TRACKING ERROR IN DIGITIZED ANALOG VIDEO: AUTOMATIC DETECTION AND CORRECTION

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INTRODUCTION

- Nowadays video technology is basically digital, but in the last half century the most diffused devices have been analog magnetic tapes.

- Since this is an old storing technique, it is necessary to convert these data in digital form.

- Analog videos may be affected by particular defects, called ***drops***.

- Now the drop also known as "Tracking Error" is focused. A method to detect and correct this artifact is developed.

DETECTION PHASE

- The Tracking error consists in a quick variation of luminance between close horizontal lines in a rectangular area.
- This property suggests a connection with *edge detection filters*.
- Unfortunately, if we use this approach, damaged area can't be distinguished by other regular edges.

Original Image

Laplacian Filtered Image

To solve this problem we propose a new filter, with kernel:

$$\begin{bmatrix} 1 & -1 & 1 \\ -1 & 1 & -1 \end{bmatrix} / 6$$

- This kernel, as well as detects horizontal edges only, sharpens above all the horizontal lines close together with marked luminance difference.
- Now, the filtered image consists in a grey scale frame with a great pixel value in the damaged area and a low value in other areas.
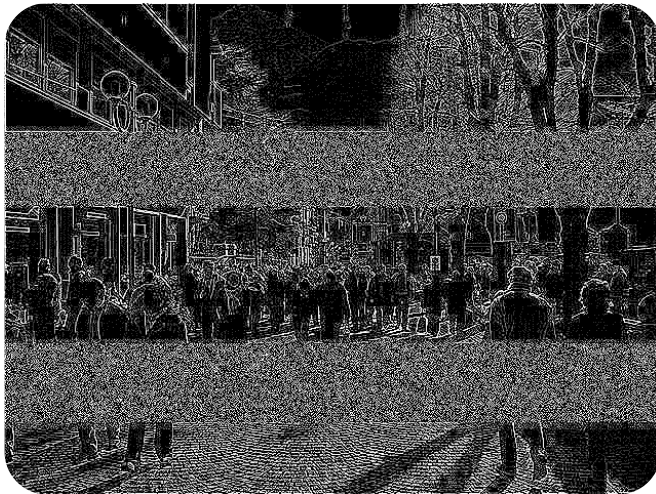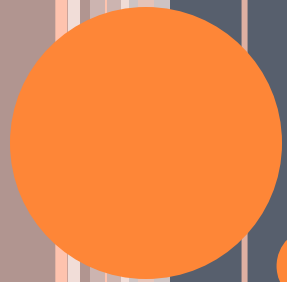

Laplacian Filtered Image
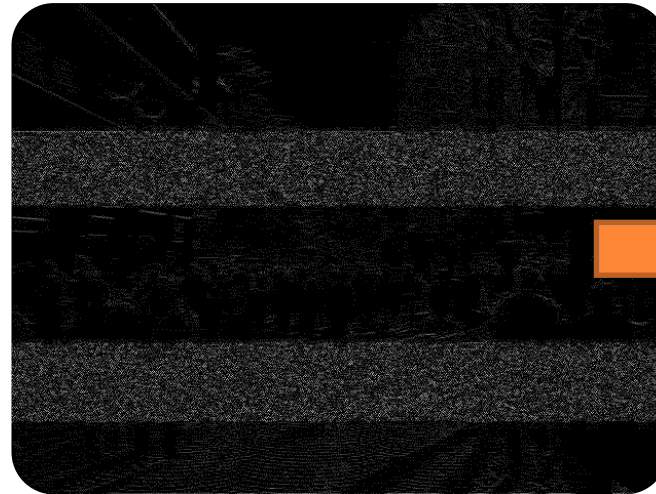
Proposed Filtered Image

Otsu's method

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SOME RESULTS AFTER CORRECTION PHASE...

THANKS