

1. Instalacja opencv

a) PYTHON:

<https://drthitirat.wordpress.com/2019/01/20/opencv-python-build-opencv-4-0-1-dev-contrib-non-free-siftsurf-from-sources-on-windows-10-64-bit-os/>

b) JAVA:

<https://elbauldelprogramador.com/en/how-to-compile-opencv3-nonfree-part-from-source/>

2. Metody przetwarzania obrazu:

a) PYTHON:

```
import cv2
//wczytywanie zdjęcia
image = cv2.imread("test_image.jpg")
//odcienie szarości
gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
//detekcja cech
surf = cv2.xfeatures2d.SURF_create()
(kps, desc) = surf.detectAndCompute(gray, None)
```

b) JAVA:

```
//Ładowanie biblioteki
System.loadLibrary(Core.NATIVE_LIBRARY_NAME);

// Wczytywanie zdjęcia
String file = "image.jpg";
Mat src = Imgcodecs.imread(file);

//Odcienie szarości
Mat gray = new Mat();
Imgproc.cvtColor(src, gray, Imgproc.COLOR_BGR2GRAY);
Zapisywanie zdjęcia
Imgcodecs.imwrite("gray.jpg", gray);

double hessianThreshold = 400;
int nOctaves = 4, nOctaveLayers = 3;
boolean extended = false, upright = false;

SURF detector = SURF.create(hessianThreshold, nOctaves, nOctaveLayers,
extended, upright);

MatOfKeyPoint keypoints = new MatOfKeyPoint();
detector.detect(src, keypoints);
Features2d.drawKeypoints(src, keypoints, src);
```