has been created.

Introduction







Inpainted Output

Input

Obtained Mask

Proposed method

We propose a blind image inpainting network that consists of three stages:

1) Image Segmentation.

2) Hidden Feature Generator.

3) Image Completion.

Proposed method

We propose a blind image inpainting network that consists of three stages:

1) The U-Net network (encoder-decoder structure) is used at the first stage.

2) The next two stages are based on two different generative adversarial networks (GAN), where each one consists of generator/discriminator substages.

Dataset:

- Our dataset is based on 506 different wall images of size (512 * 512):
- which are divided into:
 - a. The training set (310 images).
 - b. The testing set (196 images).
- 1. Offline augmentation: 7 modified images are created:
 - a. horizontal flip.
 - b. vertical flip.
 - c. both vertical and horizontal flips.
 - d. adding Gaussian noise.
 - e. randomly increasing the average brightness.
 - f. randomly decreasing the average brightness.
 - g. adding random shadows.

Dataset:





The results



































Thanks!

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