**Department of Computer Engineering**



**Cairo University**

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**Change detection Project Report**

**Submitted to**

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|  |  |  |  |
| --- | --- | --- | --- |
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**Classical Approach:**

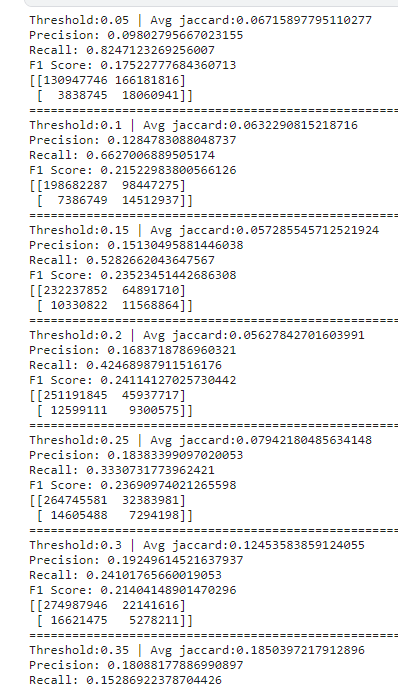
We started by reading the images as grayscale (value of the pixel between 0 and 1), then we tried the 3 classical approaches mentioned in the document.

1. **Image differencing:**

We get the difference of the two arrays (images in time 1 and images in time 2), so the values now between 0 and 1.

Then we tried a number of thresholds [0.05,0.1,0.15,0.2,0.25,0.3,0.35]

And we found this result



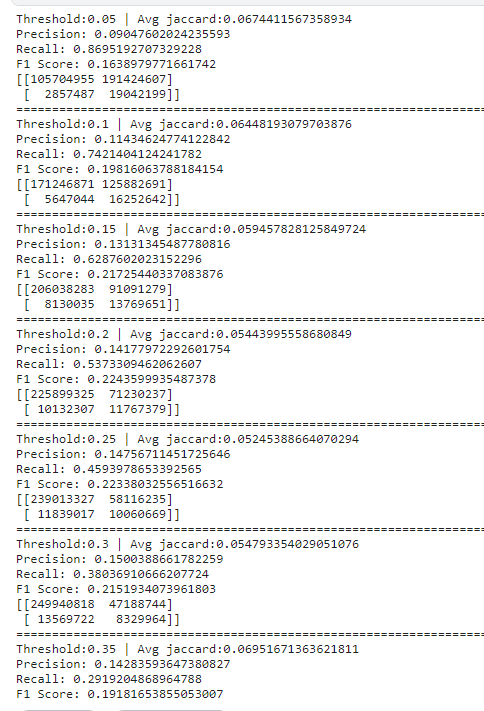
We think that the reason of high jaccard for high thresholds is the most of the dataset is no change so when we predict there is no change we add 1 for the array of the jaccard but this is not a general case in the real test set so we can choose a threshold of 0.35 to be more general because the precision and recall are good.

1. **Image rationing:**

We get the ratio between the two arrays (images in time 1 and images in time 2) and add small number to avoid division by zero, so the values now between 0 and 1.

Then we tried a number of thresholds [0.05,0.1,0.15,0.2,0.25,0.3,0.35]

And we found this result



We can see that image differencing give us better results in jaccard and close results in precision and recall.

1. **Change vector analysis:**

There was a trial with change vector analysis but we did not take it, this is the result of it



Finally, in the classical we will go through with the image differencing because of its simplicity and good results.