



University of Girona

Spain

Visual Perception

Lab 2 - Corner Detection

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1 Introduction

The visual perception lab 2 - corner detection is focused on detecting the corners of the given images. It is mostly based on the harris corner detection algorithm. We have divided the work into five different parts and the parts are explained respectively in the below sections, where the last part is optional for the exercise.

2 Part 1 and 2

In this two parts we are explaining about the Harris corner algorithm. Basically harris corner is based on finding the image gradient and then taking the derivatives of the image in x and y direction as explained in the given lab tutorial document or from the class lectures. We will define the matrix M which has arranged by the gradient's of the image. Finding the Eigen values takes more computational time than harris corner. So it was implemented for the less computational time, but in terms of accuracy Eigen matrix is considered as better than Harris algorithm.

When we run the code, you can observe very slight difference of computational time. The matrix E takes more time.

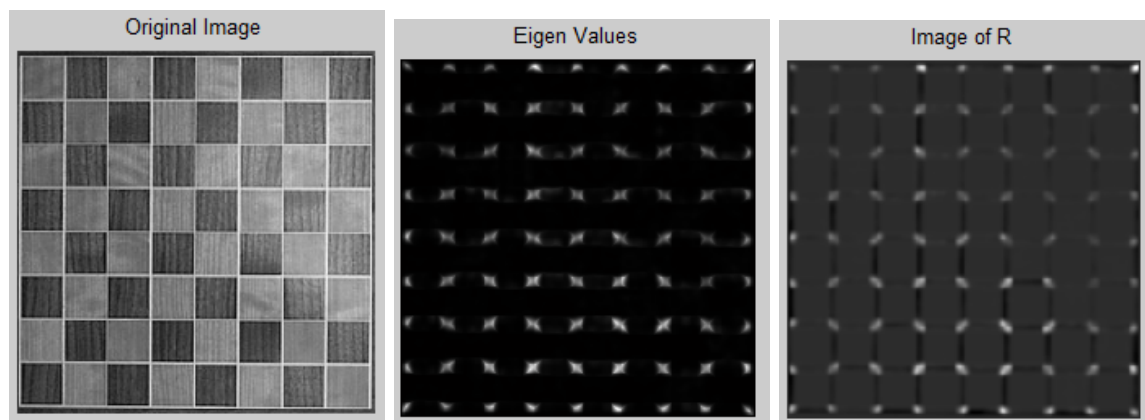


Figure 1: Eigen and harris results for chessboard 3

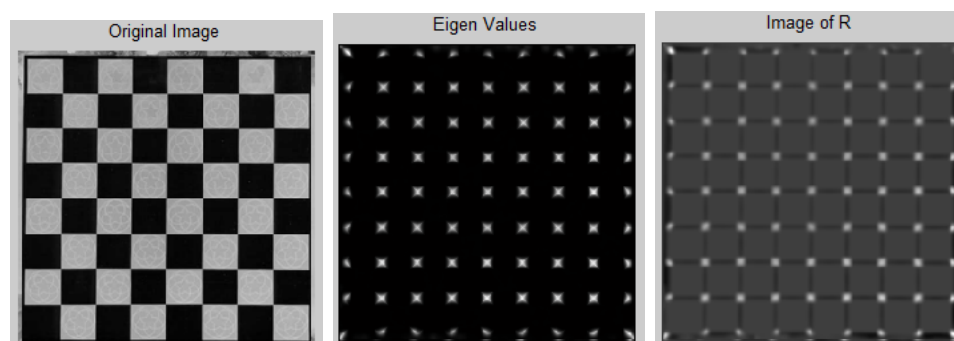


Figure 2: Eigen and harris results for chessboard 4

3 Part 3 and part 4

In these parts we will discuss about non-maximal suppression. For the part 3 we will describe about taking the 81 salient points. At first we will sort the matrices into descending order and then we will take the first 81 points in the matrices and the results are plotted in the following figure. For the part 4 we will follow the same code by taking the index of the matrices and arranging them in the different windows as mentioned in the MATLAB code.

