Academic Paper Robotics

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Abstract

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1 Introduction

This image analysis assignment set out to demonstrate the different methods of image compression. As part of the tasks associated with this assignment a method will need to be devised and implemented to reduce the size of natural images with the purpose of occupying the least amount of the storage while preserving quality. Both sides of the algorithm will need to be implemented, compression and decompression. As the extra step required in storing the image, file writing and formatting will be investigated in order for compressed images to be stored on computer's file system. The JPEG compression algorithm has been chosen for the purpose of this task. Before implementing the compression and decompression algorithms it was necessary to investigate the algorithm used in JPEG. After implementing compression, file writing was investigate and implemented along with the decompression. Tests were then run to validate the performance of the image compression and decompression algorithms being used. Source code used to perform the compression and decompression can be found in the appendix.

2 Development

3 Results

4 Discussion of Results

5 Conclusion

In conclusion, this assignment highlighted the many possible methods of image compression. The route chosen for this task of JPEG compression allowed for discovery of the different methods for data reduction using the YCbCr colour space. It was discovered that due to the method of encoding the data in order to compress the file, different images resulted in different levels of compression independent of image size. With the use of MATLAB's built in functions, this method of image compression was made easier in the implementation stages as some of more basic methods had already been written. This method of lossy compression also highlighted areas where lost of data can be considered non-detrimental to the image. Future work would be concentrated on the implementation of the improvements highlighted in the discussion section of this report. These improvements include, down-sampling the chrominance, proper file header construction and the use of alternative methods of data encoding.