

Temat ćwiczenia:	Lab 3A – PC
Data:	14.10
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## 1. Skrypt realizujący ekstrakcję tła:

```
import cv2
import numpy as np
import os

cam_http_addr = "http://149.156.199.121"
vid = cv2.VideoCapture("{}axis-cgi/mjpg/video.cgi?
resolution=640x480&compression=70&fps=30".format(cam_http_addr))

backSub_MOG2 = cv2.createBackgroundSubtractorMOG2(history=500, varThreshold=50,
detectShadows=False)
backSub_KNN = cv2.createBackgroundSubtractorKNN(history=500, dist2Threshold=300,
detectShadows=False)

(status, frame) = vid.read()
average = np.float32(frame)
alpha = 0.01

output_dir = "background_results_street"
if not os.path.exists(output_dir):
    os.makedirs(output_dir)

fourcc = cv2.VideoWriter_fourcc(*'XVID')
out_comparison = cv2.VideoWriter(os.path.join(output_dir, "comparison.avi"), fourcc, 30.0,
(frame.shape[1] * 3, frame.shape[0]))
out_comparison_diff = cv2.VideoWriter(os.path.join(output_dir, "diff.avi"), fourcc, 30.0, (frame.shape[1]
* 3, frame.shape[0]))

while True:
    ret, frame = vid.read()
    if not ret:
        break
    cv2.accumulateWeighted(frame, average, alpha)
    average_result = cv2.convertScaleAbs(average)

    fgMask_MOG2 = backSub_MOG2.apply(frame)
    background_MOG2 = backSub_MOG2.getBackgroundImage()
    fgMask_KNN = backSub_KNN.apply(frame)
    background_KNN = backSub_KNN.getBackgroundImage()

    comparison = np.hstack((average_result, background_MOG2, background_KNN))
    cv2.imshow('Comparison (Avg / MOG2 / KNN)', comparison)
```

```
out_comparison.write(comparison)
```

```
diff_avg = cv2.absdiff(frame, average_result)
```

```
diff_MOG2 = cv2.absdiff(frame, background_MOG2) if background_MOG2 is not None else  
np.zeros_like(frame)
```

```
diff_KNN = cv2.absdiff(frame, background_KNN) if background_KNN is not None else  
np.zeros_like(frame)
```

```
diff_comparison = np.hstack((diff_avg, diff_MOG2, diff_KNN))
```

```
cv2.imshow('Difference (Avg / MOG2 / KNN)', diff_comparison)
```

```
out_comparison_diff.write(diff_comparison)
```

```
if cv2.waitKey(1) == ord('q'):  
    break
```

```
vid.release()
```

```
cv2.destroyAllWindows()
```

2. Wyniki działania skryptu, diff oraz tło:

*accumulateWeighted*

*createBackgroundSubtractorMOG2*

*createBackgroundSubtractorKNN*

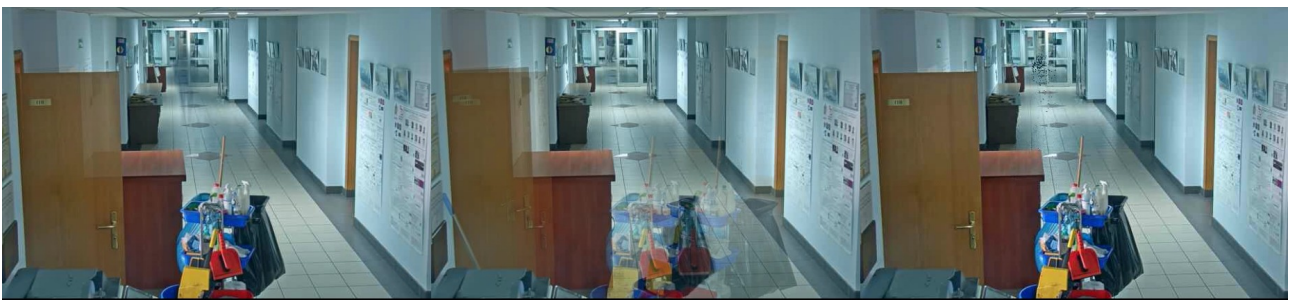
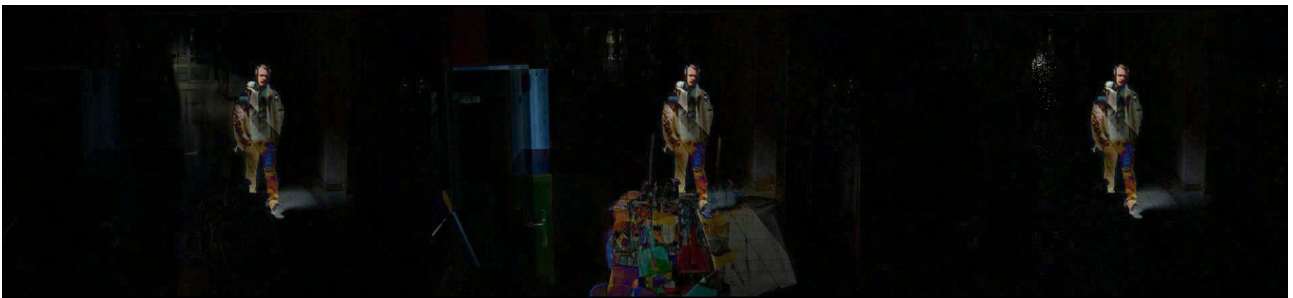


Figure 1,2 : Obraz z kamery w korzytarzu uczelni

*accumulateWeighted*

*createBackgroundSubtractorMOG2*

*createBackgroundSubtractorKNN*



*Figure 3,4: Obraz z kamery internetowej przed uczelnią*