# Noise Identification and Removal Proof of Concept

This proof of concept only works with video files that are 400x400px. This is due to a limitation in the noise generation and a constant to identify the total number of pixels in the image.

A video file is read in, converted to greyscale using the ITU-R BT.709 standard. Then, noise is added to each frame (both permanent and transient noise).

After this, each frame undergoes noise removal and the result is compared to the original to determine the effectiveness of the reconstruction.

The video is also sampled to identify the locations of the permanent noise. These are reported to the user as well as identified how much of the frame is covered in permanent noise.

Input Array    Identified Noise

Noise Identification

Overlay
R
G
Reference
B

R
G
B
psnr
noise
[fCount]
fCount

Display Noise Identification Frame

$\frac{1}{z}$

Test
SNR
Ref

Noise Identification Verification

Frame    Percentage

Permanent Noise Count

Input Array    Noise Array

Noise Generator

Noisy Array    Filtered Array

Noise Filtering

Image
psnr
[fCount]
fCount

Display Noisy Frame

Test
SNR
Ref

Verification - 2

Outputs frames to a viewer and file.
Provides overlay information as well

Image

Test
SNR
Ref

psnr

Verification - 1

[fCount]
fCount

Display Filtered Frame

Frames - conv.m4v
V: 400x400, 30.0 fps

R
G
B
EOF

Red
Green    Grey
Blue

Rst    Count
Up    Cnt

[fCount]

Frame Counter

Provides frame count

Image
[fCount]
fCount

Display Reference