

# Improves the Quality of Degraded Document Image Using Image Enhancement Technique

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**Abstract** - Evolution of digital devices and computers makes an increasing attraction in document image analysis. Many of the paper documents have been transferred and stored using digital devices in large manner. We have done image enhancement techniques to reduce the noises from degraded document images. Segmentation of text from badly degraded document images is a very challenging task due to the high Inter/Intra variation between the document background and the foreground text of different document images. Pattern recognition and image processing algorithms take more time for execution on a single-core processor. Graphics Processing Unit is more popular nowadays due to its low cost, speed, programmability and more in built execution cores in it. Our main goal is to make binarization faster for recognition of a large number of degraded document images on GPU. We have done parallel work on a window of  $m*n$  size and extract object pixel of text stroke of that window. The document text is further segmented by a local threshold that is estimated based on the intensities of detected text stroke edge pixels within a local window. Discussion of results of proposed system is done.

**Key Words** : Image Segmentation , Pixel classification, GPU, Parallelization, Binarization,Otsu,Results

## 1.INTRODUCTION

Document Image Binarization is performed in the pre-processing stage for document analysis and it aims to segment the foreground text from the document background. A fast and accurate document image binarization technique is important for the ensuing document image processing tasks such as optical character recognition. The thresholding of degraded document images is still an unsolved problem due to the high Inter/Intra variation between the text stroke and the document background across different document images. Historical documents are often degraded by different types of imaging artifacts. These different types of document degradations tend to induce the document thresholding error and make degraded document image binarization a big challenge to most state-of-the-art techniques.

- Algorithms
- Grayscale Conversion
- Otsu's
- Image Segmentation
- Post Processing

## 2. PROPOSED SYSTEM

Digital image processing has become an applied research area that goes from professional photography to several different fields such as meteorology, astronomy, computer vision, medical imaging among others. The aim of digital image processing is to improve the pictorial information in order to perform subsequently other tasks such as image-based classification, pattern recognition or feature extraction. Image processing is usually a time-consuming and expensive task. The use of a GPU to parallelize tasks started several years ago, in 2004 proposed a new architecture using multiple GPUs for image processing and computer vision. They obtained significant speed up over a CPU implementation. Fast algorithms are important for efficient image processing systems for handling a large set of calculations. To speed up the processing parallel implementation of an algorithm can be done using the Graphics Processing Unit. GPU is general-purpose computation low cost and hardware programmability make it productive. Binarization is a widely used technique in recognition applications and image analysis. We investigate the accuracy and performance characteristics of GPUs on well-known global binarization.

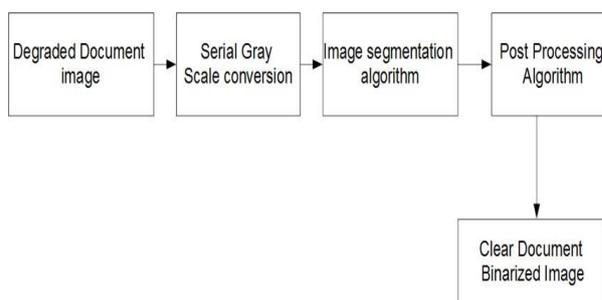


Fig. 1. Architecture diagram

As the system starts we give degraded document images as the input to the system. Then the image is converted to grayscale format after that the image segmentation algorithm is applied to get the clear binarized image as output. The post-processing algorithm is applied to get character and image clearer and more readable. Some key features of the system are as follow Some key features of the system are as follow:

- Processing image using parallel computing.
- To generate Clear output from Degraded Images.
- Text Stroke Identification.
- Parallel Image Segmentation

### 3.RESULTS AND DISCUSSION

The Proposed system brows for any type of degraded images then after applying grayscale algorithm it converts that image into Grayscale format.fig.2 shows the results of applying Grayscale algorithm.Then system accept threshold value and by using Global thresholding the image is enhanced which is shown in fig.3.In fig.4 the results of proposed segmentation algorithm is shown.The noises are removed from the image and it improves the quality of image.The proposed algorithm gives better results.

### 3. CONCLUSIONS

The system provides document image Binarization technique that is tolerant of different types of document degradation. The proposed technique is simple and robust only a few parameters are involved. We have presented an approach for document image processing using parallel computing using C#.Net. The gain in parallel maybe not very significant. Thus we propose a parallel approach for Document Image Binarization Using image segmentation algorithm for generating a clear document image from giving degraded document images.The proposed system gives better results than existing algorithms.If the threshold value is proper then the noises are removed from image and quality is be enhanced.The proposed algorithm gives better results.

### REFERENCES

- [1] Vibhor Sharma, Dheresh Soni, Deepak Srivastava, "Filtration Based Noise Reduction Technique in an Image", Published in 2019 on IEEE Explorer.
- [2] Sehad, Abdenour, et al. "Ancient degraded document image binarization based on texture features." Image and Signal Processing and Analysis (ISPA), 2013 8th International Symposium on IEEE, 2013.
- [3] Nafchi, Hossein Ziaei, Reza Farrahi Moghaddam, and Mohamed Cheriet. "Application of Phase-Based Features and Denoising in Postprocessing and Binarization of Historical Document Images." Document Analysis and Recognition (ICDAR), 2013 12th International Conference on. IEEE, 2013.
- [4] Parker, Jon, Ophir Frieder, and Gideon Frieder. "Automatic Enhancement and Binarization of Degraded Document Images." Document Analysis and Recognition (ICDAR), 2013 12th International Conference on IEEE, 2013.
- [5] D. Doermann and K. Tombre, "Handbook of Document Image Processing and Recognition.", Published in 2014.
- [6] Fabrizio Russo, "An Image Enhancement Technique Combining Sharp- ening and Noise Reduction", Published in 4 AUGUST 2002 on IEEE Explorer

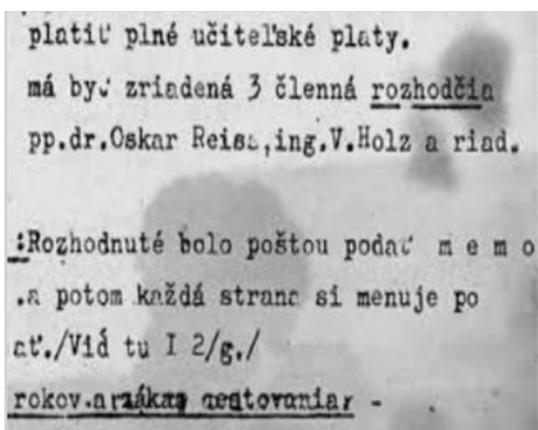


Fig. 2. Results of Grayscale Algorithm

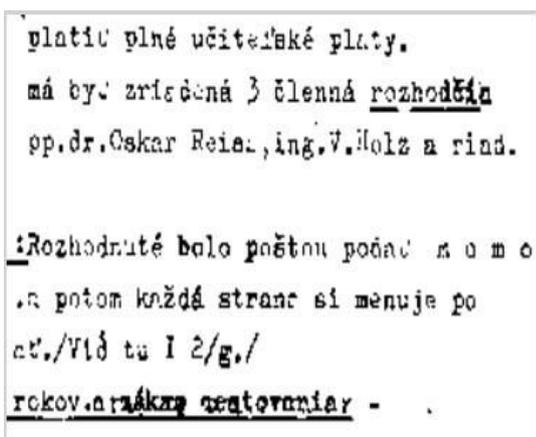


Fig. 3. Results of Global Thresholding