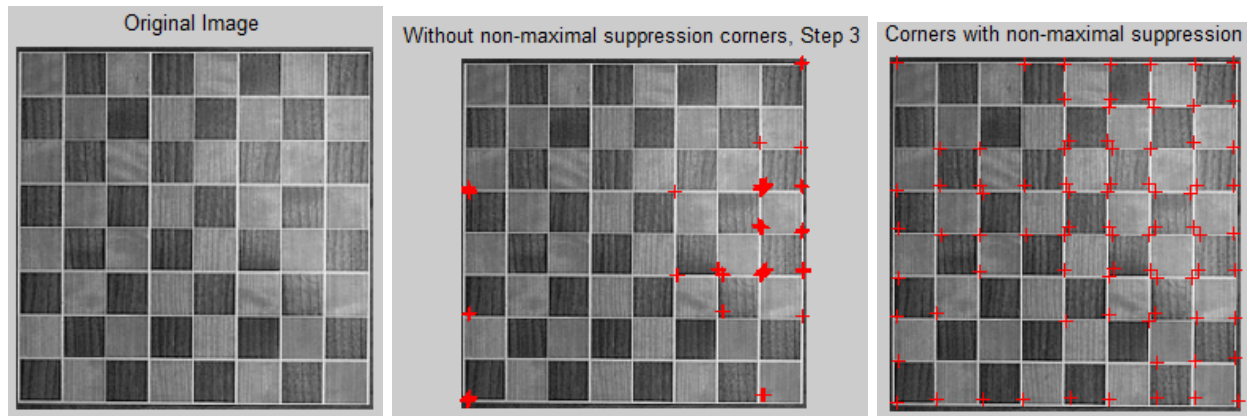


Figure 3: With and without Non-maximal suppression for chessboard 3

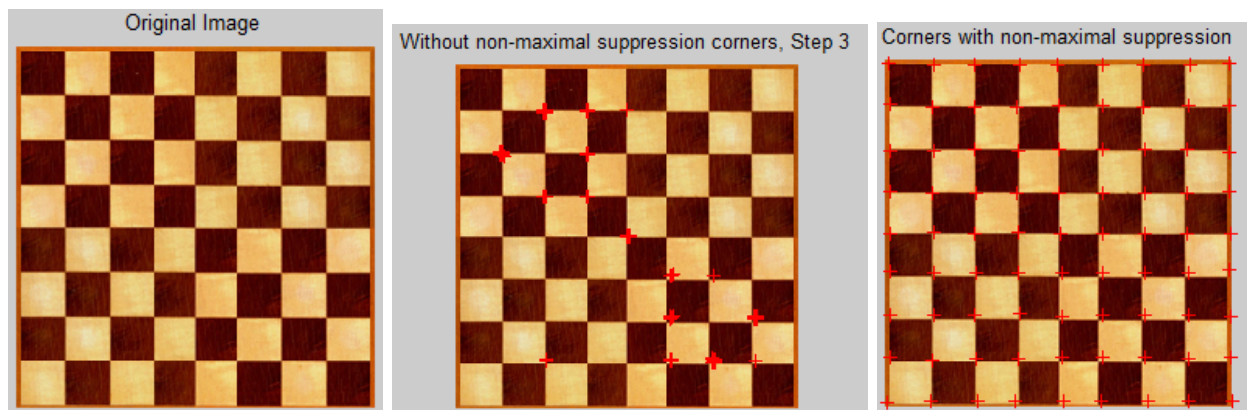


Figure 4: With and without Non-maximal suppression for chessboard 5

4 Conclusion

In this lab 2 we have learned about harris corner detection algorithm, and we have compared the difference of computational with eigen values. The other steps followed by explaining about the non-maximal suppression and the results are plotted with different given images.