

CS 4391 Introduction to Computer Vision

Homework 2

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Download the [homework2_programming.zip](#) file from eLearning, Assignments, Homework 2. Finish the following programming problems and submit your scripts to eLearning. You can zip all the data and files for submission. Our TA will run your scripts to verify them.

Install the Python packages needed by

- `pip install -r requirement.txt`

Here are some useful resources:

- Python basics <https://pythonbasics.org/>
- Numpy <https://numpy.org/doc/stable/user/basics.html>
- OpenCV https://docs.opencv.org/4.x/d6/d00/tutorial_py_root.html

Problem 1

(4 points) Edge Detection.

Implement the `edge_detection()` function in `edge_detection.py`. The script implements the edge detection algorithm. Follow the steps in the script to implement it.

After your implementation, run the `edge_detection.py` in Python to verify it. Figure 1 shows an example of running the script.

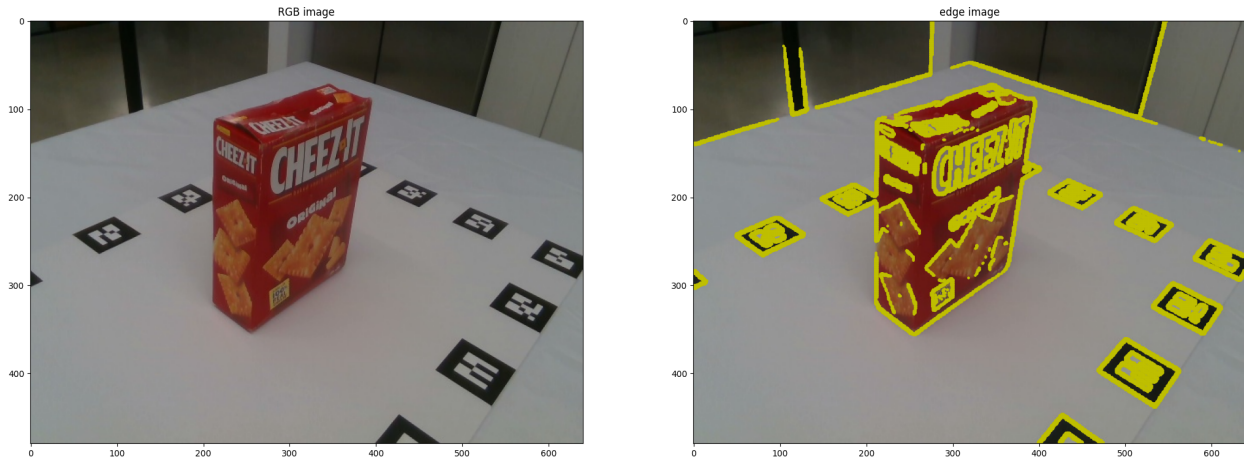


Figure 1: (Left) An input image. (Right) Edge detection with my implementation.

Problem 2

(6 points) Harris Corner Detector.

Implement the `harris_corner()` function and the `non_maximum_suppression()` function in `harris_corner.py`. The script implements the Harris corner detection algorithm. Follow the steps in the script to implement it.

After your implementation, run the `harris_corner.py` in Python to verify it. Figure 2 shows an example of running the script.

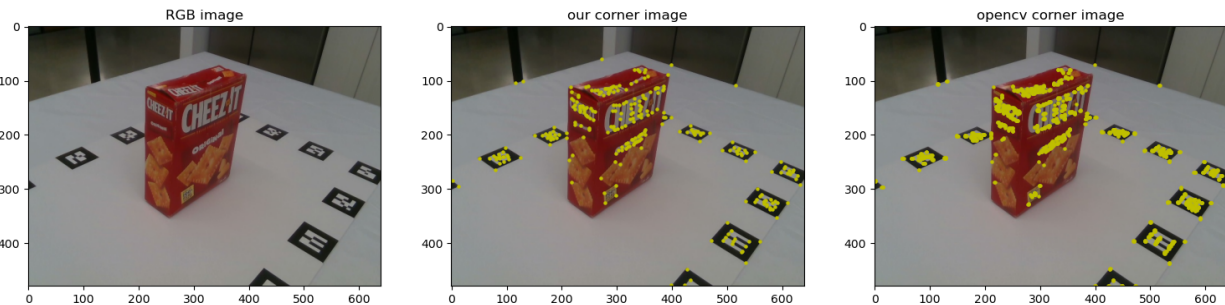


Figure 2: (Left) An input image. (Middle) Harris corner detection with our implementation. (Right) Harris corner detection using the provided function in OpenCV. The yellow dots indicate the detected corners.