

CS4363/5363 Computer Vision

Lab 1

Due Monday, September 10. Submit a paper copy by 5 p.m.

For this lab you will experiment with simple real-time image capture and processing operations in Python. Extend the code presented in the class web page to implement the following:

1. Display the gray level version of the image.
2. Display the negative of the gray level version of the image.
3. Display the mirrored version of the original color image.
4. Display the original color image upside down.
5. Write to a file one frame every n seconds, where n is a user-supplied parameter.
6. Display an illumination-corrected version of the gray level version of the image. To do this, map the highest intensity found in the image to 1 and the lowest intensity to 0. Let $\max(I)$ and $\min(I)$ be the highest and lowest intensities in image I , then the corrected image C is given by:

$$C[i][j] = \frac{I[i][j] - \min(I)}{\max(I) - \min(I)}$$

7. Build a motion detector. Your program should write to a file one frame every n seconds for k seconds after motion is detected, where n and k are user-supplied parameters. It is up to you to decide what constitutes motion and how to detect it.

Write a report including (at least) the following items:

1. Problem description
2. Algorithms implemented
3. Experimental results
4. Discussion of results
5. Conclusions
6. Appendix: Source code