CS 6870 : Digital Video Processing Assignment -1

Implementation of Pixel-wise Background Subtraction using GMM

Instructor: Dr. Anurag Mittal (BSB 368)
amittal@cse.iitm.ac.in

1 Problem statement

Implement the background (BG) subtraction algorithm using GMM as in the paper Stauffer and Grimson et. al [1], perform the BG subtraction on the following videos and document your observations.

Running, Walking

- Download from Moodle (Jump.avi, Run.avi)

Dynamic background

- `http://jacarini.dinf.usherbrooke.ca/static/dataset/dynamicBackground/canoe.zip`

Lighting changes, shadows

- `http://jacarini.dinf.usherbrooke.ca/static/dataset/baseline/highway.zip`
- `http://jacarini.dinf.usherbrooke.ca/static/dataset/baseline/PETS2006.zip`

Optional: If you would like to perform additional experiments, you can download additional videos here from ChangeDetection[2] dataset.

Plagiarism

- You should do the assignment yourself. In case you take help from others, please mention in the pdf submitted.
- No sharing of code/experiments etc. will be allowed under any circumstances and may attract disciplinary action by the institute disciplinary committee.

Instructions

- **Do not use libraries like opencv (you can use it only to read/write images).**
- **You can use numpy.**
- **Report should contain graphical results, inferences and analysis.**

Suggested Programming language:

Python, C++, Matlab

Submission Guidelines

- **Dead line : 06/02/2019 11:59 PM**
- **PDF Upload:** `https://www.turnitin.com` Class ID: **20214335** Enrollment Key: **CS6870** Naming format: RollNo_FName_AssignmentNumber.pdf Ex CS15D001_Amitabh_1A.pdf.
- **Code Upload:** Using Moodle. Naming format: Same as pdf with .zip or .tar.gz extension.
- Email submissions will not be accepted. Reduce file size (if required).
- This is not a team assignment.

TAs:

- Vikram Singh (vik1409@gmail.com), BSB 374
- Gouthaman KV (gouthamankv@gmail.com), BSB 374
- Arulkumar S (arul.csecit@ymail.com), BSB 374

References

[1] C. Stauffer and W. E. L. Grimson, "Adaptive background mixture models for real-time tracking," in *cvpr*, p. 2246, IEEE, 1999.

[2] N. Goyette, P.-M. Jodoin, F. Porikli, J. Konrad, P. Ishwar, *et al.*, "Changedetection. net: A new change detection benchmark dataset.," in *CVPR Workshops*, no. 2012, pp. 1–8, 2012.