IS THIS IMAGE THAT IMAGE?

Asserting integrity beyond the fixity

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Abstract – This poster describes the image comparison technique developed at the National Library of New Zealand. This process has been developed to help demonstrate / document any changes to image content as a result of a preservation or conservation treatment.

Keywords – integrity, image comparison, rmse

Conference Topics – Building the Capacity & Capability.

I. INTRODUCTION

This poster will demonstrate the mathematical image comparison process that we've been using to detect and document any changes to an image during a technical intervention.

A. Why is the required?

Through our work on preservation actions and treatments we routinely find ourselves needing to demonstrate what change has / has not occurred to a processed item. In some cases, we need to be able to definitively demonstrate no change, in other cases we might be tolerate of some change within agreed parameters. This process occupies that space and allows us to understand change to an image file beyond the fixity.

B. RMSe

The tech relies heavily on a mathematical process called 'RMSe" or Root Means Squared error. This poster will lightly explain how that works and point the reader to more detailed documentation.

We're using RMSe as a true/false test, comparing the image source of an input file and an output file. This process can compare images of difference formats, versions of formats, and different technical constructions of the same format. The purpose of the technique is to alert us to a detect change. The poster will document that process

If a change is detected, a series of assets are created to allow an assessor to understand the nature of that change, including locations in the image, and depth of difference in 'change steps' (number of steps of difference between any pixel in the two images.

C. Assets

The poster will describe the assets we create:

- A total 'difference' image showing all the changed pixels in the two images.
- An inverted instance of the difference image
- Difference masks that show which pixels were changed, and to what depth
- An animated gif that shows all difference masks in sequence
- An animated gif that shows the input / output image in rotation.

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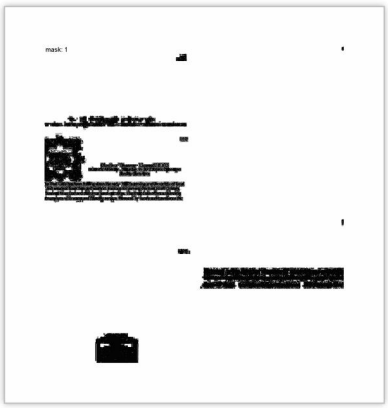
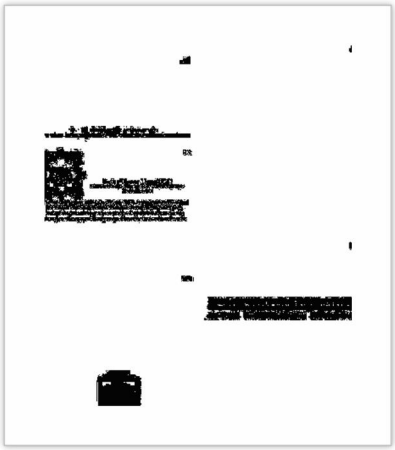
Flipper.gif (animated)



Diff.gif (animated)



Diff_mask.png

Difference image

D. Demonstration of Usage

We're using this technique to assess standard image files, and some text-based formats like PDF and DOC(x) where we can export the document as rendered pages. This poster will demonstrate that workflow and point the reader towards the github based code.

E. Unique contribution to Digital preservation

This technique, or even the specific need for this technique is not explored or discussed in the literature.