INTRODUCTION AND METHODS

In a typical DCT 8×8 block, each coefficient value is the linear combination of the pixel values and the frequency level increase from top to bottom and left to right.

To solve all the cases in Fig. 3 except case 4, for locating the line boundaries in compressed domain, we need F10,F01 and F11 coefficients.

If F10 > 0, which means the text belongs to upper line and we mark the below block as the line boundary. Similarly for Word also. If F01>0, means word belongs to previous word.

If F10 < 0 then we mark the above block as the line boundary.

Likewise, we also observe the absolute value of F11 coefficient. If the |F11| > 0 then we can’t divide that block but marks that block itself as boundary.

The another way of solution for F11 cases is to partially decompress the block at that position to locate the exact line separator in the pixel domain.

The flow diagram of the approach is shown in Fig. 4.

We tested our approach on different printed documents, results of both the methods have been shown in Table 1 and Table 2.

The observation is that the process in compressed domain has gain the improvement in the speed as shown in Table 3.

DISCUSSION

- In a typical DCT 8×8 block, each coefficient value is the linear combination of the pixel values and the frequency level increase from top to bottom and left to right.
- To solve all the cases in Fig. 3 except case 4, for locating the line boundaries in compressed domain, we need F10,F01 and F11 coefficients.
- If F10 > 0, which means the text belongs to upper line and we mark the below block as the line boundary. Similarly for Word also. If F01>0, means word belongs to previous word.
- Similarly, if F10 < 0 then we mark the above block as the line boundary.
- Likewise, we also observe the absolute value of F11 coefficient. If the |F11| > 0 then we can’t divide that block but marks that block itself as boundary.
- The another way of solution for F11 cases is to partially decompress the block at that position to locate the exact line separator in the pixel domain.
- The flow diagram of the approach is shown in Fig. 4.
- We tested our approach on different printed documents, results of both the methods have been shown in Table 1 and Table 2.

CONCLUSIONS

- We proposed the possibility of working directly JPEG compressed domain for JPEG compressed document images.
- Two approaches have been proposed in this paper, first approach is using DC projection profile along with F10 and F11 AC coefficients.
- The second approach is using partial decompression at the expected line separators positions where the detection of line boundary is impossible in compressed domain.

FUTURE DIRECTIONS

We want to continue our work in compressed domain to explore the techniques for building models to find solution to the problems like segmentation.

We want to incorporate the better representations and methods to further increase the performance that we achieved in this paper.