VC_HW2_107703006

1. (50%) Motion Estimation

   a. (35%) Please apply a block matching algorithm (16x16) to the luma component of "foreman_qcif_1_rgb.bmp" with the reference frame "foreman_qcif_0_rgb.bmp." The collocated position in the reference frame of the top-left pixel of each MB is the center of the search window. The search range is set to [-16, 15]. The similarity metric is SAD. Please print out all the MVs with their corresponding block indices (in the raster scan order

      i. Reference frame 有做 padding，使用 cv2 的 BORDER_REPLICATE，因為兩張 frame 的動作差距沒有很大，所以 motion vector 的值也沒有很大，背景的motion vector幾乎都是 0

      ii. Answer of all motion vectors are in "q1_output/txt_output/motion_vector.txt".

   b. (15%) Make a collage for all the reference blocks as a frame that corresponds to foreman_qcif_1_rgb.bmp. Please show the collage in your report and save it as a grayscale image.

      i. Reference

      ii. Current

iii. Collage：動作和 Current 確實一樣，但是因為是從 Reference 中的 block 搬過來的，所以畫面有些割裂感

2. (50%) Intra Frame Prediction

   a. (35%) Please apply intra prediction to the luma component of "foreman_qcif_0_rgb.bmp." You only need to implement the four modes (Mode 0, 1, 2, and 4) for the 16x16 luma MB. You do not do intra prediction to the top- left MB since there is no predictor for it. The similarity metric is also SAD. If there are any pixels unavailable for a mode, you cannot choose it (using -1 as its mode number). Please print out all the prediction modes with their corresponding block indices in the raster scan order.

      i. 左上的 block 依題意設為 -1，第一列全設為 horizontal，第一行則全設為 vertical

      ii. Answer of all modes are in "q2_output/txt_output/modes.txt".

   b. (15%) Please make a collage for all the reference blocks (filled out with all the predictors only) as a frame that corresponds to foreman_qcif_0_rgb.bmp. Please show the collage in your report and save it as a grayscale image

      i. Reference

      ii. Collage：因為只有4種 mode 可使用，且 block 的大小相對整張圖很大，所以只有右上角能清楚的看出和原圖的相似處，人的部分只剩一些大區塊

勉強看得出來

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