

# Chapter 10

## Possible Approaches for Character Recognition With Existing Methodologies and State-of-the-Art Techniques

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### ABSTRACT

*The world started to talk about optical character recognition (OCR) around 1870. Then over another 25 years OCR systems were designed for industrial applications. And now the OCR software is easily available online for free, through products like Acrobat reader, WebOCR, etc. But still the research is on. Do we need to switch direction or introduce new hypothesis are some of the key questions? The purpose of this chapter is to answer the above questions and propose new methods for character recognition.*

### INTRODUCTION

Doing a comprehensive literature survey is a skillful task. We need to consider literature reviews and results of various methodologies being perceived, tried and tested by other researchers. We need to spend hours and sometime years to read all related research work and identify the key points which have scope of improvement.

After going thoroughly through all literature in detail, we can:

- Gain complete understanding of topic under consideration;
- Identify various sources of data being used by other researchers;
- Identify familiarize our self with documentation style that is required and expected to be used and followed for putting and plotting results and inferences;

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### ***Possible Approaches for Character Recognition With Existing Methodologies***

- Identify key concepts and relationship between them;
- Identify gaps and shortcomings in literature;
- avoid the older errors and mistakes those were committed in previous work and plan more accurate and systematic approach for timely completion of proposed task;
- Develop our own strategy and verification procedure.

The well defined research proposal needs a thorough study. A detailed survey and literature review will always help to put forward a thoughtful proposal. The analysis helps us to identify key modules of our proposed research work. Once modularized, it becomes easier to sort out the issues. We may find that some of the issues pertaining to particular modules are already being addressed. Hence we can eliminate those and focus on the issues which needs more scientific analysis and the modules with scope of improvement.

Let's consider the case of optical character recognition (OCR). If we try to break the topic in key research areas then what we can conclude that the scope for research in OCR is in developing new logics instead of developing new methods of feature extraction or segmentation or improvising minimum edit distance method. It is because these areas are already flooded with lot of algorithms and logics which are producing results with accuracy more than 96% or 97%. But the most important issue is the overhead the system carries to hit that high recognition rate.

The purpose of this chapter is to present the great amount of work already being done with one mind set and then try to introduce a new approach which may reduce the performance overhead still keeping the recognition rate intact. The chapter is written with following points in mind:

- We need to look for the literature;
- Once we have found and retrieved all the relevant literature, we need to collate our literature - put it into groups of related themes;
- Then we need to critique them - individually and together (again within the themes);
- This is followed by summarizing the various points made by the writers of the literature, and then comparing these summarized points from paper/book, etc. to paper/book, etc. within each theme;
- Once we have done this, we can now start to write up our critiques of the various papers, research reports, books, etc. that constitute your literature.
- This process can take a long time, and if we are going to undertake any research we have to allow for this in our timetable.

## **REVIEW OF VARIOUS TECHNIQUES OF CHARACTER RECOGNITION**

Off line handwriting character recognition system is developed to convert text available in image format into latter coding which is generally used by computer software's for text processing. The input systems present static data for the software. The software has to perform complex task of dealing with various different styles of writing as every person in the world has unique style and every handwritten text is different than the other. Most of the OCR engines focus on recognizing standard fonts or printed text.

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