Video Compression HW2 Answer Sheet

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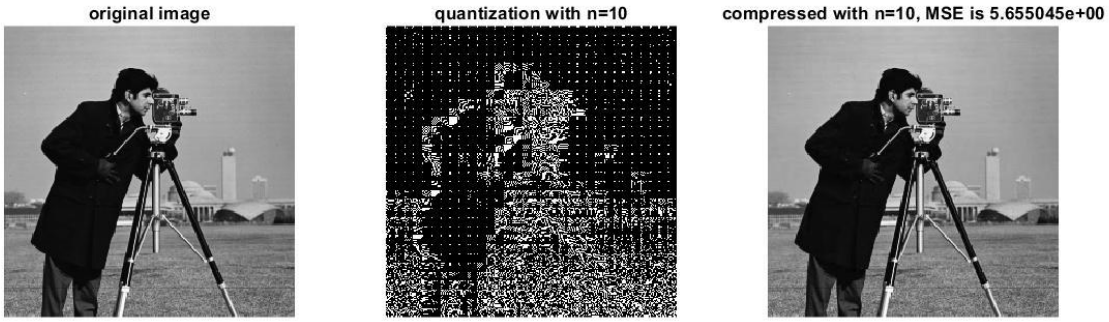
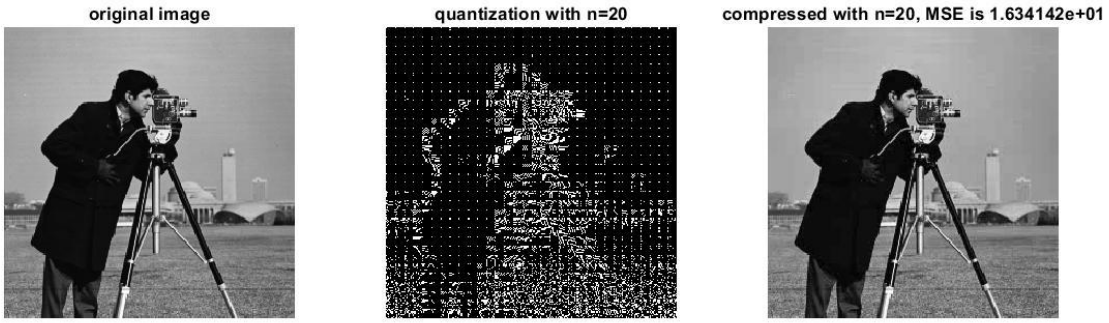
- Perform 8x8 DCT and quantization with a uniform quantizer with step-size n on an image (grey scale).. (The rounding is used after dividing by the quantization step-size, as shown below).
- Decode the results (inverse quantization and inverse DCT) and calculate the MSE with respect to the original matrix when: (N=10, N=20)





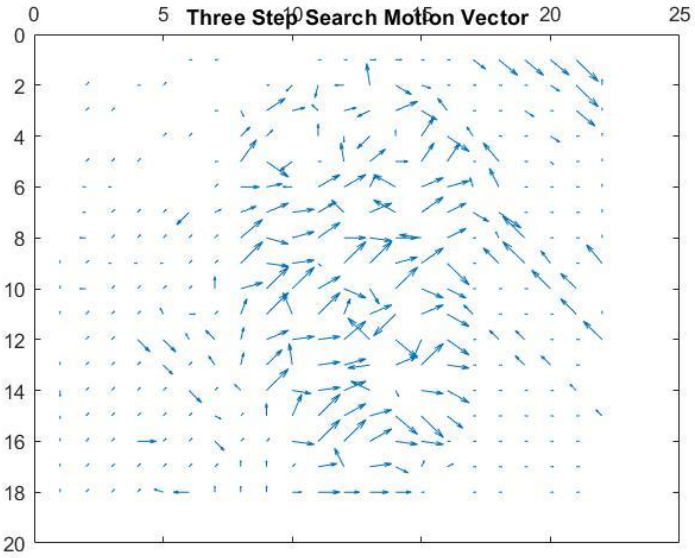
N=10, MSE = 5.655045

N=20, MSE = 16.34142

- Implement the following motion search on two images (grey scale).
  - Use three-step search with search window size +/-7 to find the motion vectors of target frame from the reference frame. (block size: 16x16)
  - Use full search with search window size +/-7 to find the motion vectors of target frame from the reference frame. (block size: 16x16)
- Compare the mean of absolute difference (MAD) between these two algorithms and show the motion fields, respectively (sample motion field as shown below).

Current Frame: **Previous Frame:**

Three step search:



Full Search: