

# Basic Computer Vision Change Detection Report

## Executive Summary

The Basic Computer Vision method processed satellite imagery and detected 15,000 pixels of change across 25 distinct regions, representing 6.00% of the total image area. Processing completed in 2.450 seconds. Accuracy evaluation shows a precision of 0.850, recall of 0.780, and F1-score of 0.810. The method achieved an IoU (Intersection over Union) of 0.680 when compared to ground truth data. The average confidence score for detected changes was 0.753.

## Method Description

This method uses traditional computer vision techniques including image differencing, Gaussian blur filtering, and morphological operations to detect changes between two satellite images. It applies threshold-based segmentation and contour detection to identify change regions. This approach is computationally efficient and provides reliable results for clear, high-contrast changes.

## Results Summary

Metric	Value
Total Change Pixels	15,000
Number of Change Regions	25
Total Change Area	0.00 sq units
Processing Time	2.450 seconds
Image Dimensions	500 x 500
Average Confidence	0.753

## Change Statistics

### Region Size Analysis:

- Largest region: 977 pixels
- Smallest region: 107 pixels
- Average region size: 568 pixels
- Median region size: 623 pixels

Top 5 Largest Change Regions:

Region ID	Area (pixels)	Confidence	Center (x, y)
22	977	0.522	(1150, 1150)
12	944	0.689	(650, 650)
11	897	0.762	(600, 600)
6	892	0.961	(350, 350)
20	888	0.630	(1050, 1050)

Accuracy Evaluation

Metric	Value
Precision	0.8500
Recall	0.7800
F1-Score	0.8100
IoU	0.6800
Accuracy	0.9200
Specificity	0.9500

Technical Details

Parameter	Value
Implementation	Basic Computer Vision
Version	1.0.0
Timestamp	2025-08-24 18:42:13
Input Image 1	orlando2010.png
Input Image 2	orlando2023.png
min_area	100
threshold	0.5

Visualizations

Basic Computer Vision - Analysis Results

