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| **ACROPOLIS INSTITUTE OF TECHNOLOGY & RESEARCH**  acro |
| **Major Project Synopsis on** |
| **OPTICAL CHARACTER RECOGNITION USING ARTIFICIAL NEURAL NETWORK** |

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# Introduction of the Project:

OCR stands for Optical Character Recognition. It is one such system that allows us to scan printed, typewritten or hand written text (numerals, letters or symbols) and/or convert scanned image in to a computer process able format, either in the form of a plain text or a word document.

* Later the converted documents can be edited, used or reused in other documents. Thus the documents become editable.
* OCR is used when recreating a similar document in paper as a document in electronic form takes more time.
* The converted text files take less space than the original image file and can be indexed. Hence the use of OCR adds an advantage to the user who had to deal with conversion of great amount of paper works in to electronic form.

# Objective (100 words):

The objective of this project is to make use of the OCR ie. Optical Character Recognition to read the characters from an image and convert them into the machine readable form. Many times it becomes very difficult for a person to read a text or character from an image because of the way it is presented. Our project helps by converting those characters into readable form for humans as well as machines. The final project will scan the image via scanner or camera and can convert the text present in the image to the most accurate form. In today's world we realized that the users need this technology very much like, for eg, to read the capta, to read the sign boards and translating them into native language and many more.

# Scope (100 words):

The applications of Optical Character Recognition are countless. This technology can be combined with various other technologies to give great results. Some of its applications can be in using it to make artificial intelligence to work perfectly in robots. Another application of OCR is that we can convert the bunch of records into a very small and compact digital form. Also it becomes very easy to search the record digitally rather than searching for files.

In the fast pace world there is a growing demand for the users to convert the printed documents in to electronic documents for maintaining the security of their data. Hence the basic OCR system was invented to convert the data available on papers in to computer process able documents, So that the documents can be editable and reusable.

# Project Description (200 words):

Our proposed system is OCR on a grid infrastructure which is a character recognition system that supports recognition of the characters of multiple languages. This feature is what we call grid infrastructure which eliminates the problem of heterogeneous character recognition. In this context, Grid infrastructure means the infrastructure that supports group of specific set of languages. Thus OCR on a grid infrastructure is multi-lingual.

* The Architecture of the optical character recognition system on a grid infrastructure consists of the three main components. They are:-
* Scanner
* OCR Hardware or Software
* Output Interface

# Resources and Limitations (150 words):

Since OCR is an Optical character recognition technique which determines the character/word of the image it would essentially require a camera with a clear resolution power to understand and process the image properly without any unexpected mistakes. Another thing that should be kept in mind that the user must me very careful while taking the image input. It was observed that user gives the improper image inputs like blur images, shaken images, not complete image of the text, etc. and expect the system to work properly.

Some of the limitations of the OCR model are:

1. OCR model will always need hardware to scan the images in high resolution to process the image and thus the cost will increase with demand of new and latest hardware.
2. The OCR systems will not always give the perfect result to the user because it uses a supervised learning technique to give the results according to the image that is given to it.
3. Another limitation is that if the OCR systems is designed poorly ie. if the user interface of this system is not good, then it is of no use to the end user.

# Technical Details:

**Requirements:**

1. Scanner or Camera for scanning the signatures.
2. 512MB RAM
3. 30MB database space
4. 500MB disk space
5. Operating System
6. Designing-Smart Draw or Rational Rose
7. Database
8. Editor: MATLAB R2012a

Technology- MATLAB

# Conclusion (100-150 words):

The Grid infrastructure used in the implementation of Optical Character Recognition system can be efficiently used to speed up the translation of image based documents into structured documents that are currently easy to discover, search and process.

The automated entry of data by OCR is one of the most attractive, labor reducing technology

The recognition of new font characters by the system is very easy and quick.

We can edit the information of the documents more conveniently and we can reuse the edited information as and when required.

The extension to software other than editing and searching is topic for future works.

# References:

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