

TP 5 - Motion analysis - Lucas and Kanade

Question 1: Apply the Lucas and Kanade method computed in an 8-Neighborhood on the 2 successive images given below. To represent the results, produce a color image where:

- the red component will give the displacement in x : $\text{Red} = 128 + k.V_x$
- the green component will give the displacement in y : $\text{Green} = 128 + k.V_y$
- the blue component will be set to 255 for all pixels

In order to better visualize the movements, it may be useful to amplify the value of the displacements V_x and V_y by multiplying them by an adapted constant k .

Give and comment the result. Express the value of the constant.



Question 2: Adapt your algorithm so that only "reliable" results are displayed - i.e. those obtained for high absolute eigenvalues. **Express the threshold value used to define a "high value". Give and comment on the result.**

Question 3: Based on the program produced in question 2, study the influence of the neighborhood on the results using successively 3x3, 5x5, 7x7, 9x9 and 11x11 neighborhoods centered on the pixel being processed. **Give and comment the results.**